

Enhanced Western Grid Integration: A Legal and Policy Analysis of the Effects on California's Clean Energy Laws

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Yale
ENVIRONMENTAL PROTECTION CLINIC



May 2017

Yale Law School and Yale School of Forestry & Environmental Studies

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Cover image: *Western Interconnection Balancing Authorities*, W. Elec. Coordinating Council,
https://www.wecc.biz/_layouts/15/WopiFrame.aspx?sourcedoc=/Administrative/WECC_BAMap.pdf.

I. Executive Summary

This analysis addresses the legal and policy merits of a transition to a fully integrated electricity grid in the Western United States through the creation of a regional independent system operator. We summarize the increasing constraints that today's balkanized grid imposes on system-wide electricity costs and reliability, address the potential benefits of enhanced grid integration, and evaluate potential legal risks for key California clean energy policies.

Wind and solar power are the dominant sources of new renewable energy in the United States and can provide numerous benefits to the economy and the environment. However, the variable nature of these technologies can create grid integration challenges for electricity system operators in some circumstances because renewable energy supply does not necessarily track demand. As California increases its renewable energy generation, it often has to curtail or shut down clean energy that is produced when demand is low. In February 2017, the California Independent System Operator (CAISO) warned that it may need to curtail 6,000 megawatts (MW) to 8,000 MW of renewable energy capacity during some hours in the spring of 2017,¹ which is equivalent to 60 to 80% of the total installed large-scale solar generating capacity in the CAISO.² This means that CAISO will not be able to take full advantage of this inexpensive and pollution-free generation. One way to improve grid reliability, minimize curtailments, and reduce the variability of renewable energy is to create a regional independent system operator to balance supply and demand across a larger geographic area.

Within the Western grid (known as the "Western Interconnection"), electricity is managed by 38 separate balancing authorities (BA) across the United States, Canada, and Mexico. All 38 BAs, including CAISO, are part of the synchronized Western Interconnection but each BA is independently responsible for balancing supply and demand in its own territory. In order to improve reliability, cut costs, and increase efficiency, a number of these balancing authorities are partnering in the Western energy imbalance market (EIM), which is managed by CAISO. The EIM is a "real-time market" that adjusts for forecast errors between supply and demand every five minutes. This regional market has demonstrated numerous benefits of enhanced regional grid integration, such as reducing costs and greenhouse gas (GHG) emissions. However, the EIM is limited in that it only allows for incremental adjustments to generation dispatch schedules and only captures a small portion of the region's wholesale electricity market. CAISO, Western states, and other stakeholders throughout the West are exploring the creation of a more fully integrated regional electricity market that would be comprehensively managed by a single system operator and include a day-ahead market and other benefits. Such a market could enhance utilities' resource planning, improve grid efficiency and reliability, and

¹ Steve Berberich, *CEO Report*, Cal. Indep. Sys. Operator Corp. (Feb. 9, 2017), <https://www.caiso.com/Documents/CEOREport-Feb2017.pdf>. Installed renewable capacity in the CAISO region is 20,445.9 MW as of March 2017.

² See *Today's Outlook*, Cal. Indep. Sys. Operator Corp., <http://www.caiso.com/Pages/TodaysOutlook.aspx> (last visited Apr. 24, 2017).

save utility customers money while meeting the West's demand for reliable, affordable, and clean electricity.

This report examines the potential impacts of an integrated Western electricity market on California's clean energy policies, including the state's renewable portfolio standard (RPS), the greenhouse gas emissions performance standard (EPS) for long-term contracts with baseload power plants, and the cap-and-trade program established by AB 32, the state's groundbreaking climate law. We find that enhanced Western grid integration—through the creation of a regional ISO—does not interfere with these clean energy policies, and it instead can assist California in meeting its objectives by creating more market opportunities for renewable energy, reducing greenhouse gas emissions and other pollution, and improving the transmission system's efficiency and reliability. CAISO is not now, and would not become a policy-making body, but like other multi-state grid operators it would assist the states it serves in achieving their own policy objectives at lower cost while improving electric system reliability.

While California's clean energy policies could be the subject of future legal challenges, the likelihood and prospects of such challenges would *not* be affected by enhanced Western grid integration.

Two provisions of the U.S. Constitution pose theoretical threats to California's clean energy laws: the Supremacy Clause³ and the Commerce Clause.⁴ Under the Supremacy Clause, a state law is preempted and invalid if it conflicts with a federal law,⁵ such as the Federal Power Act (FPA) or the Public Utility Regulatory Policies Act (PURPA). Additionally, the “dormant” Commerce Clause imposes limits on state actions that discriminate against out-of-state commerce,⁶ unduly burden interstate commerce,⁷ or assert control over conduct that occurs outside the state's borders.⁸ Opponents of regional grid integration might argue that the creation of a regional power market could call the legality of California's clean energy laws into question under either of these two provisions.

Our analysis indicates that the expansion of CAISO into a regional system operator across several states would not make these challenges any more likely to succeed.⁹ Given the highly interconnected nature of the electric grid in the Western United States through the Western

³ U.S. Const. art. IV, para 2 (requiring that federal law “shall be the supreme Law of the Land”).

⁴ U.S. Const. art. I, § 8, cl. 3 (giving Congress power to “regulate Commerce with foreign Nations, and among the several States, and with the Indian Tribes.”).

⁵ See, e.g., *Hughes v. Talen Energy Mktg., LLC*, 136 S. Ct. 1288, 1297 (2016) (“Put simply, federal law preempts contrary state law.”).

⁶ *Ore. Waste Sys., Inc. v. Dep’t of Env’tl. Quality of Ore.*, 511 U.S. 93, 99 (1994).

⁷ *Pike v. Bruce Church, Inc.*, 397 U.S. 137, 142 (1970).

⁸ *Edgar v. MITE Corp.*, 457 U.S. 624, 642-43 (1982); *Healy v. Beer Inst.*, 491 U.S. 324, 336 (1989). Note that the Ninth and Tenth Circuits, which cover most of the Western United States, including California, have taken a narrow view of this extraterritoriality doctrine. *Association des Eleveurs de Canards et D’oies du Quebec v. Harris*, 729 F.3d 937, 951 (9th Cir. 2013); *Energy & Env’t. Legal Inst. v. Epel*, 793 F.3d 1169, 1175 (10th Cir. 2015).

⁹ See *infra* Part III.A.

Interconnection, wholesale sales and transmission of electricity in the CAISO footprint are *already* treated as forms of “interstate commerce”¹⁰ subject to regulation by the Federal Energy Regulatory Commission (FERC) under the FPA. California laws and regulations affecting wholesale electricity transactions could be subject to challenges today if they conflict with federal energy law, and those same laws and regulations are already subject to scrutiny under the dormant Commerce Clause. As long as California and other Western states remain within the Western Interconnection, the potential for Supremacy Clause and dormant Commerce Clause challenges will not change. It is noteworthy that to date there have been no such challenges.

In sum, enhanced Western grid integration under a regional system operator would not expose California’s clean energy policies to additional risks of preemption under the FPA or challenges based on the dormant Commerce Clause. Shifting to a regional grid operator would enable more efficient, affordable, and reliable integration of renewable resources without increasing the legal risk to California’s clean energy policies.

II. Background

A. CAISO and the Western Energy Imbalance Market

The fragmented Western electric grid, known as the Western Interconnection, spans the area from California to the Great Plains, and from Western Canada to Northern Baja California, Mexico. Although the grid is electrically interconnected, electricity is independently dispatched across 38 balancing authorities—electric utilities and other entities that integrate resource plans ahead of time, maintain load interchange-generation balance, and support Interconnection frequency in real time.¹¹

CAISO, a nonprofit public benefit corporation, is the largest balancing authority in the Western Interconnection.¹² CAISO’s grid encompasses 80% of California, and a small portion of Nevada, and CAISO currently imports and exports power across the broader Western region. CAISO is regulated by FERC under the Federal Power Act (FPA) and is synchronously connected to the rest of the Western Interconnection. CAISO and other ISOs throughout the United States run competitive wholesale power markets, plan new transmission infrastructure, and maintain grid reliability. CAISO forecasts demand on a day-ahead basis and adjusts for forecast errors every five minutes, accounts for operating reserves, and dispatches the power plants with the lowest

¹⁰ See, e.g., *New York v. FERC*, 535 U.S. 1, 7 (2002) (citing *Fla. Power & Light Co.*, 37 F.P.C. 544, 549 (1967) and *Fed. Power Comm’n v. Fla. Power & Light Co.*, 404 U.S. 453, 469 (1972)) (noting that outside of Hawaii, Alaska, and the Texas Interconnect, “any electricity that enters the grid immediately becomes a part of a vast pool of energy that is constantly moving in interstate commerce.”).

¹¹ *Glossary of Terms Used in NERC Reliability Standards*, N. Am. Elec. Reliability Corp. (Apr. 4, 2017), http://www.nerc.com/files/glossary_of_terms.pdf.

¹² *Company Information and Facts*, Cal. Indep. Sys. Operator Corp. (2016), https://www.caiso.com/Documents/CompanyInformation_Facts.pdf.

operating costs to meet demand, while ensuring sufficient transmission capacity to maintain reliable grid operations under all foreseeable conditions.¹³

In October 2014, CAISO partnered with an Oregon-based utility, PacifiCorp, to launch the Western EIM, a “real-time market.” By entering into a shared market, the balancing authorities were able to improve management of short-term fluctuations of supply, increase reliability, lower costs for their customers, and better integrate renewable energy resources. CAISO manages and coordinates the EIM, which is now comprised of three additional utilities (NV Energy, Arizona Public Service, and Puget Sound Energy) spanning eight states, including Arizona, California, Idaho, Nevada, Oregon, Utah, Washington, and Wyoming (see Figure 1).¹⁴ Due to the demonstrated benefits of the Western EIM, a number of additional BAs have announced their intention to join, including Portland General Electric, Idaho Power, the Balancing Authority of Northern California (BANC), and the Sacramento Municipal Utility District (SMUD). Additionally, Utah Associated Municipal Power Systems (UAMPS), the Los Angeles Department of Water and Power, Seattle City Light, and the Mexican grid operator El Centro Nacional de Control de Energía (CENACE) Baja Norte have indicated that they are exploring participation.¹⁵

Figure 1: Map of the Western Energy Imbalance Market (EIM)

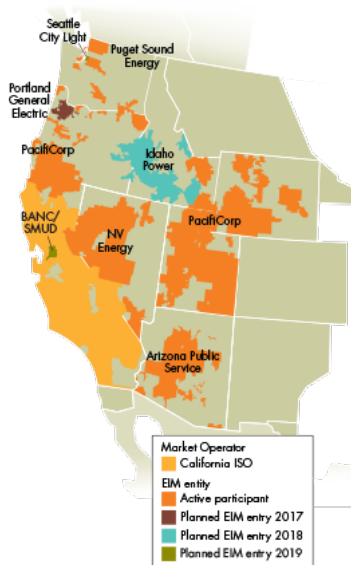


Figure 1. The EIM is managed by CAISO and comprised of four additional utilities: Pacificorp, NV Energy, Arizona Public Service, and Puget Sound Energy across eight states. Portland General Electric, Idaho Power, the Balancing Authority of Northern California (BANC), and the Sacramento Municipal Utility District (SMUD) are planning to join the Western EIM as well.

¹³ *Market Processes and Products*, Cal. Indep. Sys. Operator Corp., <http://www.caiso.com/market/Pages/MarketProcesses.aspx>.

¹⁴ *ISO and PacifiCorp Outline EIM Implementation Plans for October 1*, Cal. Indep. Sys. Operator Corp. (Sept. 15, 2014), <http://www.caiso.com/Documents/ISOandPacifiCorpOutlineEIMImplementationPlans-October1.htm>.

¹⁵ *Western EIM Produces Significant Savings Despite Low Demand*, Cal. Indep. Sys. Operator Corp. (Jan. 31, 2017), <http://www.caiso.com/Documents/WesternEIMProducesSignificantSavingsDespiteLowDemand.pdf>.

Since November 2014, CAISO estimates that the EIM has saved participants \$142.6 million.¹⁶ The larger geographic footprint facilitates the dispatch of more renewable energy resources, which have cheaper operating costs than coal or gas-fired power plants.¹⁷ In an integrated market, the plants with the lowest operating costs are always dispatched first. If not for the EIM, the California Energy Commission (CEC) estimates that CAISO would have had to curtail 272,000 MWh of renewable energy in the first half of 2016, offsetting 116,000 metric tons of carbon emissions from fossil fuel generation.¹⁸

The Western EIM demonstrates the benefits made possible by streamlining balkanized grid operations, but it is not a substitute for a full regional ISO. The real-time market only comprises a small portion of the overall wholesale electricity market (1% to 3% of the ISO's total wholesale energy costs),¹⁹ and is primarily designed to allow utilities to purchase power in small increments to correct for forecast errors from their day-ahead schedules. A regional ISO would allow participants to engage in more fully coordinated transmission planning, which can eliminate redundancy, increase efficiency, allow for the dispatch of more renewable energy, and improve the reliability of the grid. The EIM does not enable CAISO to view the full market of generators, nor does it allow for coordinated transmission planning and dispatch of renewables and other power plants across the Interconnection.

B. The Effort to Create a Regional ISO

California's S.B. 350, enacted in 2015, requires CAISO to consider the environmental and economic impacts of a regional grid, and submit a proposal to the governor for enhanced grid integration.²⁰ Other efforts are underway across the region to explore potential options for an expanded system operator.

Each balancing authority currently operates independently, and each encounters similar challenges to reliability, integrating variable energy resources, and resource adequacy. Proponents of the Western integrated grid assert that grid integration would deliver a range of

¹⁶ *Western EIM Produces Significant Savings Despite Low Demand*, Cal. Indep. Sys. Operator Corp. (Jan. 31, 2017), <http://www.caiso.com/Documents/WesternEIMProducesSignificantSavingsDespiteLowDemand.pdf>.

¹⁷ *Regional Energy Market Background*, Cal. Indep. Sys. Operator Corp. (July 12, 2016), <http://www.caiso.com/Documents/RegionalEnergyMarket-FastFacts.pdf>.

¹⁸ *Tracking Progress: Resource Flexibility*, Cal. Energy Comm'n (Dec. 15, 2016), http://www.energy.ca.gov/renewables/tracking_progress/documents/resource_flexibility.pdf.

¹⁹ *Regional Coordination in the West: Benefits of PacifiCorp and California ISO Integration*, Energy & Env'tl. Econ., Inc. (Oct. 2015), <https://www.caiso.com/Documents/StudyBenefits-PacifiCorp-ISOIntegration.pdf>.

²⁰ *FAQ*, Cal. Indep. Sys. Operator Corp. (Sept. 2016), <https://www.caiso.com/Documents/ISORegionalEnergyMarketFAQ.pdf>.

benefits including reduced costs, enhanced reliability, higher levels of renewable energy resources, avoided capacity redundancy, and increased resource flexibility.²¹

Grid integration would allow balancing authorities to reduce their energy reserve requirements. Currently, individual BAs have to plan for resources to meet their own peak loads. With grid integration, participating entities can instead plan to meet the region's peak load, resulting in a lower required peak generation capacity and lower costs for customers.²²

Additional cost savings could occur from the elimination of redundant transmission access charges that are currently used with a balkanized system. Renewable energy is often transmitted over long distances through multiple transmission systems to load centers, and in the current non-ISO West this electricity incurs a wheeling charge or toll for "each segment of the contract-path."²³ Therefore, removing these multiple charges will reduce the cost of renewable energy resources.²⁴

Regional grid integration is expected to improve efficiency in numerous ways. The introduction of a regional day-ahead market can fully optimize for cost and efficiency, whereas the current EIM real-time market can only make incremental improvements. A small market can create oversupply situations whereby energy is wasted through curtailment. In addition, under a balkanized system, bilateral transmission contracts may end up unnecessarily reserving and constraining transmission capacity. Grid integration would allow this reserved transmission to be redispatched.

1. Governance

Under current California law, CAISO's five-member board is "appointed by the Governor and subject to confirmation by the Senate."²⁵ In order for CAISO to become a regional system operator, California law requires that the ISO follow a process set forth in 2015's S.B. 350.²⁶ That law says that "modifications" to CAISO's "governance structure, through changes to its bylaws or other corporate governance documents, would be needed to allow this transformation [into a regional organization]."²⁷ Under S.B. 350, CAISO is responsible for proposing

²¹ *Regional Coordination in the West: Benefits of PacifiCorp and California ISO Integration*. Energy and Environmental Economics, Inc. (Oct. 2015), <https://www.caiso.com/Documents/StudyBenefits-PacifiCorp-ISOIntegration.pdf>

²² *Regional Coordination in the West: Benefits of PacifiCorp and California ISO Integration*, Energy & Envtl. Econ., Inc. (Oct. 2015), <https://www.caiso.com/Documents/StudyBenefits-PacifiCorp-ISOIntegration.pdf>.

²³ Rebecca Johnson, *Grid Integration in the West: Bulk Electric System Reliability, Clean Energy Integration, and Economic Efficiency*, Hewlett Found. (July 19, 2015), <http://americaspowerplan.com/wp-content/uploads/2015/08/Grid-Integration-in-the-West-07-19-15-Updated.pdf>.

²⁴ *Id.*

²⁵ Cal. Pub. Util. Code § 337 (West 2017).

²⁶ S.B. 350 (2015); Cal. Pub. Util. Code §§ 352(b), 359.5 (West 2017).

²⁷ Cal. Pub. Util. Code § 359.5(d) (West 2017).

governance changes, but the California legislature must “enact[] a statute implementing the revised governance changes.”²⁸

Any changes to CAISO’s governance structure will also need FERC approval. The Commission requires that regional transmission organizations be “independent of market participants.”²⁹ In order to meet this standard, “any non-stakeholder directors must not have any financial interests in any market participants” and “the RTO must have a decision-making process that is independent of control by any market participant or class of participants.”³⁰

C. Legal Principles

This section summarizes important concepts that help explain potential legal challenges to California’s clean energy policies and why the legal vulnerabilities of such policies would not change based on enhanced Western grid integration. It begins by discussing the current scope of the Federal Energy Regulatory Commission’s (FERC) jurisdiction, highlighting (1) the authority granted to FERC by the Federal Power Act, (2) powers reserved to the states, and (3) how the important jurisdictional term “electricity in interstate commerce” has been construed by FERC and federal courts. This section concludes by discussing two key constitutional issues: preemption of state laws based on the Supremacy Clause and the dormant Commerce Clause’s limits on state regulatory activity. While this report discusses potential challenges to state law, it is not intended to imply that any such challenges would be successful.

The key takeaway is that a move to a regional ISO would not expand FERC’s authority over California’s electricity system, because FERC already has jurisdiction over CAISO. Likewise, enhanced Western grid integration would not open the door to new or stronger dormant Commerce Clause challenges, because wholesale power transactions on the California grid are already considered to be part of interstate commerce.

1. FERC Jurisdiction

The Federal Power Act (FPA) establishes a system of split jurisdiction, with FERC exercising authority over transmission and wholesale sales of electricity “in interstate commerce” and state regulators retaining power over retail sales as well as generation and local distribution facilities. This section discusses the most important jurisdictional provisions of the FPA. It also explains why FERC has jurisdiction over wholesale sales of electricity even when both the generator and the purchaser of the power are in California.

²⁸ Cal. Pub. Util. Code § 395.5(e)(5) (West 2017).

²⁹ Order No. 2000: Regional Transmission Organizations, 89 FERC ¶ 61,285, at 152 (1999).

³⁰ *Id.*

a. FERC Jurisdiction Under the Federal Power Act

As a federal agency, FERC is only able to exercise its regulatory authority pursuant to a statutory grant of power.³¹ The FPA is FERC's enabling statute and determines the scope of its jurisdiction over the electricity industry.

The FPA grants FERC jurisdiction over “the transmission of electric energy in interstate commerce and ... the sale of electric energy at wholesale in interstate commerce.”³² The term “sale of electric energy at wholesale” is defined in the statute as “a sale of electric energy to any person for resale.”³³

The FPA gives FERC authority over “all *facilities* for such transmission or sale of electric energy.”³⁴ FERC is also responsible for ensuring that “[a]ll *rates and charges*, made demanded, or received by any public utility for or in connection with the transmission or sale of electric energy subject to the jurisdiction of the Commission, and all *rules and regulations* affecting or pertaining to such rates or charges shall be just and reasonable.”³⁵ The statute defines “public utility” as “any person who owns or operates facilities subject to the jurisdiction of the Commission” with some specific exceptions.³⁶ Under this statutory construct, CAISO is a “public utility” subject to FERC jurisdiction because (1) it operates transmission facilities, (2) its markets set the rates for wholesale electricity sales, and (3) its market rules “affect[] or pertain[] to” rates for wholesale electricity sales.³⁷ CAISO has been subject to FERC jurisdiction since its inception.³⁸ Additionally, since FERC has jurisdiction over all “public utilities” that own

³¹ *Atlantic City Elec. Co. v. FERC*, 295 F.3d 1, 8 (D.C. Cir. 2002) (“As a federal agency, FERC is a ‘creature of statute,’ having no constitutional or common law existence or authority, but *only* those authorities conferred upon it by Congress.” (quoting *Michigan v. EPA*, 268 F.3d 1075, 1081 (D.C. Cir. 2001))).

³² 16 U.S.C. § 824(b)(1) (2012).

³³ 16 U.S.C. § 824(d) (2012).

³⁴ 16 U.S.C. § 824(b)(1) (2012) (emphasis added).

³⁵ 16 U.S.C. § 824(d) (2012). The Supreme Court recently clarified that FERC's jurisdiction under the “affecting” clause is limited to rules and regulations that directly affect wholesale rates. *FERC v. Elec. Power Supply Ass'n*, 136 S. Ct. 760, 774 (2016).

³⁶ 16 U.S.C. § 824(e) (2012).

³⁷ See Order No. 888, Promoting Wholesale Competition Through Open Access Non-Discriminatory Transmission Services by Public Utilities; Recovery of Stranded Costs by Public Utilities and Transmitting Utilities, 75 FERC ¶ 61,080, at 279 (1996) (“[A]n ISO will be a public utility subject to our jurisdiction....”); *id.* at 279 n.425 (“An ISO will operate facilities used for the transmission of electric energy in interstate commerce and thus will be subject to Open Access and OASIS rules.”); Order No. 741: Credit Reforms in Organized Wholesale Markets, 133 FERC ¶ 61,060, at P 1 n.1 (“As public utilities, [the ISOs and RTOs, including CAISO] have on file as jurisdictional tariffs the rules governing [electric energy and financial transmission rights] markets.”).

³⁸ *Pacific Gas & Elec. Co.*, 77 FERC ¶ 61,204, at 61,796 (1996) (“As proposed, the ISO would be a non-profit, public benefit California corporation, subject to the Commission's jurisdiction.”); *id.* at 61,818 (noting that “the governance or operations of the ISO, or appellate review of ISO Board decisions, ... are [matters] within our exclusive jurisdiction”).

transmission facilities, it also has jurisdiction over transmission owners in the West, including those that are not members of an organized wholesale electricity market.³⁹

b. Powers Reserved to the States

The FPA also imposes limits on FERC jurisdiction, noting that federal regulation will “extend only to those matters which are not subject to regulation by the States.”⁴⁰ The FPA also notes that FERC does *not* have authority “over facilities used for the generation of electric energy or over facilities used in local distribution or only for the transmission of electric energy in intrastate commerce, or over facilities for the transmission of electric energy consumed wholly by the transmitter.”⁴¹ The FPA allows states to retain control over the “[n]eed for new power facilities, their economic feasibility, and [retail] rates and services.”⁴² Indeed, FERC itself has said that it “acknowledge[s] California’s ability under its authorities over the electric utilities subject to its jurisdiction to favor particular generation technologies over others. We respect the fact that resource planning and resource decisions are the prerogative of state commissions and that states may wish to diversify their generation mix to meet environmental goals in a variety of ways.”⁴³

Clean energy policies that target the state’s generation mix and retail electricity rates are thus valid exercises of state power. It is important to note that California and other states retain these powers over generation, local distribution, and retail rates regardless of any changes to the geographic footprint of the CAISO.

The Supreme Court’s recent decisions policing the boundary between state and federal jurisdiction under the Federal Power Act have “recognize[d] the importance of protecting the States’ ability to contribute, within their regulatory domain, to the Federal Power Act’s goal of ensuring a sustainable supply of efficient and price-effective energy.”⁴⁴ The Court’s 2015 opinion in *FERC v. Electric Power Supply Association* emphasized that “the law places beyond FERC’s power, and leaves to the States alone, the regulation of ‘any other sale’—most notably, any retail sale—of electricity.”⁴⁵ The majority opinion in *Hughes v. Talen Energy Marketing, LLC* similarly acknowledged that states retain authority over generation resources.⁴⁶

³⁹ See, e.g., *Ariz. Pub. Serv. Co.*, 155 FERC ¶ 61,257 (2016); *Puget Sound Energy, Inc.*, 135 FERC ¶ 61,254 (2011).

⁴⁰ 16 U.S.C. § 824(a).

⁴¹ 16 U.S.C. § 824(b)(1).

⁴² *Pacific Gas & Elec Co. v. State Energy Res. Conservation & Dev. Comm’n*, 461 U.S. 190, 205 (1983).

⁴³ *S. Cal. Edison Co.*, 70 FERC ¶ 61,215, at 61,676 (1995).

⁴⁴ *Hughes v. Talen Energy Mktg., LLC*, 136 S. Ct. 1288, 1300 (2016) (Sotomayor, J., concurring).

⁴⁵ *FERC v. Elec. Power Supply Ass’n*, 136 S. Ct. 760, 766 (2015).

⁴⁶ *Hughes v. Talen Energy Mktg., LLC*, 136 S. Ct. 1288, 1292 (2016) (citing *Pac. Gas & Elec. Co. v. State Energy Res. Conservation & Dev. Comm’n*, 461 U.S. 190, 205 (1983) for the proposition that “[n]eed for new power facilities, their economic feasibility, and rates and services, are areas that have been characteristically governed by the States.”).

The preemption issues raised by the divide between state and federal jurisdiction are discussed in further detail in Part II.C.2.

c. Defining Electricity “in Interstate Commerce”

As discussed in Part II.C.1.a, FERC has jurisdiction over transmission and wholesale sales of electricity “in interstate commerce.” FERC and the courts have clarified that wholesale electricity transactions can qualify as sales “in interstate commerce” even if the buyer and seller are located in the same state. The FPA says that “electric energy shall be held to be transmitted in interstate commerce if transmitted from a State and consumed at any point outside thereof.”⁴⁷ However, “this provision has been consistently interpreted to mean that the Commission has jurisdiction when the system is interconnected and capable of transmitting energy across the State boundary, even though the contracting parties and the electrical [transmission] pathway between them are within one State.”⁴⁸ The reason is simple: the electrical current flowing through the regional network of wires and substations ignores state boundaries.

⁴⁷ 16 U.S.C. § 824(c).

⁴⁸ Fla. Power & Light Co., 29 FERC ¶ 61,140, at 61,291 (1984) (citing Fed. Power Comm’n v. S. Cal. Edison Co., 376 U.S. 205 (1964) and Fed. Power Comm’n v. Fla. Power & Light Co., 404 U.S. 453 (1972)). See also People’s Elec. Coop., 84 FERC ¶ 61,229, at 62,107-62,112 (1998), *reh’g denied* 93 FERC ¶ 61,218 (2000) (discussing Jersey Cent. Power & Light Co., 319 U.S. 61 (1943); Fed. Power Comm’n v. Fla. Power & Light Co., 324 U.S. 515 (1945); Conn. Light & Power Co. v. Fed. Power Comm’n, 324 U.S. 515 (1945); Fed. Power Comm’n v. S. Cal. Edison Co., 376 U.S. 205 (1964); and City of Centralia v. FERC, 661 F.2d 787 (9th Cir. 1981)); Wis. Elec. Power Co., 62 FERC ¶ 61,142, at 62,008 n.40 (1993); *reh’g denied* 66 FERC ¶ 61,096 (1994) (“[E]nergy is deemed to be transmitted in interstate commerce if it is transmitted on a portion of an integrated interstate electric system, regardless of whether the transmission is across a state line.”); Promoting Wholesale Competition Through Open-Access Non-Discriminatory Transmission Services by Public Utilities and Transmitting Utilities, Order No. 888, 61 Fed. Reg. 21,540, at 21,725 (May 10, 1996), *order on reh’g*, Order No. 888-A, FERC Stats. & Regs. ¶ 31,048 (1997), *aff’d in relevant part* 225 F.3d 667, 690-95 (D.C. Cir. 2000), *aff’d in relevant part* 535 U.S. 1 (2002) (“Unlike the narrow interpretations given to the FPA provisions reserving certain regulatory authority to the States, the courts have construed transmission ‘in interstate commerce’ broadly. The term does not turn on whether the contract path for a particular power or transmission sale crosses state lines, but rather follows the physical flow of electricity. Because of the highly integrated nature of the electric system, this results in most transmission of electric energy being ‘in interstate commerce.’” (citations omitted)).

Figure 2 - North American Electric Reliability Corporation Interconnections⁴⁹

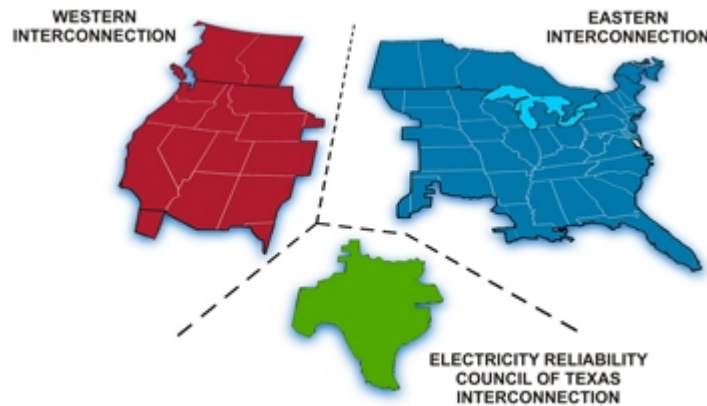


Figure 2. This map shows the three of the major synchronized Interconnections in the North American Electric Reliability Corporation: (1) the Western Interconnection, which includes CAISO, (2) the Eastern Interconnection, and (3) the Electric Reliability Council of Texas Interconnection. The Quebec Interconnection and the Alaska Interconnection are not pictured.

Because California’s electric grid is connected to other states in the Western Interconnection (as shown in Figure 2), FERC has jurisdiction over wholesale sales executed through the CAISO, even when both the buyer and seller are located in California. In its order approving the creation of the CAISO and the California Power Exchange, FERC acknowledged that “the sale of electric energy for resale through the [Power Exchange] will be subject to this Commission’s jurisdiction.”⁵⁰ Similarly, in an order regarding transactions that were part of the 2000-2001 California electricity crisis, FERC noted, “As all of the electric energy sales into the FERC-regulated [California Power Exchange] or ISO spot markets are wholesale sales of electricity in interstate commerce, they all fall within the Commission’s subject matter jurisdiction.”⁵¹

In 2002, the U.S. Supreme Court confirmed this understanding of FERC’s jurisdiction:

“[U]nlike the local power networks of the past, electricity is now delivered over three major networks, or ‘grids,’ in the continental United States. Two of these grids—the ‘Eastern Interconnect’ and the ‘Western Interconnect’—are connected to each other. It is only in Hawaii and Alaska and on the ‘Texas Interconnect’—which covers most of that State—that electricity is distributed entirely within a single State. In the rest of the country, any electricity that enters the grid immediately becomes a part of a vast pool of energy that is constantly moving in interstate commerce.”⁵²

⁴⁹ *Recovery Act Interconnection Transmission Planning*, U.S. Dep’t Energy, <https://energy.gov/oe/services/electricity-policy-coordination-and-implementation/transmission-planning/recovery-act>.

⁵⁰ *Pacific Gas & Elec. Co.*, 77 FERC ¶ 61,204, at 61,795 (1996).

⁵¹ *San Diego Gas & Electric Co.*, 97 FERC ¶ 61,275, at 24 (2001).

⁵² *New York v. FERC*, 535 U.S. 1, 7 (2002) (citing *Fla. Power & Light Co.*, 37 F.P.C. 544, 549 (1967) and *Fed. Power Comm’n v. Fla. Power & Light Co.*, 404 U.S. 453, 469 (1972)).

Both the CAISO and the New York Independent System Operator (NYISO) operate markets with footprints that are largely limited to a single state. FERC exercises its authority over rates set by CAISO and NYISO markets and the rules that affect such rates exactly to the same degree as it exercises its authority over larger, multi-state ISOs.⁵³ FERC can exercise this authority because the CAISO is part of the Western Interconnection and NYISO is part of the Eastern Interconnection. By contrast, FERC does *not* have jurisdiction under the FPA over the Electric Reliability Council of Texas because it is not synchronously connected to the electric grid in other states, as shown in Figure 2.⁵⁴ The dispositive factor in determining FERC jurisdiction therefore is not whether the grid operator's footprint is largely confined to a single state but rather whether the grid managed by the ISO is connected to one of the two multi-state synchronized Interconnections. As long as the electric grid in California is part of the Western Interconnection, transmission and sales of wholesale electricity in the state will be subject to FERC jurisdiction.

While recent technology advances and restructuring of the electricity industry have challenged the traditional "bright line"⁵⁵ between state and federal jurisdiction,⁵⁶ this basic understanding of the meaning of sales of electricity "in interstate commerce" has not changed. **Since California's electricity grid is part of the Western Interconnection, transactions through CAISO-administered markets are currently subject to FERC jurisdiction and will continue to be subject to such jurisdiction, regardless of whether the ISO becomes a regional grid operator.**

2. Preemption Issues

The U.S. Constitution's Supremacy Clause states that federal law "shall be the supreme Law of the Land."⁵⁷ This means that state laws can be "preempted" if they conflict with a federal law. Express preemption occurs when a federal law specifically states that it overrides state law. Implied preemption can occur through "field preemption," when the federal government has fully

⁵³ See, e.g., *Cal. Indep. Sys. Operator Corp.*, 154 FERC ¶ 61,122, at P 17 (2016) ("[W]e remind CAISO that rates for jurisdictional service must be included in CAISO's filed tariff, as required by the tariff, as required by the Federal Power Act and Commission regulations."); *FERC Orders*, Cal. Indep. Sys. Operator, <https://www.caiso.com/rules/Pages/Regulatory/RegulatoryFilingsAndOrders.aspx> (showing FERC orders in recent years regarding CAISO rates and rules); *eTariff Viewer*, NYISO, http://www.nyiso.com/public/markets_operations/documents/tariffviewer/index.jsp (showing FERC orders in recent years regarding NYISO rates and rules).

⁵⁴ See, e.g., *Sharyland Utilities, L.P.*, 121 FERC ¶ 61,006, at 7 (2007); see also Jared M. Fleisher, *ERCOT's Jurisdictional Status: A Legal History and Contemporary Appraisal*, 3 Tex. J. Oil Gas & Energy L. 4 (2008).

⁵⁵ *Fed. Power Comm'n v. S. Cal. Edison Co.*, 376 U.S. 205, 215-16 (1964).

⁵⁶ See *New York v. FERC*, 535 U.S. 1, 16 (2002) ("[T]he landscape of the electric industry has changed since the enactment of the FPA, when the electricity universe was neatly divided into spheres of retail versus wholesale sales.").

⁵⁷ U.S. Const. art. IV, para 2.

occupied the regulatory field, effectively leaving no room for concurrent state jurisdiction,⁵⁸ or through “conflict preemption,” when it is impossible to comply with both the state and federal laws or when the state law impedes the federal objective.⁵⁹ Given the states’ rights concerns implicated in preemption cases, courts have held that a presumption against preemption exists in a “field which the States have traditionally occupied . . . unless [preemption] was the clear and manifest purpose of Congress.”⁶⁰

In the electricity context, parties seeking to challenge state clean energy laws might argue that such laws are preempted by the Federal Power Act or other federal laws relating to electricity or pollution, such as the Public Utility Regulatory Policies Act of 1978 (PURPA) and the Clean Air Act. As discussed above in Part II.C.1, the FPA gives FERC jurisdiction over wholesale sales and transmission of electricity in interstate commerce but preserves state jurisdiction over retail rates and local generation and distribution facilities. The traditional view was that the FPA created a “bright line” between state and federal jurisdiction,⁶¹ with FERC exerting exclusive control over wholesale transactions.⁶² FERC’s exclusive jurisdiction over wholesale rates can impose limits on the power of state regulators through the “filed rate doctrine.” Under this doctrine, states cannot set retail rates at levels that fail to give effect to wholesale rates that FERC has deemed just and reasonable because “a State may not conclude in setting retail rates that the FERC-approved wholesale rates are unreasonable.”⁶³

Restructuring of the electricity industry and recent technological advances involving distributed generation and demand response have challenged the traditional jurisdictional line between wholesale and retail electricity. Federal courts have addressed a number of novel preemption questions in recent years, including issues related to sales of electricity to power plants for “station power,”⁶⁴ regional transmission planning,⁶⁵ the treatment of demand response resources in wholesale markets,⁶⁶ and the relationship between state subsidies for new generation and wholesale capacity markets.⁶⁷

These decisions shed light on how courts assess preemption challenges. Perhaps the clearest articulation of modern energy law preemption analysis comes from the Supreme Court’s 2015 decision in *Oneok v. Learjet*, which emphasizes “the importance of considering the *target* at

⁵⁸ See *English v. General Elec. Co.*, 496 U.S. 72, 90 (1990).

⁵⁹ See *id.* at 79.

⁶⁰ *Rice v. Santa Fe Elevator Corp.*, 331 U.S. 218, 230 (1947); see also *Wyeth v. Levine*, 555 U.S. 555, 565 (2009); *New York v. FERC*, 525 U.S. 1, 17-18 (2002); *Medtronic, Inc. v. Lohr*, 518 U.S. 470, 485 (1996); *N.Y. State Conference of Blue Cross & Blue Shield Plans v. Travelers Ins. Co.*, 514 U.S. 645, 655 (1995).

⁶¹ *Fed. Power Comm’n v. S. Cal. Edison Co.*, 376 U.S. 205, 215-16 (1964).

⁶² See *Nantahala Power & Light Co. v. Thornburg*, 476 U.S. 953, 966 (1986); 16 U.S.C. §§ 824(a)-(b) (2012); *id.* § 824e(a).

⁶³ *Nantahala Power & Light Co. v. Thornburg*, 476 U.S. 953, 966 (1986).

⁶⁴ *S. Cal. Edison Co. v. FERC*, 603 F.3d 996 (D.C. Cir. 2010).

⁶⁵ *S.C. Pub. Serv. Auth. v. FERC*, 762 F.3d 41 (D.C. Cir. 2014).

⁶⁶ *FERC v. Elec. Power Supply Ass’n*, 136 S. Ct. 760 (2016).

⁶⁷ *Hughes v. Talen Energy Mktg., LLC*, 136 S. Ct. 1288 (2016).

which the state law *aims* in determining whether that law is preempted.”⁶⁸ State laws that target retail rates are valid, while those that target wholesale rates are preempted. The most recent Supreme Court preemption decision in the electricity context, *Hughes v. Talen Energy Marketing*, determined that a state program requiring utilities to enter into a contract for differences with a new gas-fired power plant was preempted because it displaced the FERC-approved rate that the plant would receive in the wholesale capacity market.⁶⁹ However, the Court’s decision emphasized that it was “limited” to the specific contractual arrangement at issue in the case and did “not address the permissibility of various other measures States might employ to encourage development of new or clean generation.”⁷⁰

While several recent legal challenges have argued that state clean energy policies are preempted by the Federal Power Act, few have been successful. In *North Dakota v. Heydinger*, the Eighth Circuit struck down a state policy limiting high-carbon electricity imports, but the panel was divided in terms of its reasoning, which weakens the decision’s precedential effect.⁷¹ One judge argued that the law was preempted by the Federal Power Act while another believed it was preempted by the Clean Air Act. The third agreed with the district court that the law was invalid because it violated the dormant Commerce Clause rather than the Supremacy Clause. In another case, a federal district court struck down a Massachusetts regulation regarding the definition of “avoided costs” under PURPA as inconsistent with the federal statute,⁷² although an appeal is currently pending before the First Circuit.⁷³ Other courts have rejected or expressed skepticism about Supremacy Clause challenges to state clean energy policies. A federal district court in August 2016 dismissed a complaint that claimed that Connecticut’s clean energy procurement program was preempted by PURPA⁷⁴ (an appeal is currently pending before the Second Circuit⁷⁵). Courts have also rejected preemption claims against low-carbon fuel standards⁷⁶ and expressed skepticism regarding a claim that a state’s approval of a contract for wind power was preempted by the Federal Power Act.⁷⁷

⁶⁸ 135 S. Ct. 1591, 1599 (2015). Although *Oneok* arose under the Natural Gas Act, it provides insight for preemption under the Federal Power Act because courts have held that the relevant provisions of the Natural Gas Act and FPA are “in all material respects substantially identical.” *Ark. La. Gas Co. v. Hall*, 453 U.S. 571, 578 n.7 (1981).

⁶⁹ 136 S. Ct. 1288 (2016).

⁷⁰ *Id.* at 1299.

⁷¹ *North Dakota v. Heydinger*, 825 F.3d 912 (8th Cir. 2016). For further discussion of this case, see Part III.A.2.c.

⁷² *Allco Renewable Energy Ltd. v. Mass. Elec. Co.*, No. 15-13515-PBS, 2016 WL 5346937 (D. Mass. Sept. 23, 2016).

⁷³ *Allco Renewable Energy Ltd. v. Mass Elec. Co.*, No. 17-1296 (1st Cir. Mar. 29, 2017) (notice of appeal filed).

⁷⁴ *Allco Fin. Ltd. v. Klee*, No. 3:15-cv-00608-CSH, 2016 WL 4414774 (D. Conn. Aug. 18, 2016).

⁷⁵ *Allco Fin. Ltd. v. Klee*, No. 16-2946 (2d Cir. Sept. 28, 2016) (appeal brief filed).

⁷⁶ *Rocky Mountain Farmers Union v. Corey*, 730 F.3d 1070 (9th Cir. 2013); *Am. Fuel & Petrochemical Mfrs. v. O’Keeffe*, 134 F. Supp. 3d 1270 (D. Ore. 2015), *appeal pending* No. 15-35834 (9th Cir. Feb. 3, 2016) (appellant brief filed).

⁷⁷ *Town of Barnstable v. Berwick*, 17 F. Supp. 3d 113, 124 n.26 (D. Mass. 2014). The district court dismissed the case on Eleventh Amendment sovereign immunity grounds. The First Circuit rejected the Eleventh Amendment ruling and remanded the case to the district court. *Town of Barnstable v. O’Connor*,

3. Dormant Commerce Clause Issues

The dormant Commerce Clause presents another important restraint on state regulations. The Commerce Clause of the U.S. Constitution says that Congress shall have the power “To regulate Commerce with foreign Nations, and among the several States, and with the Indian Tribes.”⁷⁸ The Commerce Clause has been read to include a “‘dormant’ limitation on the authority of States to enact legislation affecting interstate commerce.”⁷⁹

There are three major tests that courts use to determine whether a state law violates the dormant Commerce Clause: (1) strict scrutiny for laws that discriminate against out-of-state commerce, (2) the *Pike* balancing test for facially neutral laws, and (3) the extraterritoriality test. The Supreme Court has said that state laws that discriminate against interstate commerce are “virtually *per se* invalid”⁸⁰ and will be struck down unless they “advance[] a legitimate local purpose that cannot be adequately served by reasonable nondiscriminatory alternatives.”⁸¹ In *Pike v. Bruce Church*, the Supreme Court established the less stringent test for laws that are not facially discriminatory. Such laws “will be upheld unless the burden imposed on [interstate] commerce is clearly excessive in relation to the putative local benefits.”⁸² Finally, the dormant Commerce Clause also imposes limits on state laws that have an “extraterritorial effect.” The Supreme Court has held that the “Commerce Clause ... precludes the application of a state statute to commerce that takes place wholly outside of the State’s borders, whether or not the commerce has effects within the State.”⁸³

California’s clean energy laws could be challenged as unconstitutional under any of these three tests. One key focus of all three tests is the state law’s impact on interstate commerce. As discussed in Part II.C.1.c, transmission and sales of wholesale electricity in California are already considered part of interstate commerce by virtue of the fact that California is part of the Western Interconnection. Additionally, the scope of “interstate commerce” is even broader in the Commerce Clause context than it is in the context of determining FERC’s jurisdiction under the Federal Power Act.⁸⁴ **There is therefore no question that a California law that impacts**

786 F.3d 130 (1st Cir. 2015). The contract at issue was terminated before the district court reached a decision on remand. *Town of Barnstable v. O’Connor*, No. 14-cv-10148 (D. Mass. July 1, 2015) (joint status report filed).

⁷⁸ U.S. Const. art. I, § 8, cl. 3.

⁷⁹ *Healy v. Beer Inst.*, 491 U.S. 324, 326 n.1 (1989).

⁸⁰ *Ore. Waste Sys., Inc. v. Dep’t of Env’tl. Quality of Ore.*, 511 U.S. 93, 99 (1994).

⁸¹ *Id.* at 101.

⁸² *Pike v. Bruce Church, Inc.*, 397 U.S. 137, 142 (1970).

⁸³ *Edgar v. MITE Corp.*, 457 U.S. 624, 642-43 (1982).

⁸⁴ See Jared M. Fleisher, *ERCOT’s Jurisdictional Status: A Legal History and Contemporary Appraisal*, 3 *Tex. J. Oil Gas & Energy* L. 4 (2008) (“[I]t is important to pause for a moment on the fact that interstate commerce in this context is a statutory term and does not refer to the Interstate Commerce Clause of the United States Constitution. . . . [I]t is essential to remain aware that ERCOT’s jurisdictional status is a product of the FPA’s regulatory scheme and almost certainly represents an under-reach in terms of the Commerce Clause power.”); Cassandra Burke Robertson, *Bringing the Camel into the Tent: State and Federal Power over Electricity Transmission*, 49 *Clev. St. L. Rev.* 71, 78 (2001) (“There is little doubt that

wholesale electricity transactions already affects interstate commerce and is thus already subject to the limitations of the dormant Commerce Clause. This is true regardless of whether or not CAISO becomes a regional ISO.

There is one additional point regarding the extraterritoriality test that is important to the interests of California and other Western states. In assessing claims about whether a state law is extraterritorial, courts focus on “whether the practical effect of the regulation is to control conduct beyond the boundaries of the State.”⁸⁵ There has been some confusion in different judicial circuits about the meaning of the extraterritoriality doctrine.⁸⁶ The Ninth Circuit—which covers California as well as Alaska, Arizona, Hawaii, Idaho, Montana, Nevada, Oregon, and Washington—has taken a narrow view, holding that this extraterritoriality limit only applies when a statute sets the price of a product or “[t]he price of its in-state products to out-of-state prices.”⁸⁷ The Tenth Circuit, which covers most of the rest of the West, has taken the same position.⁸⁸ However, other circuits have taken a broader approach, holding that the extraterritoriality doctrine is not limited to the price-control context.⁸⁹ The fact that the Ninth and Tenth Circuits take a narrow view is advantageous for California and other Western states since potential dormant Commerce Clause challenges that hinge on the extraterritoriality theory are likely to be subject to this stricter test.

In recent years, several parties have challenged state clean energy policies as violating the dormant Commerce Clause.⁹⁰ However, with the exception of *North Dakota v. Heydinger*,⁹¹ none of these challenges have been successful in the federal courts.⁹² In *Energy & Environment Legal Institute v. Epel*, the Tenth Circuit (in an opinion by then-Judge Neil Gorsuch) upheld Colorado’s renewable portfolio standard, rejecting the claim that it amounted to extraterritorial legislation because “it isn’t a price control statute, it doesn’t link prices paid in Colorado with those paid out of state, and it does not discriminate against out-of-staters.”⁹³ Similarly, a federal

transmission of electricity could meet the Commerce Clause definition of interstate commerce There is also little doubt that electricity transmission—even that within a single state—“substantially [a]ffects” interstate commerce. . . . Furthermore, the interconnected grid could even be seen as an instrumentality of interstate commerce, for electricity travels through the grid to get from one state to another”).

⁸⁵ *Healy v. Beer Inst.*, 491 U.S. 324, 336 (1989).

⁸⁶ Jeffrey M. Schmitt, *Making Sense of Extraterritoriality: Why California’s Progressive Global Warming and Animal Welfare Legislation Does Not Violate the Dormant Commerce Clause*, 39 Harv. Envt. L. Rev. 423 (2015).

⁸⁷ *Association des Eleveurs de Canards et D’oies du Quebec v. Harris*, 729 F.3d 937, 951 (9th Cir. 2013) (quoting *Pharm. Research & Mfrs. of Am. v. Walsh*, 538 U.S. 644, 669 (2003)).

⁸⁸ *Energy & Envt. Legal Inst. v. Epel*, 793 F.3d 1169, 1175 (10th Cir. 2015).

⁸⁹ See, e.g., *North Dakota v. Heydinger*, 825 F.3d 912, 920 (8th Cir. 2016).

⁹⁰ See *State Cases*, State Power Project, <https://statepowerproject.org/states/>.

⁹¹ *North Dakota v. Heydinger*, 825 F.3d 912 (8th Cir. 2016). As noted above, only one of the three judges on the *Heydinger* panel believed that the law violated the Commerce Clause’s extraterritoriality doctrine.

⁹² See *State Cases*, State Power Project, <https://statepowerproject.org/states/>.

⁹³ *Energy & Envt. L. Inst. v. Epel*, 793 F.3d 1169, 1173 (10th Cir. 2015). While only the extraterritoriality challenge was preserved on appeal, the lower court also rejected plaintiff’s claims that the RPS discriminated against out-of-state commerce or amounted to an excessive burden on interstate commerce under the *Pike* test. *Id.* at 1172.

district court recently dismissed a challenge to Connecticut's RPS, which requires renewable energy to be generated in New England or an adjacent region in order to be eligible to receive Renewable Energy Certificates (RECs). The court held:

"[T]he dormant Commerce Clause does not apply to Connecticut because the RPS creates a market for RECs, rather than impeding on a previously existing national market. Furthermore, Connecticut is not obligated to pass the benefits of its subsidy program without restriction to those producing clean energy in [remote states]."⁹⁴

4. Summary of Key Legal Principles

The Federal Power Act gives FERC jurisdiction over transmission and wholesale sales of electricity "in interstate commerce."⁹⁵ The term "in interstate commerce" has been interpreted to include transactions that source and sink within a single state so long as that state is part of one of the two large multi-state interconnections (the Eastern Interconnection and the Western Interconnection).⁹⁶ Transmission and wholesale sales of electricity in California are already subject to FERC jurisdiction under the Federal Power Act because California is part of the Western Interconnection. **The potential for legal challenges claiming that a California law conflicts with and is thus preempted by the Federal Power Act (or another federal law) will not change if CAISO becomes a regional ISO.**

If California or other states' laws face preemption challenges under the Supremacy Clause, it is important to bear in mind that states retain significant power under the Federal Power Act, including authority over generation, local distribution, and retail rates.⁹⁷ This statutory reservation of state power gives California and other Western states considerable leeway to defend their clean energy policies. The Supreme Court's recent decision in *Hughes v. Talen Energy Marketing*—in which it held that a state-mandated generation contract was preempted by the Federal Power Act—has made Supremacy Clause issues more salient. However, it is important to recall that the Court emphasized that its decision was "limited" to the specific contractual arrangement at issue in the case and did "not address the permissibility of various other measures States might employ to encourage development of new or clean generation."⁹⁸

California's clean energy laws could also face challenges under the dormant Commerce Clause. Each of the three dormant Commerce Clause tests—strict scrutiny for discriminatory laws, the *Pike* balancing test for facially neutral laws, and the extraterritoriality test—focus on the effect of a state law on interstate commerce. **Because transmission and wholesale sales of electricity in California are already considered to be part of interstate commerce, the risk**

⁹⁴ Allco Fin. Ltd. v. Klee, No. 3:15-cv-608, 2016 WL 4414774, at *25 (Aug. 18, 2016) (appeal pending).

⁹⁵ 16 U.S.C. § 824(b)(1) (2012).

⁹⁶ New York v. FERC, 535 U.S. 1, 7 (2002) (citing Fla. Power & Light Co., 37 F.P.C. 544, 549 (1967) and Fed. Power Comm'n v. Fla. Power & Light Co., 404 U.S. 453, 469 (1972)).

⁹⁷ 16 U.S.C. § 824(b)(1) (2012); Pacific Gas & Elec Co. v. State Energy Res. Conservation & Dev. Comm'n, 461 U.S. 190, 205 (1983).

⁹⁸ 136 S. Ct. 1288, 1299 (2016).

of a dormant Commerce Clause challenge to California's clean energy policies does not change based on whether or not CAISO becomes a regional ISO.

III. Impact of the Shift to a Regional ISO

A. California's Clean Energy Policies

California is leading the nation in enacting and implementing public policies to address climate change by reducing greenhouse gas emissions and transitioning from fossil fuels to clean energy to generate electricity. In evaluating the emergence of an integrated regional Western electricity market, this paper examines the potential policy and legal ramifications for three major California clean energy policies: the renewable portfolio standard (RPS), the greenhouse gas emission performance standard (EPS), and the cap-and-trade program under the Global Warming Solutions Act (GWSA).

1. Renewable Portfolio Standard

a. Existing Policy

The California RPS mandates that a minimum percentage of electricity served to California customers is procured from qualifying renewable sources⁹⁹ by retailer sellers.¹⁰⁰ The standard applies to all publicly owned utilities (POUs), investor-owned utilities (IOUs), electricity service providers, and community choice aggregators. The California standard is one of the nation's most ambitious, with a 50% target by 2030. In 2015, the major California IOUs reported that they met 27.6% of their collective electricity demand with RPS-eligible renewable generation.¹⁰¹ California State Senate leader Kevin De-León has since proposed legislation to require that 100% of California electricity be renewable by 2045. The bill, S.B. 584, also advances the 50% RPS goal from 2030 to 2025.¹⁰²

The California RPS was established in 2002 under S.B. 1078. In October 2015, S.B. 350 ("Clean Energy and Pollution Reduction Act") established new greenhouse gas reduction goals for 2030 and beyond. S.B. 350 created a 50% RPS goal for 2030 and enhanced the state's ability to meet its long-term, economy-wide 80% greenhouse gas reduction from 1990 levels by

⁹⁹ The eligible renewable energy technologies do not include most hydroelectric facilities that exceed 30 MW in size.

¹⁰⁰ S.B. 1078 (2002).

¹⁰¹ *Renewables Portfolio Standard Quarterly Report: Fourth Quarter 2016*, Cal. Pub. Utils. Comm'n, http://cpuc.ca.gov/uploadedFiles/CPUC_Website/Content/Utilities_and_Industries/Energy/Reports_and_White_Papers/Q4_2016_RPS_Report_to_the_Legislature_FINAL.pdf

¹⁰² *SB-584 California Renewables Portfolio Standard Program*. February 17, 2017. California Legislature. https://leginfo.ca.gov/faces/billNavClient.xhtml?bill_id=201720180SB584

2050.¹⁰³ The RPS has consistently progressed during the past decade and sets interim targets along the way to the final goal:

- 20% by end of 2013
- 25% by end of 2016
- 33% by end of 2020
- 40% by end of 2024
- 45% by end of 2027
- 50% by end of 2030

The California Energy Commission (CEC), the California Public Utilities Commission (CPUC), and the California Air Resources Board (CARB) share responsibility for implementing the RPS. The CEC is responsible for certifying renewable facilities,¹⁰⁴ running a tracking and verification system, and monitoring compliance by publicly owned utilities.¹⁰⁵ The CEC refers non-compliant publicly owned utilities to CARB for potential penalties.¹⁰⁶ Meanwhile, the CPUC is responsible for overseeing RPS compliance by investor-owned utilities, electric service providers, and community choice aggregators.¹⁰⁷

WECC, which oversees one of the three primary interconnects in the United States, falls under the authority of the North American Electric Reliability Corporation (NERC) and encompasses the entire Western Interconnection. Among other responsibilities, WECC is tasked with maintaining a reliable power system that supports competitive markets, ensuring open transmission line access, and assisting in regional transmission planning. Resources located outside of California must either “have a first point of interconnection to a California Balancing Authority” or be connected to WECC and certify that they do “not cause or contribute to any violations of a California environmental quality laws, ordinances, regulations, or standards (LORS) within California.”¹⁰⁸

¹⁰³ *Clean Energy & Pollution Reduction Act: SB 350 Overview*, Cal. Energy Comm’n, <http://www.energy.ca.gov/sb350/>.

¹⁰⁴ In order to be certified as a renewable resource for the purposes of California’s RPS, facilities must be registered and approved by the Western Renewable Energy Generation Information System, a system that was developed by the Western Electricity Coordinating Council (WECC), the CEC, and the Western Governors’ Association. *Renewables Portfolio Standard Eligibility: Ninth Edition, Commission Guidebook*, Cal. Energy Comm’n 24 (Jan. 2017), http://docketpublic.energy.ca.gov/PublicDocuments/16-RPS-01/TN215573_2011f

70125T160830_Renewables_Portfolio_Standard_Eligibility_Guidebook_Ninth_Editi.pdf; *Renewables Portfolio Standard*, DSIRE (Oct. 7, 2015), <http://programs.dsireusa.org/system/program/detail/840>.

¹⁰⁵ *Renewable Portfolio Standard (RPS)*, Cal. Energy Comm’n, <http://www.energy.ca.gov/portfolio/>.

¹⁰⁶ *Id.*

¹⁰⁷ *California Renewables Portfolio Standard (RPS)*, Cal. Pub. Utils. Comm’n, http://www.cpuc.ca.gov/RPS_Homepage/.

¹⁰⁸ *Renewables Portfolio Standard Eligibility: Ninth Edition, Commission Guidebook*, Cal. Energy Comm’n 33 (Jan. 2017), http://docketpublic.energy.ca.gov/PublicDocuments/16-RPS-01/TN215573_20170125T160830_Renewables_Portfolio_Standard_Eligibility_Guidebook_Ninth_Editi.pdf. Resources not connected to a California BA must also meet certain recency requirements in terms of start of commercial operations, procurement by a California load-serving entity, expansion, or repowering. *Id.*

The state also breaks renewable resources up into three categories (or buckets) and requires that 75% of the RPS target come from renewable energy sources that have a first point of interconnection in a California balancing authority¹⁰⁹ or that are generated in a neighboring balancing authority but are delivered electrically into the California balancing authority.¹¹⁰ State regulators have not yet determined how to handle renewable resources transferred across balancing authorities through CAISO's Energy Imbalance Market.¹¹¹

Renewable energy is procured through requests for offers for utility-scale projects,¹¹² a renewable auction mechanism for resources between 3 MW and 20 MW,¹¹³ and feed-in tariffs for resources under 3 MW.¹¹⁴ Investor-owned utilities are also authorized to own and operate solar photovoltaic projects and to use competitive solicitations to enter into power purchase agreements (PPAs) with independent developers.¹¹⁵

b. Policy Analysis

Enhanced regional integration would allow California to meet its RPS at lower cost by reducing curtailment of in-state renewable energy generation and improving access to high quality renewable energy resources across the Western region. California renewable sources would be exported at peak production times to other Western states, greatly reducing or eliminating curtailment.

CAISO also warns that the risk of grid instability increases due to potential oversupply of renewables at certain times of the day,¹¹⁶ a phenomenon that CAISO predicts will become more striking in the coming years.¹¹⁷ Enhanced regional integration would therefore improve system reliability and environmental performance by pooling demand and generation supply across a

¹⁰⁹ The energy can also count as a category 1 if it is not first interconnected to California but is delivered to California without substituting other energy.

¹¹⁰ *Dynamic Transfers*, PJM, <http://www.pjm.com/about-pjm/member-services/member-forms/dynamic-transfers.aspx>.

¹¹¹ *Renewables Portfolio Standard Eligibility: Ninth Edition, Commission Guidebook*, Cal. Energy Comm'n 3 (Jan. 2017), http://docketpublic.energy.ca.gov/PublicDocuments/16-RPS-01/TN215573_20170125T160830_Renewables_Portfolio_Standard_Eligibility_Guidebook_Ninth_Edition.pdf.

¹¹² *Utility Scale Request for Offers (RFO)*, Cal. Pub. Utils. Comm'n, http://cpuc.ca.gov/Utility_Scale_RFO/.

¹¹³ *Renewable Auction Mechanism*, Cal. Pub. Utils. Comm'n, http://cpuc.ca.gov/Renewable_Auction_Mechanism/.

¹¹⁴ *RPS Procurement Programs*, Cal. Pub. Utils. Comm'n, http://www.cpuc.ca.gov/RPS_Procurement_Programs/.

¹¹⁵ *Id.*

¹¹⁶ *Renewables Integration*, Cal. Indep. Sys. Operator Corp., <http://publications.aiso.com/StateOfTheGrid2014/RenewablesIntegration.htm>.

¹¹⁷ *What the Duck Curve Tells Us About Managing a Green Grid*, Cal. Indep. Sys. Operator Corp. (2016), https://www.aiso.com/Documents/FlexibleResourcesHelpRenewables_FastFacts.pdf.

wider geographic area.¹¹⁸

Enhanced regional integration would introduce California renewable energy generation to a larger demand base by means of a Western day-ahead market and purposefully planned transmission investments. Both would lead to less curtailment of renewables in California. The Union of Concerned Scientists found that curtailment in California reaches 4.8% under a 50% RPS. Under a regional ISO, curtailment can be decreased to .08% through a combination of demand response, electricity storage, and net exports.¹¹⁹ The “net exports” strategy would be best facilitated through a regional market. Combined, these three factors would cause a 10% drop in California’s greenhouse gas emissions, most of which would be driven by utilizing existing renewables in lieu of running natural gas peaker plants.¹²⁰ Without enhanced grid integration, California renewables that are curtailed due to overgeneration at peak solar times may cause new projects that are subsequently developed to be contracted at higher PPA prices in order to compensate for the expected curtailment. These higher prices would be passed on to California utility customers.

The limited geographic size of the CAISO market also restricts access for cheaper out-of-state renewables to serve California load.¹²¹ Western states have ideal landscapes for wind, where wind speeds and capacity factors are among the highest in the country (Figure 3). A capacity factor is equal to the energy output as a percentage of rated capacity at full production. Capacity factors are also one of the primary drivers in determining a PPA’s contract price. Wind projects in these other Western states have lower costs per megawatt-hour (MWh) than do projects in California primarily because of their higher capacity factors. Capacity factors are approximately one third higher in Wyoming than in California’s Imperial Valley and Tehachapi area. As a result, the dollar per MWh levelized cost of energy (LCOE) is approximately 50% lower in Wyoming.¹²² California would have access to less expensive wind energy from other Western states under enhanced Western grid integration, which would lead to lower bills for California utility customers, as outlined in Section III B.

¹¹⁸ Rebecca Johnson, *Grid Integration in the West: Bulk Electric System Reliability, Clean Energy Integration, and Economic Efficiency*, Hewlett Found. (July 19, 2015), <http://americaspowerplan.com/wp-content/uploads/2015/08/Grid-Integration-in-the-West-07-19-15-Updated.pdf>.

¹¹⁹ James H. Nelson & Laura M. Wisland, *Achieving 50 Percent Renewable Electricity in California*, Union Concerned Scientists (Aug. 2015), <http://www.ucsusa.org/sites/default/files/attach/2015/08/Achieving-50-Percent-Renewable-Electricity-In-California.pdf>.

¹²⁰ *Id.*

¹²¹ The term “full production” means operating 100% of the time at its rated capacity.

¹²² *SB 350 Study: The Impacts of a Regional ISO-Operated Power Market on California*, Cal. Indep. Sys. Operator Corp. et al. (July 26, 2016), https://www.caiso.com/Documents/Presentation-SenateBill350Study-Jul26_2016.pdf.

Figure 3 - Wind Resources in the United States¹²³

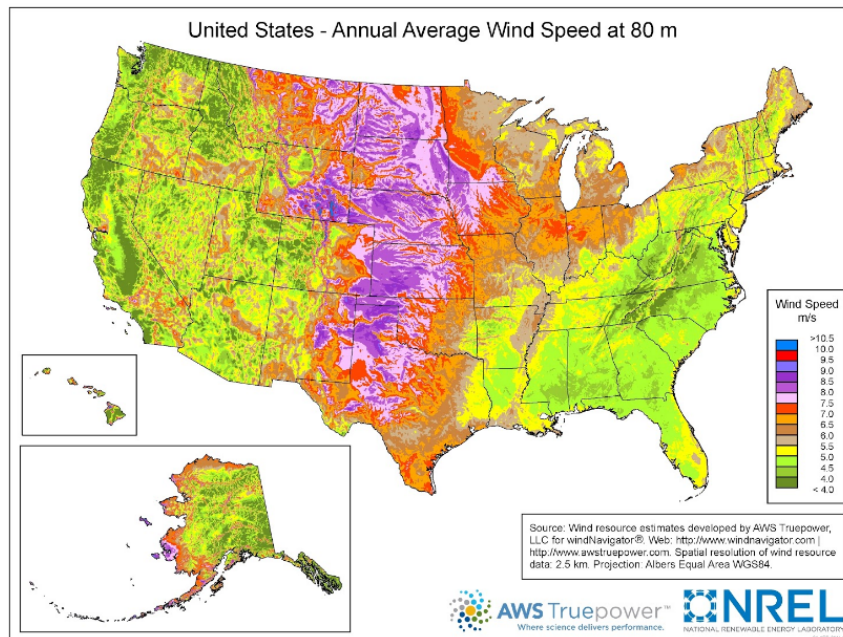


Figure 3. Map of the annual average wind speed at 80 m. Most of the west's strong wind resources are in Montana, Wyoming, and New Mexico.

Developing the highest quality renewable resources across the West would achieve the RPS goals with the lowest costs and least curtailment, while also encouraging developers and utilities to procure cost-effective renewables well in excess of RPS standards. This has already occurred in areas with transparent markets and improved regional transmission planning because of lower “transmission-related renewables integration and generator interconnection costs.”¹²⁴ In the Midwest and Texas, for example, new wind generation beyond RPS requirements has represented between 3% and 6% of total retail sales between 2011 and 2015.¹²⁵ Applying this logic to an integrated Western grid, 3% to 6% of total WECC retail sales would equate to an additional 5,500-11,500 MW of renewable energy capacity development beyond RPS requirements. In fact, RPS goals by one estimate only account for about 60% of total non-hydro renewable energy generation in the United States.¹²⁶

Without improved regional coordination, RPS compliance and the integration of renewables into the CAISO grid will become more challenging and comparatively costlier as the levels of variable energy resources continues to grow. Among the less attractive alternatives are more

¹²³ *United States: Annual Average Wind Speed at 80 m*, Nat'l Renewable Energy Laboratory (Apr. 1, 2011), http://www.nrel.gov/gis/images/80m_wind/USwind300dpe4-11.jpg.

¹²⁴ *SB 350 Study: The Impacts of a Regional ISO-Operated Power Market on California*, Cal. Indep. Sys. Operator Corp. et al. (July 26, 2016), https://www.caiso.com/Documents/Presentation-SenateBill350Study-Jul26_2016.pdf.

¹²⁵ *Id.*

¹²⁶ *SB 350 Study: The Impacts of a Regional ISO-Operated Power Market on California*, Cal. Indep. Sys. Operator Corp. et al. (July 8, 2016), https://www.caiso.com/Documents/SB350Study_AggregatedReport.pdf.

capacity build-out than necessary or over-investment in battery storage. **Enhanced regional grid integration would significantly reduce the need for renewable energy curtailment, which would save California between \$680 million and \$799 million annually in renewable energy procurement costs - even after accounting for additional transmission investment required to transport the renewable electricity.** Investing in excessive battery storage to meet the RPS goals will invariably cost more than transmitting those excess electrons to the expanded regionalized market. In a 55% RPS scenario in 2030, California would need nearly four times more battery storage without enhanced grid integration.¹²⁷ Lithium-ion batteries that would replace peaker power plants were estimated in December 2016 by Lazard to cost between \$285 to \$581 per MW.¹²⁸ While these costs will inevitably decline as battery storage adoption increases and the market matures, this additional investment in storage will lead to higher compliance costs passed on to utility customers. The National Renewable Energy Laboratory (NREL) attempted to analyze the storage challenge by modeling “high PV solar” scenarios to determine the amount of energy storage required to meet high levels of solar. While not a perfectly parallel situation to California’s, this study highlights the challenges in integrating renewables without broader grid integration. Their analysis concludes that up to about 10 GW of new electricity storage is needed to achieve 40% solar PV penetration, an estimate that grows by almost three fold to 28 GW once solar PV reaches 50% of total generation.¹²⁹ The dramatic rise in energy storage build-out, despite a relatively small growth in solar PV penetration, highlights the challenges California faces in meeting its RPS goals. Enhanced grid integration will reduce these storage needs and costs significantly.

The progression of RPS goals—with four legislative updates in the years since the original standard was established in 2002—shows the continued ambition of the California legislature and Governor’s office. As California continues to forge ahead with meeting its AB 32 goals, it can be expected to make more ambitious efforts to reduce GHG emissions. A pillar of those efforts will continue to be the decarbonization of the electricity generation sector, and the RPS goal is likely to be raised - as foreshadowed in S.B. 584. **In order to meet future RPS goals that are more ambitious than the current 50% by 2030 mandate, California needs enhanced Western grid integration.**

c. Legal Analysis

To date, no federal court has struck down a state renewable portfolio standard. Nonetheless, recent litigation suggests that these standards may be the target of dormant Commerce Clause and Supremacy Clause challenges. **The shift to a regional ISO would *not* affect the analysis**

¹²⁷ *SB 350 Study: The Impacts of a Regional ISO-Operated Power Market on California*, Cal. Indep. Sys. Operator Corp. et al. (July 26, 2016), https://www.caiso.com/Documents/Presentation-SenateBill350Study-Jul26_2016.pdf.

¹²⁸ *Lazard’s Levelized Cost of Storage: Version 2.0*, Lazard (Dec. 2016), <https://www.lazard.com/media/438042/lazard-levelized-cost-of-storage-v20.pdf>.

¹²⁹ Paul Denholm & Robert Margolis, *Energy Storage Requirements for Achieving 50% Solar Photovoltaic Energy Penetration in California*, Nat’l Renewable Energy Laboratory (Aug. 2016), <http://www.nrel.gov/docs/fy16osti/66595.pdf>.

or likelihood of success of such claims because wholesale transmission and sales of electricity within California are already considered interstate commerce by virtue of California's connection to the larger Western Interconnection. This subsection begins by discussing potential dormant Commerce Clause Challenges and then analyzes potential preemption claims.

The question of whether the state whose RPS is being challenged is part of a multi-state wholesale electricity market should not be a relevant factor in the dormant Commerce Clause analysis. As discussed in further depth below, a dormant Commerce Clause challenge to California's RPS would need to argue that the policy unjustifiably discriminates against out-of-state sellers, imposes excessive burdens on interstate commerce, or has the practical effect of controlling out-of-state conduct. California's clean energy laws, including its RPS, already have the potential to impact out-of-state power producers by affecting their ability to sell their electricity into California. Transmission and sales of wholesale electricity in California are currently recognized as being part of interstate commerce due to California's position as part of the integrated Western Interconnection.¹³⁰ Moreover, the definition of "interstate commerce" is even broader the Commerce Clause context than it is for the purposes of determining FERC's jurisdiction under the Federal Power Act.¹³¹ California's RPS sets requirements regarding how in-state utilities, electric service providers, and community choice aggregators can purchase electricity to meet the needs of their customers. The law thus affects interstate commerce in electricity and could be the target of dormant Commerce Clause challenges regardless of whether CAISO becomes a regional ISO.

As a recently filed case from New York shows,¹³² being in a single-state ISO does not protect states from facing dormant Commerce Clause challenges to their renewable portfolio standards. Even in a single-state ISO, the ISO-managed transmission lines are interconnected to the larger grid (in the case of NYISO, the Eastern Interconnection) and thus part of interstate commerce. Indeed, the only challenge to a state RPS program to receive a final disposition by a federal court on the merits, *Energy & Environment Legal Institute v. Epel*,¹³³ comes from Colorado, which is not part of any organized wholesale electricity market (but is part of the Western Interconnection). While Colorado successfully defended its RPS, the case illustrates that renewable portfolio standards may be the target of dormant Commerce Clause challenges regardless of the presence of a multi-state ISO due to the broad definition of interstate commerce in electricity.

It is important to emphasize that the state policy was upheld in the only case in which federal court has reached a final disposition on the merits of a dormant Commerce Clause challenge to

¹³⁰ See *infra* Part II.C.1.c.

¹³¹ See *infra* Part II.C.3.

¹³² See *Coalition for Competitive Electricity v. Zibelman*, No. 16-cv-08164 at *40 (S.D.N.Y. Oct. 19, 2016) (noting that "NYISO's wholesale markets are interstate and international in nature, as they involve the sale and transmission of energy and capacity from generators located in other states and in Canada, and the purchase of such commodities by customers in other states").

¹³³ *Energy & Env't. Legal Inst. v. Epel*, 793 F.3d 1169 (10th Cir. 2015).

a RPS. In *Energy & Environment Legal Institute v. Epel*, the Tenth Circuit affirmed a district court's dismissal of a dormant Commerce Clause challenge to Colorado's Renewable Energy Standard, which had been brought by a group representing an out-of-state coal producer.¹³⁴ In another important case with an appeal pending, *Allco v. Klee*, a federal district court likewise upheld Connecticut's RPS, which limits eligible resources to those in the ISO-New England region or an adjacent region.¹³⁵

However, it is still worth exploring in greater detail potential dormant Commerce Clause challenges to California's RPS. As discussed in Part II.C.3, there are three major tests for determining whether a state policy violates the dormant Commerce Clause: (1) the strict scrutiny standard for facially discriminatory laws, (2) the *Pike* balancing test for laws that are facially neutral, and (3) the extraterritoriality test. While California's RPS could conceivably face challenges under all three of these theories, the state is able to offer strong defenses of its law on all three grounds. Moreover, California's ability to defend the law would not be impaired by the transition to a regional ISO.

If a law facially discriminates against interstate commerce, it will be subject to strict scrutiny. Under this standard, the law will be struck down unless the state can show that it "advances a legitimate local purpose that cannot be adequately served by reasonable nondiscriminatory alternatives."¹³⁶ A law may be facially discriminatory for dormant Commerce Clause purposes if it imposes a surcharge or fee on out-of-state products¹³⁷ or otherwise provides preferential treatment for in-state sellers.¹³⁸

Renewable portfolio standards that give preferences to in-state resources may be challenged as facially discriminatory under this test. In dicta in *Illinois Commerce Commission v. FERC*, Judge Richard Posner of the Seventh Circuit suggested as much. He noted that an argument based on Michigan's Renewable Energy Standard—which forbids giving credits to out-of-state wind resources—"trips over an insurmountable constitutional objection. Michigan cannot, without violating the commerce clause of Article I of the Constitution, discriminate against out-of-state renewable energy."¹³⁹ However, it is important to remember that Michigan's policy was not directly at issue in *Illinois Commerce Commission v. FERC* and the state did not have the opportunity to mount a full defense of the constitutionality of its policy. Still, legal commentators have made similar arguments about other RPSs that favor in-state resources,¹⁴⁰ with one

¹³⁴ 793 F.3d 1169 (10th Cir. 2015).

¹³⁵ *Allco Finance Ltd. v. Klee*, No. 3:15-cv-608, 2016 WL 4414774 (D. Conn. Aug. 18, 2016), *appeal pending* No. 16-2946 (2d Cir. Sept. 28, 2016) (appeal filed).

¹³⁶ *Ore. Waste Sys., Inc. v. Dep't of Envtl. Quality of Ore.*, 511 U.S. 93, 101 (1994) (quoting *New Energy Co. of Ind. v. Limbach*, 486 U.S. 269 (1988)).

¹³⁷ *Id.* at 99.

¹³⁸ *Id.* at 99 ("['D]iscrimination' simply means differential treatment of in-state and out-of-state economic interests that benefits the former and burdens the latter."); *Granholm v. Heald*, 544 U.S. 460, 473-476 (2005).

¹³⁹ *Illinois Commerce Comm'n v. FERC*, 721 F.3d 764, 776 (7th Cir. 2013).

¹⁴⁰ Kirsten H. Engel, *The Dormant Commerce Clause Threat to Market-Based Environmental Regulation: The Case of Electricity Deregulation*, 26 *Ecology L.Q.* 243, 288-94 (1999); Steven Ferrey, *Threading the*

prominent commentator arguing that California's 2010 adoption of the bucket system is problematic because it "has the effect of limiting out-of-state renewable generation RECs to a minority share of the compliance credits."¹⁴¹

However, California has strong ammunition to use in arguing that its RPS, including its "bucket" system for compliance, is not in fact discriminatory. In 2013, the CPUC considered and rejected a dormant Commerce Clause challenge to the California RPS, finding that the bucket system does not discriminate against out-of-state resources.¹⁴² The CPUC determined that out-of-state resources could be treated as "Category 1" resources because "[t]he boundaries of California balancing authority areas extend beyond the political boundaries of the State of California."¹⁴³ The statutory definition of "California balancing authority" includes the CAISO, and the term covers "a balancing authority with control over a balancing authority area *primarily* located in this state"¹⁴⁴ This is significant because it means that the statute does not require balancing authorities to be located exclusively within California in order to qualify as a "California balancing authority." Indeed, the current CAISO footprint includes part of Nevada, meaning that it is already effectively a multi-state entity, yet it continues to qualify as a "California balancing authority" for the purposes of the RPS. California officials have not yet determined how CAISO's Energy Imbalance Market will affect the "bucket" system¹⁴⁵ and this paper does not attempt to recommend how this issue should be resolved under a regional ISO construct. But as long as the definition of "California balancing authority" is not changed to strictly conform to "the political boundaries of the State of California," the state should be able to make use of the same reasoning that drove the CPUC decision, regardless of whether CAISO becomes a regional ISO.

California could also contend that its RPS does not impose a burden on interstate commerce in wholesale electricity but rather creates a new market for renewable energy resources in or near the state. Since California is effectively creating a new market rather than burdening pre-existing

Constitutional Needle with Care: The Commerce Clause Threat to the New Infrastructure of Renewable Power, 7 Tex. J. Oil Gas & Energy L. 59, 99 (2011-2012); Harvey Reiter, *Removing Unconstitutional Barriers to Out-of-State and Foreign Competition from State Renewable Portfolio Standards: Why the Dormant Commerce Clause Provides Important Protection for Consumers and Environmentalists*, 36 Energy L.J. 45 (2015); Trevor D. Stiles, *Renewable Resources and the Dormant Commerce Clause*, 4 Env'tl. & Energy L. Pol'y J. 34, 64-65 (2009); Patrick R. Jacobi, Note, *Renewable Portfolio Standard Generator Applicability Requirements: How State Can Stop Worrying and Learn to Love the Dormant Commerce Clause*, 30 Vt. L. Rev. 1079, 1111 (2006).

¹⁴¹ Steven Ferrey, *California Challenges and Vulnerabilities of the New Business Model Design for Power*, 6 San Diego J. Climate & Energy L. 1, 21 (2015).

¹⁴² Order Denying Applications for Rehearing of Decision (D.) 11-12-052 (Cal. Pub. Utils. Comm'n Nov. 1, 2013).

¹⁴³ *Id.* at 11.

¹⁴⁴ Cal. Pub. Util. Code § 399.12(d) (West 2017) (emphasis added). This statutory provision also says, "[a] California balancing authority is responsible for the operation of the transmission grid within its metered boundaries which is not limited by the political boundaries of the State of California." *Id.*

¹⁴⁵ *Renewables Portfolio Standard Eligibility: Ninth Edition, Commission Guidebook*, Cal. Energy Comm'n 3 (Jan. 2017), http://docketpublic.energy.ca.gov/PublicDocuments/16-RPS-01/TN215573_20170125T160830_Renewables_Portfolio_Standard_Eligibility_Guidebook_Ninth_Editi.pdf.

interstate commerce, the state could argue, geographic limitations do not offend the dormant Commerce Clause. The court in *Allco* found this reasoning persuasive, finding that Connecticut's RPS—which limits eligibility to resources in ISO-New England and adjacent regions—“is part of a plan by the state to subsidize the generation of renewable energy, and the resulting [Renewable Energy Credit] market is wholly a creation of the RPS statute.”¹⁴⁶ Drawing analogies to Supreme Court cases that exempted states from dormant Commerce Clause scrutiny when they were acting as market participants rather than regulators,¹⁴⁷ the court found that the Connecticut RPS's regional limitation did not violate the dormant Commerce Clause.¹⁴⁸ As the *Allco* case demonstrates, this reasoning could be invoked regardless of whether the state whose RPS is being challenged is part of a multi-state ISO.

Even if an RPS with in-state preferences is deemed facially discriminatory, it could survive strict scrutiny if the state can demonstrate that it “advances a legitimate local purpose that cannot be adequately served by reasonable nondiscriminatory alternatives.”¹⁴⁹ Thus California could defend its bucket system by arguing that the preference for resources connected to a California balancing authority is based on a legitimate local purpose. The RPS statute itself notes that the use of eligible renewable resources “is necessary to improve California's air quality and public health.”¹⁵⁰ The state could argue that in order to achieve those benefits, it is necessary to use the bucket system to ensure that a significant portion of the eligible renewable energy is deliverable to California customers, thus allowing the state's load serving entities to avoid relying on resources that cause more pollution. The state could draw on language from the RPS statute to support such an argument. The RPS statute indicates that the differentiation of renewable resources under the bucket system is based on differences in the resources' “impacts on the operation of the grid in supplying electricity, as well as meeting the requirements of this article.”¹⁵¹ This provision supports the argument that the bucket system is based on deliverability and impact on the local fuel mix, which are legitimate local interests. Additionally, the statute defines the first bucket as including resources that “[h]ave a first point of interconnection with a California balancing authority, have a first point of interconnection with distribution facilities used to serve end users within a California balancing authority area, *or are scheduled from the eligible renewable energy resource into a California balancing authority*

¹⁴⁶ *Allco Finance Ltd. v. Klee*, No. 3:15-cv-608, 2016 WL 4414774, at *24 (D. Conn. Aug. 18, 2016), *appeal pending* No. 16-2946 (2d Cir. Sept. 28, 2016) (appeal brief filed) (“Connecticut is not preventing the flow of clean energy or regulating the conditions on which it may occur. Instead, Connecticut, through its RPS statute, has created a secondary REC market that incentivizes the production and distribution of clean energy in and around Connecticut, where it will have a measurable impact on Connecticut's environmental goals.”).

¹⁴⁷ *Id.* at *24 (citing *Hughes v. Alexandria Scrap Corp.*, 426 U.S. 794 (1976), and *Reeves, Inc. v. Stake*, 447 U.S. 429 (1980)).

¹⁴⁸ *Id.* at *24 (“Connecticut created a market for RECs, and is not obligated to spread the benefit of that market to states that do not also bear the burden of the cost of the subsidy, which is ultimately paid by Connecticut ratepayers.”).

¹⁴⁹ *Ore. Waste Sys., Inc. v. Dep't of Env'tl. Quality of Ore.*, 511 U.S. 93, 101 (1994).

¹⁵⁰ Cal. Pub. Util. Code § 399.11(e)(1) (West 2017).

¹⁵¹ Cal. Pub. Util. Code § 399.16(a) (West 2017).

*without substituting electricity from another source.*¹⁵² This third clause makes it clear that the focus is not on the physical location of the resource but rather its ability to deliver power that can be used to serve California consumers.

The district court in *Allco* found a similar argument convincing, noting that Connecticut's goal of reducing air pollution "is not served by" paying for renewable generation in remote states "unless that energy displaces Connecticut's own use of non-renewable energy sources."¹⁵³ The CPUC used similar reasoning when it found that the preference for resources connected to a California balancing authority was not motivated by a discriminatory purpose but rather intended "to ensure that California end users actually receive the eligible renewable energy associated with the REC in order to realize the benefits of the RPS statute."¹⁵⁴ While it is uncertain whether and how the bucket system might change with the shift to a regional ISO, California should be able to continue to make arguments about the importance of ensuring that renewable energy procured to meet its RPS is actually deliverable to California consumers and thus providing the intended benefits.

While the decision in *Energy & Environment Legal Institute v. Epel* provides encouragement for supporters of state RPSs, it is important to note that the version of the Colorado RPS reviewed by the district court and Tenth Circuit did not include preferences for in-state resources. In upholding the law, the court pointed out that "as far as we know, all fossil fuel producers in the area served by the grid will be hurt equally and all renewable energy producers in the area will be helped equally."¹⁵⁵ In fact, Colorado is one of several states that have moved away from in-state resource preferences in response to claims that such preferences amounted to constitutional violations.¹⁵⁶ However, numerous states in multi-state ISOs continue to use renewable portfolio standards that include preferences for in-state resources.¹⁵⁷

¹⁵² Cal. Pub. Util. Code § 399.16(b)(1)(A) (West 2017) (emphasis added).

¹⁵³ *Allco Finance Ltd. v. Klee*, No. 3:15-cv-608, 2016 WL 4414774, at *25 (D. Conn. Aug. 18, 2016), *appeal pending* No. 16-2946 (2d Cir. Sept. 28, 2016) (appeal brief filed).

¹⁵⁴ Order Denying Applications for Rehearing of Decision (D.) 11-12-052, at 13 (Cal. Pub. Utils. Comm'n Nov. 1, 2013).

¹⁵⁵ *Energy & Envtl. Legal Inst. v. Epel*, 793 F.3d 1169, 1174 (10th Cir. 2015).

¹⁵⁶ After the Commerce Clause challenge in *Nichols v. Markell* survived a motion to dismiss, "Delaware regulators agreed to waive the statute's requirements that a qualified fuel cell be located in Delaware." *Delaware*, State Power Project, <https://statepowerproject.org/delaware/>. Massachusetts abandoned its in-state requirement for long-term contracts after TransCanada challenged the policy. *Massachusetts: TransCanada Power Marketing v. Ian Bowles, et al.*, State Power Project, <https://statepowerproject.org/massachusetts/#trans>. A Commerce Clause challenge to Ohio's RPS was rendered moot after that state's governor temporarily froze the RPS and permanently removed its in-state requirements. *Ohio*, State Power Project, <https://statepowerproject.org/ohio/>.

¹⁵⁷ For instance, in Michigan, which is covered by MISO, "[a]lternative electric suppliers are generally not permitted to meet the standard using out-of-state resources" and "[r]enewable electricity produced using a system which was constructed using an in-state workforce receives an additional 1/10 credit per MWh." *Renewable Energy Standard*, DSIRE (Feb. 28, 2017), <http://programs.dsireusa.org/system/program/detail/3094>. In Iowa, which is also in MISO's footprint, "A utility must meet its RPS obligation by either owning renewable energy production facilities located in Iowa or entering into long-term contracts to purchase or wheel electricity from renewable energy

If a court determines that California's RPS is not discriminatory, a challenger could still argue that it fails the *Pike* balancing test and is thus invalid under the dormant Commerce Clause. Under *Pike*, state laws that are facially neutral "will be upheld unless the burden imposed on [interstate] commerce is clearly excessive in relation to the putative local benefits."¹⁵⁸ This is a considerably looser standard than that which the law would face if it is deemed discriminatory. California could defend its RPS by arguing that any burdens on interstate commerce are minimal and significantly outweighed by local benefits.

The California RPS's statutory language identifies many potential local benefits, including reductions in air pollution and greenhouse gas emissions and improved reliability through diversification of the fuel mix.¹⁵⁹ Since California's RPS has been in place in for many years, there is no shortage of data that could be marshalled to support such arguments.¹⁶⁰ Enhanced Western grid integration would not undermine California's ability to make such arguments about the benefits of its RPS. In fact, to the extent that regional integration helps California realize the benefits of the RPS, it would improve California's ability to defend the law under the *Pike* analysis.

The district court in *Epel* held that Colorado's RPS passed the *Pike* balancing test.¹⁶¹ The challengers in that case claimed that the law burdened interstate commerce by creating a lack of uniformity in state laws, but they failed to demonstrate how that lack of uniformity "limited interstate commerce in the electricity market." Given that multi-state ISOs like ISO-NE, MISO, PJM, and SPP have been able to accommodate a diversity of state renewable portfolio standards,¹⁶² and that a strong FERC-jurisdictional bilateral contract market exists for renewable energy procurement, California will be able to make similar argument even if CAISO becomes a regional ISO. The district court in *Epel* also rejected the argument that Colorado's RPS burdened interstate commerce by reducing the market for fossil generation, finding that such an effect was permissible so long as the RPS does not "cause[] greater harm to out-of-state coal and hydrocarbon electricity generators than is caused to in-state coal and hydrocarbon electricity generators."¹⁶³ California would be able to make a similar argument—that its RPS does not limit *out-of-state* fossil generators any more than it limits in-state fossil generators—regardless of whether CAISO retains its current footprint or expands.

production facilities located in the utility's service area." *Alternative Energy Law (AEL)*, DSIRE (Dec. 9, 2016), <http://programs.dsireusa.org/system/program/detail/265>.

¹⁵⁸ *Pike v. Bruce Church, Inc.*, 397 U.S. 137, 142 (1970).

¹⁵⁹ See Cal. Pub. Util. Code § 399.11(b) (West 2017).

¹⁶⁰ See e.g. Ryan Wiser et al., *A Retrospective Analysis of the Benefits and Impacts of U.S. Renewable Portfolio Standards*, Nat'l Renewable Energy Laboratory & Lawrence Berkeley Nat'l Laboratory 10 (Jan. 2016) (showing that California's RPS reduced in-state fossil generation by 13.9% in 2013).

¹⁶¹ *Energy & Env't. Legal Inst. v. Epel*, 43 F. Supp. 3d 1171, 1182-84 (D. Colo. 2014). The plaintiffs did not challenge this part of the decision on appeal. *Id.* at 1172.

¹⁶² See *Renewable Portfolio Standards*, DSIRE (Feb. 2017), <http://ncsolarcen-prod.s3.amazonaws.com/wp-content/uploads/2017/03/Renewable-Portfolio-Standards.pdf> (showing the diversity of state renewable portfolio standards).

¹⁶³ 43 F. Supp. 3d 1171, 1182.

The final level of dormant Commerce Clause analysis is the extraterritoriality test. Under this test, a state law is unconstitutional if it applies “to commerce that takes place wholly outside of the State’s borders, whether or not the commerce has effects within the state.”¹⁶⁴ Challengers could try to argue that California’s RPS effectively sets rules for generators located in other states and that such rules affect transactions between out-of-state generators and other out-of-state parties. Notably, however, the Ninth Circuit—which has jurisdiction over California as well as Alaska, Arizona, Hawaii, Idaho, Montana, Nevada, Oregon, and Washington—has taken a narrow view of the extraterritoriality test, holding in *Association des Eleveurs de Canards et d’Oies du Quebec v. Harris* that the extraterritoriality limit only applies when a statute sets the price of a product or “[t]ies] the price of its in-state products to out-of-state prices.”¹⁶⁵

In *Energy & Environment Legal Institute v. Epel*, the plaintiff focused its appeal on the district court’s determination that that Colorado’s RPS did not control out-of-state conduct and thus was not subject to the stricter scrutiny applicable to extraterritorial laws. Adopting the extraterritoriality test used by the Ninth Circuit in *Association des Eleveurs de Canards et d’Oies du Quebec*, the Tenth Circuit held (in an opinion authored by then-Judge Neil Gorsuch) that the extraterritoriality doctrine “concerns only ‘price control or price affirmation statutes’ that involve ‘tying the price of ... in-state products to out-of-state prices.’”¹⁶⁶ The court found that Colorado’s RPS “doesn’t directly regulate price in-state or anywhere for that matter.”¹⁶⁷ Instead, the court determined that the law merely “set[s] non-price standards for products sold in-state” and does not violate the dormant Commerce Clause’s extraterritoriality limit.¹⁶⁸ This is highly useful precedent because it shows how a court using a narrow version of the extraterritoriality test might reason about California’s RPS. *Epel* suggests that California’s RPS should survive an extraterritoriality challenge because it sets standards for the generation mix used to serve California consumers but does not directly regulate prices. This core feature of the RPS would not change with enhanced regional grid integration.

Because both the Ninth and Tenth Circuits have held that the Commerce Clause’s extraterritoriality limit only applies when a statute sets the price of a product or “[t]ies] the price of its in-state products to out-of-state prices,” California’s RPS is well protected from an extraterritoriality challenge. Thus, if California’s RPS were attacked on dormant Commerce Clause grounds, the main concerns would be whether the California RPS is facially discriminatory or imposes an excessive burden on interstate commerce. The analytical approach to assessing these questions does not change based on whether CAISO is a single-state or multistate ISO. Because California’s transmission facilities are connected to other parts of the Western Interconnection, the wholesale electricity transmission and sales that CAISO

¹⁶⁴ *Edgar v. MITE Corp.*, 457 U.S. 624, 642-43 (1982).

¹⁶⁵ *See Assoc. des Eleveurs de Canards et d’Oies du Quebec v. Harris*, 729 F.3d 937, 951 (9th Cir. 2013).

¹⁶⁶ *Energy & Env’t. Legal Inst. v. Epel*, 793 F.3d 1169, 1175 (10th Cir. 2015) (quoting *Pharm. Research Mfrs. of Am. v. Walsh*, 528 U.S. 644, 669 (2003)).

¹⁶⁷ *Id.* at 1173.

¹⁶⁸ *Id.* at 1173.

currently coordinates are already part of interstate commerce.

The other important constitutional rule to keep in mind is the Supremacy Clause. Opponents of California's RPS could argue that certain aspects of the RPS conflict with and thus are preempted by a federal law such as the Federal Power Act or the Public Utility Regulatory Policies Act of 1978 (PURPA). Indeed, the state's feed-in tariff is currently being challenged as preempted by PURPA.¹⁶⁹ As this case shows, CAISO's status as a single-state ISO does not shield California's RPS from Supremacy Clause attacks. **An integrated Western electricity market would not strengthen the legal basis for preemption because wholesale electricity transmission and sales in California are already subject to FERC jurisdiction under the Federal Power Act and PURPA. That critical underlying fact will not change, regardless of whether CAISO becomes a regional ISO.**

The other major pending preemption case, *Allco v. Klee*, involves a challenge to a state-run competitive solicitation process intended to help local utilities satisfy Connecticut's RPS.¹⁷⁰ Plaintiffs in that case claim that the RFP process, which excluded resources smaller than 20 MW, violated both PURPA and the FPA.¹⁷¹ Plaintiff's arguments in that case hinge on the notion that the Connecticut regulators invaded FERC's exclusive jurisdiction by "compel[ling] wholesale sales."¹⁷² This case is likely distinguishable because the CPUC does not directly run competitive solicitations, but it is important to emphasize that Allco's argument in this case is not contingent on the fact that Connecticut is part of the multi-state ISO New England.

Similarly, courts have held that PURPA does not preempt state regulations on renewable energy credits, which many states, including California, use in administering their renewable portfolio standards. In *Wheelabrator Lisbon v. Connecticut Department of Public Utilities Control*, the Second Circuit¹⁷³ held that FERC's decision in *American Ref-Fuel Co.*¹⁷⁴ "does not evince an intent to occupy the relevant field—namely, the regulation of renewable energy credits. Rather, it explicitly acknowledges that state law governs the conveyance of RECs."¹⁷⁵ Other courts in New Jersey, Pennsylvania, and West Virginia, have reached the same conclusion.¹⁷⁶ Notably, these decisions concern states that are part of multi-state ISOs. The rationale of these decisions rests on the scope of PURPA and FERC regulations thereunder

¹⁶⁹ *Winding Creek Solar LLC v. Peevey*, No. 13-cv-04934-JD (N.D. Cal. Feb. 17, 2015) (order granting in part and denying in part motion to dismiss second amended complaint).

¹⁷⁰ *Allco Finance Ltd. v. Klee*, No. 16-2949 (2d Cir. Sept. 28, 2016) (brief filed). In addition to its Supremacy Clause challenge, Allco also alleges that Connecticut's RPS violates the dormant Commerce Clause, as discussed above.

¹⁷¹ *Id.*

¹⁷² *Id.* at 7.

¹⁷³ 531 F.3d 183 (2d Cir. 2008).

¹⁷⁴ 105 FERC ¶ 61,004 (2003).

¹⁷⁵ 531 F.3d at 190.

¹⁷⁶ *Morgantown Energy Assocs. v. Pub. Serv. Comm'n of W. Va.*, 2013 WL 5462386 (S.D. W. Va. Sept. 30, 2013); *City of New Martinsville v. Pub. Serv. Comm'n*, 729 S.E.2d 188 (W. Va. 2012); *ARIPPA v. Pa. Pub. Util. Comm'n*, 966 A.2d 1204 (Pa. Commw. Ct. 2009); *In re Ownership of Renewable Energy Certificates*, 913 A.2d 825 (N.J. Super. Ct. App. Div. 2007).

and not on the geographic footprint of the ISO that serves the state.

The Supreme Court's recent decision in *Hughes v. Talen Energy Marketing*, which struck down a state order requiring utilities to enter into a contract-for-differences with a new power plant as preempted by the Federal Power Act,¹⁷⁷ has raised questions about how directly states can get involved with resource procurement decisions. This is potentially significant for California's RPS, which includes a number of procurement programs that are closely overseen by the CPUC.¹⁷⁸ While *Hughes* does indicate a limit on state regulatory authority, the majority opinion includes language indicating that the holding is "limited" to the specific contract at issue in that case and should not be "read to foreclose Maryland and other States from encouraging production of new or clean generation through measures untethered to a generator's wholesale market participation."¹⁷⁹ *Hughes* is unlikely to pose a threat to California's RPS because the RPS does not peg renewables compensation to wholesale market prices. This would not change with enhanced Western grid integration since there is no proposal to add a capacity market as part of CAISO's transformation into a regional ISO.¹⁸⁰

2. Greenhouse Gas Emissions Performance Standard

a. Existing Policy

In 2006, California passed into law S.B. 1368, a greenhouse gas Emissions Performance Standard (EPS). The world's first such standard, S.B. 1368 (Chapter 3, Section 8340, Division 4.1 of the Public Utilities Code) requires any baseload generation¹⁸¹ receiving long-term investments from California electricity providers to achieve a minimum level of environmental performance, measured in greenhouse gas emissions per unit of electricity production. The bill defines "baseload generation" as "electricity generation from a power plant that is designed and intended to provide electricity at an annualized plant capacity factor of at least 60 percent."

The EPS applies to all entities that provide electricity in California's retail markets, whether investor owned utilities, municipal utilities, community choice aggregators, or other energy service providers. The standard is entirely fuel and technology neutral, which means it shows no preference for coal, natural gas or renewables of any kind. It mandates that any 'long-term' investments of more than five years, or ownership of baseload energy generation resources, that is new build or retrofitted, involve generation emitting no more than 1,100 pounds of

¹⁷⁷ 136 S. Ct. 1288 (2016).

¹⁷⁸ See, e.g., *Utility Scale Request for Offers (RFO)*, Cal. Pub. Utils. Comm'n, http://cpuc.ca.gov/Utility_Scale_RFO/.

¹⁷⁹ 126 S. Ct. at 1299 (internal quotations omitted).

¹⁸⁰ *Id.* Indeed, CAISO's proposed principles for governance of a regional ISO include explicit restrictions on CAISO's ability to add a centralized capacity market in the future. *Second Revised Proposal: Principles for Governance of a Regional ISO*, Cal. Indep. Sys. Operator Corp. 4 (Oct. 7, 2016), <https://www.caiso.com/Documents/PrinciplesForGovernanceofaRegionalISO-Clean.pdf>.

¹⁸¹ Cal. Pub. Util. Code § 8340(a) (West 2017).

greenhouse gas emissions per megawatt hour (lb/MWh).¹⁸² The standard applies on a per plant basis and is based on a state-of-the art 2006 or newer vintage natural gas combined cycle power plant (NGCC). No generator that is more carbon intensive is permitted unless it is able to meet the standard via other technologies such as carbon capture and sequestration (CCS). The average current emissions for an NGCC plant is roughly 945 lb/MWh, whereas the average emissions for a pulverized coal plant is well above 2,000 lb/MWh.¹⁸³ Thus, the effect of the EPS is to sunset long-term contracts between California Load Serving Entities (LSE) and coal plants, unless they employ CCS. The emissions-based approach to regulating long-term investments in energy generating units has helped reduce emissions from generating sources serving California loads and helped drive record levels of renewable energy penetration in California by creating room for more low-carbon resources to be added to the generation stack. This policy protects California consumers against financial risk and reliability concerns associated with electricity supply from carbon intensive resources.¹⁸⁴

b. Policy Analysis

Under SB 1368, California's greenhouse gas emissions performance standard (EPS) sets a maximum level of carbon dioxide emissions for baseload power plants with which in-state publicly owned and investor-owned utilities enter into ownership agreements or long-term contracts. The law and implementing regulations are aimed at accomplishing two main objectives: 1) reducing the financial risk that California energy consumers face in anticipation of a carbon constrained system with more stringent limits on greenhouse gas (GHG) emissions, and 2) improving and maintaining grid reliability in the face of a rapidly evolving energy sector transformation, particularly in the face of possible unplanned retirements of GHG-intensive generation as regulatory constraints and costs increase.¹⁸⁵ Enhanced Western grid integration will continue to shield California utility consumers from financial risk associated with baseload power procurement in a carbon constrained system by reducing costs, and it will improve reliability without limiting the efficacy of the EPS.

The crucial aspect of the performance standard as it pertains to enhanced Western grid integration is that the EPS applies to both in-state and out-of-state investments, regardless of whether the grid is operated under a single independent system operator (ISO). The current framework for meeting resource adequacy in the CAISO area is done through bilateral procurement, and CAISO's regional framework proposal¹⁸⁶ indicates that resource adequacy under an enhanced integrated grid should continue to be done consistent with existing Local

¹⁸² *Greenhouse Gas Emissions Performance Standard*, Cal. Pub. Utils. Comm'n, <http://www.cpuc.ca.gov/General.aspx?id=5927>.

¹⁸³ Danny Cullenward, *Leakage in California's Carbon Market*, 27 *Electricity J.* 36 (2014).

¹⁸⁴ Gary Collord, *Implementation of SB 1368 Emission Performance Standard*, Cal. Energy Comm'n (Nov. 2006), <http://www.energy.ca.gov/2006publications/CEC-700-2006-011/CEC-700-2006-011.PDF>.

¹⁸⁵ *Id.*

¹⁸⁶ *Regional Resource Adequacy: Draft Regional Framework Proposal*, Cal. Indep. Sys. Operator Corp. (Dec. 1, 2016), <http://www.caiso.com/Documents/RegionalFrameworkProposal-RegionalResourceAdequacy.pdf>.

Regulatory Authority guidelines (the CPUC in this case). CAISO maintains the ability to procure short-term, backstop capacity to maintain grid reliability in certain circumstances,¹⁸⁷ but this is not a substitute for long-term planning and procurement, which will still be done through bilateral contracts. While deliberation is ongoing¹⁸⁸ and further consideration of resource adequacy and transmission access charges is needed, these debates will not impact California's EPS because long-term contractual procurement of baseload power will remain the "bottom up" responsibility of the Local Regional Authority and the LSEs that they govern.¹⁸⁹

As demonstrated by recent reporting on CAISO and the energy imbalance market (EIM),¹⁹⁰ with surrounding states either mimicking the policy or expressing indifference to the EPS impacts on their power supply, the EPS has helped improve reliability and is likely to save customers additional money in an enhanced Western grid. Other Western states that have followed suit with similar legislation to the EPS, including Washington and Oregon, as well as states that do not have such legislation on the books, such as Wyoming and Montana, should take comfort in CAISO's approach to resource adequacy issues that arise in an enhanced expanded Western grid. The California Energy Commission (CEC) *Docket on Principles and Issues for a Western Grid* reaffirms this: "Areas requiring uniformity across the expanded footprint, such as transmission cost allocation and resource adequacy rules, should be decided by a Regional/State Committee of regulators."¹⁹¹ Planning of resource adequacy would no doubt need to shift somewhat for all LSEs in an expanded grid, but CAISO's proposals thus far have made clear that under enhanced grid integration they would consult with all states (Local Regional Authorities/or Public Utility Commission (PUCs)) on resource adequacy assessments, which should result in lower costs collectively.

The EPS as it stands currently has effectively served its purpose, and it is not currently constraining California utilities and other LSEs, because the economics have dissuaded LSEs from building new coal generating facilities since 2013 across the U.S. This is primarily due to low natural gas prices and over-compensation in capacity requirements following the California energy crises, coupled with stagnant electricity demand and decreasing wholesale prices that track the decline in fuel costs as renewable penetration increases. In addition, the global trends toward a carbon constrained world remain strong, as evidenced by rapid entry-into-force and

¹⁸⁷ Jenny Pedersen, *Capacity Procurement Mechanism Overview*, Cal. Indep. Sys. Operator Corp. (Mar. 3, 2011), <http://www.caiso.com/Documents/CapacityProcurementMechanismOverview.pdf>.

¹⁸⁸ *Principles and Issues for a Western Regional ISO: Guiding Principles*, Cal. Energy Comm'n (Apr. 29, 2016), http://docketpublic.energy.ca.gov/PublicDocuments/16-RGO-01/TN211294_20160429T112227_Principles_And_Issues_For_A_Western_Regional_ISO.pdf.

¹⁸⁹ *Regional Resource Adequacy: Draft Regional Framework Proposal*, Cal. Indep. Sys. Operator Corp. (Dec. 1, 2016), <http://www.caiso.com/Documents/RegionalFrameworkProposal-RegionalResourceAdequacy.pdf>.

¹⁹⁰ Robert Mullin, *EIM Benefits up 8% in Q4 with APS, Puget Sound Additions*, RTO Insider (Feb. 2, 2017), <https://www.rtoinsider.com/eim-q4-aps-puget-sound-37968/>.

¹⁹¹ *Principles and Issues for a Western Regional ISO: Guiding Principles*, Cal. Energy Comm'n 3 (Apr. 29, 2016), http://docketpublic.energy.ca.gov/PublicDocuments/16-RGO-01/TN211294_20160429T112227_Principles_And_Issues_For_A_Western_Regional_ISO.pdf.

firm contributions made by nearly all countries to the Paris Agreement.¹⁹² This is now a prevailing economic trend, where for the third year running, in 2016 global emissions ticked down from the prior year while global economic output grew by 3%.¹⁹³ **The intent and successes of the EPS are not likely to be affected by enhanced Western grid integration because enhanced integration does not supplant or alter the need for state-led resource adequacy planning and procurement.**

California and other Western states are likely to realize significant savings in the form of reduction in renewable energy investment costs and reduction in generation capacity costs associated with meeting planning reserve capacity. In addition to reducing emissions from California's long-term baseload generation and hedging long-term financial risk in a carbon constrained system, the second California policy interest embodied in the EPS is to bolster grid reliability. Overall, CAISO currently has a total installed capacity of 71,740 MW, of which roughly 4% is coal or nuclear baseload, and 54.2% is natural gas, which offers flexible baseload. Despite an average daily peak of around 28,000 MW, and even at the historical peak demand at 50,270 MW set on July 24, 2006, the system is very well equipped to serve demand with a safe level of capacity reserve.¹⁹⁴ With resource adequacy planning processes being gauged toward an enhanced Western grid dispatched over a broader geography, resulting in decreased production and capacity costs, the trend toward greater renewable penetration would likely continue. The need for new baseload generation declines as our grid and power mix becomes more responsive, distributed and less centralized. While CAISO is not interested in seeking more baseload power, it does still seek flexible resources (to the tune of roughly 20,000 MW¹⁹⁵) to meet the increasingly steep "duck-curve." The EPS and its accompanying regulations, are written to ensure that the standard does not adversely impact reliability, and enhanced grid integration would actually improve grid reliability in a future system. Enhanced grid integration would enable CAISO to draw flexible baseload more readily from areas currently outside the ISO and give the dispatchers more low-carbon options to draw from. This would contribute to cost savings due to less overall reserve margin¹⁹⁶ and less need for new-build additional flexible capacity across the system, while maintaining reliability.

Together, the power used in California from coal and "unspecified sources"¹⁹⁷ totals about 20% (57,608 GWh) of California's annual usage. Flexible capacity needs identified by CAISO are

¹⁹² *The Paris Agreement*, United Nations Framework Convention on Climate Change, http://unfccc.int/paris_agreement/items/9485.php.

¹⁹³ Pilita Clark, *Sharp Drop in US Emissions Keeps Global Levels Flat*, Fin. Times (Mar. 17, 2017), <https://www.ft.com/content/540ebb0c-0a60-11e7-ac5a-903b21361b43>.

¹⁹⁴ *Today's Outlook*, Cal. Indep. Sys. Operator Corp., <http://www.caiso.com/Pages/TodaysOutlook.aspx>.

¹⁹⁵ *Final Flexible Capacity Needs Assessment for 2017*, Cal. Indep. Sys. Operator Corp. (Apr. 29, 2016), <http://www.caiso.com/Documents/FinalFlexibleCapacityNeedsAssessmentFor2017.pdf>.

¹⁹⁶ *SB 350 Study: The Impacts of a Regional ISO-Operated Power Market on California*, Cal. Indep. Sys. Operator Corp. et al. (July 8, 2016), https://www.caiso.com/Documents/SB350Study_AggregatedReport.pdf.

¹⁹⁷ *Total Electricity System Power*, Cal. Energy Comm'n (July 11, 2016), http://www.energy.ca.gov/almanac/electricity_data/total_system_power.html. Total energy requirement for all load serving entities with end-use loads in California. Unspecified sources are currently evaluated as having emissions equal to a natural gas combined cycle plant.

roughly 20,000 MW which, at a rated capacity of 60%, equates to about 105,000 GWh. Pursuant to the EPS, this suggests that California might meet its future flexible baseload needs in an enhanced integrated Western grid by supplanting its coal and “unspecified sources” imports with some combination of lower-emitting flexible combined cycle gas, storage and “potentially improved controllability of some variable resources”¹⁹⁸, as opposed to adding new flexible generating facilities. This leads to reductions in net costs associated with California LSE production, and lower generation capacity costs associated with meeting planning reserve capacity. It might also require generating units with higher fuel costs to face a more price efficient market, which may further emphasize existing economic trends toward more frequent dispatch of low-carbon energy. **In sum, integration of larger swaths of the Western grid would have no effect on the impact or legal vulnerability of California’s EPS, and would likely contribute to significant cost savings in achieving resource adequacy, and in long term planning and procurement of energy generating units by California Load Serving Entities.**

c. Legal Analysis

Because the EPS imposes performance standards on out-of-state power plants that want to enter into long-term contracts with California publicly-owned utilities (POUs), it may raise dormant Commerce Clause concerns. It could also raise preemption concerns if a court believes that the policy precludes certain wholesale electricity sales. However, neither of these legal risks would change based on CAISO’s regional expansion because wholesale electricity transactions in California are already considered interstate commerce. Thus California laws that impact such transactions are already subject to potential preemption under the Federal Power Act (FPA) and to the limitations of the dormant Commerce Clause.

This section begins by laying out the key statutory provisions of the emissions performance standard. It then analyzes California’s greenhouse gas emissions portfolio standard (EPS) under each of the three dormant Commerce Clause tests and explains why enhanced grid integration does not affect the analysis under these tests. It concludes by discussing potential preemption claims.

The key relevant provision of the EPS says, “No load-serving entity or local publicly owned electric utility may enter into a long-term financial commitment unless any baseload generation supplied under the long-term financial commitment complies with the greenhouse gases emission performance standard”¹⁹⁹ The statute defines “load-serving entity” as “every electrical corporation, electric service provider, or community choice aggregator serving end-use customers *in the state*”²⁰⁰ while the term “local publicly owned electric utility” covers California

¹⁹⁸ *Id.*; *Final Flexible Capacity Needs Assessment for 2017*, Cal. Indep. Sys. Operator Corp. (Apr. 29, 2016), at 23

¹⁹⁹ Cal. Pub. Util. Code § 8341(a) (West 2017).

²⁰⁰ Cal. Pub. Util. Code § 8340(e) (West 2017) (emphasis added).

municipal utilities, public utility districts, irrigation districts, or joint powers authorities.²⁰¹ The obligations of the EPS thus fall exclusively on companies that serve California consumers. The other key term in this provision is “baseload generation,” which is defined as “electricity generation from a power plant that is designed and intended to provide electricity at an annualized plant capacity factor of at least 60 percent.”²⁰² This means that the standard applies to all baseload power plants, regardless of whether they are located in California or elsewhere. Finally, “long-term financial commitment” is defined as “either a new ownership investment in baseload generation or a new or renewed contract with a term of five or more years, which includes procurement of baseload generation.”²⁰³ These sorts of long-term bilateral contracts are handled outside the CAISO markets.

It is important to emphasize that these key provisions regarding the scope and applicability of the law would not change with a move to a regional independent system operator (ISO). Moreover, the long-term bilateral contracts that are the target of the EPS would continue to exist independent of CAISO’s markets even with enhanced regional grid integration. For these reasons, the creation of a regional ISO will not affect the constitutionality of the EPS.

The first dormant Commerce Clause test imposes strict scrutiny on state laws that discriminate against interstate commerce by imposing fees on out-of-state products²⁰⁴ or providing preferential treatment for in-state companies.²⁰⁵ State laws that fall into this category are unconstitutional unless the state demonstrates that they “advance[] legitimate local purpose that cannot be adequately served by reasonable nondiscriminatory alternatives.”²⁰⁶

Based on the terms of the EPS, it is clear that the law does not facially discriminate against interstate commerce. First, the obligations of the law fall only on companies with customers in the state of California. Second, the EPS applies equally to all baseload generators, regardless of whether they are in-state or out-of-state. In this way, the EPS is similar to the low-carbon fuel standard (LCFS) that was reviewed by the Ninth Circuit in *Rocky Mountain Farmers Union v. Corey*. In that case, the court held that the law was not facially discriminatory because it “does not base its treatment on a fuel’s origin but on its carbon intensity.”²⁰⁷ Similarly, the EPS uses a standard based on greenhouse gas emissions, not the location of the baseload power plant. Because the EPS does not impose special burdens on out-of-state producers or give preferential treatment to in-state businesses, it is not vulnerable to a challenge based on facial discrimination. There is no reason why these fundamental features of the EPS would change

²⁰¹ Cal. Pub. Util. Code § 224.3 (West 2017).

²⁰² Cal. Pub. Util. Code § 8340(a) (West 2017).

²⁰³ Cal. Pub. Util. Code § 8340(f) (West 2017).

²⁰⁴ *Ore. Waste Sys., Inc. v. Dep’t of Env’tl. Quality of Ore.*, 511 U.S. 93, 99 (1994).

²⁰⁵ *Id.* at 99 (“[D]iscrimination’ simply means differential treatment of in-state and out-of-state economic interests that benefits the former and burdens the latter.”); *Granholm v. Heald*, 544 U.S. 460, 473-476 (2005).

²⁰⁶ *Ore. Waste Sys., Inc. v. Dep’t of Env’tl. Quality of Ore.*, 511 U.S. 93, 101 (1994) (quoting *New Energy Co. of Ind. v. Limbach*, 486 U.S. 269 (1988)).

²⁰⁷ *Rocky Mountain Farmers Union v. Corey*, 730 F.3d 1070, 1090 (9th Cir. 2013).

with a shift to a regional ISO. Thus the risk of this form of a dormant Commerce Clause challenge will not be affected by enhanced regional grid integration.

If a court determines that the EPS is not discriminatory, but that a dormant Commerce Clause violation could still exist, then the court would apply the *Pike* inquiry of whether “the burden imposed on [interstate] commerce is clearly excessive in relation to the putative local benefits.”²⁰⁸ Opponents of the law might argue that the EPS imposes burdens on interstate commerce by limiting the market for baseload power plants with high emissions and by undermining the uniformity of laws. However, California could rebut these challenges by arguing that (1) burdens imposed on out-of-state baseload power plants with high emissions are no higher than the burdens on their in-state counterparts and (2) the lack of uniformity does not limit interstate commerce in electricity. Regardless of the merit of these arguments, the move to a regional ISO would not strengthen them because the applicability of the law will not change and long-term bilateral contracting will continue to be handled outside of the CAISO markets. Moreover, California could continue to defend the EPS by highlighting the law’s local benefits. Such benefits could draw on the goals mentioned in the law’s legislative findings and declarations, including the need to reduce the exposure of California consumers to “future pollution-control costs” and “future reliability problems in electricity supplies”²⁰⁹ as well as the desire to address climate change, which “will have serious adverse consequences on the economy, health, and environment of California.”²¹⁰ Since the law addresses bilateral contracts that operate independently of CAISO’s markets, enhanced regional grid integration would not alter California’s ability to defend the EPS based on these local benefits.

The third and final test under the dormant Commerce Clause is the extraterritoriality test. Under this test, state laws are invalid if they apply “to commerce that takes place wholly outside of the State’s borders, whether or not the commerce has effects within the state.”²¹¹ This is another possible basis for a dormant Commerce Clause challenge to the EPS. Indeed, a federal district court and one federal appellate judge found that a somewhat similar Minnesota policy was invalid because it legislated extraterritorially.²¹² Under this theory, an opponent of the EPS could argue that it is unconstitutional because it regulates the terms on which out-of-state baseload generators can operate if they want to be able to enter into a long-term contract with a company that serves customers in California and these terms may somehow influence their sales to parties outside of California.

However, there are many ways in which California’s EPS is on stronger legal grounds than the Minnesota law that was struck down in *North Dakota v. Heydinger*. Minnesota’s Next Generation Energy Act said that “no person shall: (1) construct within the state a new large energy facility that would contribute to statewide power sector carbon dioxide emissions; (2)

²⁰⁸ *Pike v. Bruce Church, Inc.*, 397 U.S. 137, 142 (1970).

²⁰⁹ S.B. 598 §§ 1(i)-(j) (2006).

²¹⁰ S.B. 598 § 1(a) (2006).

²¹¹ *Edgar v. MITE Corp.*, 457 U.S. 624, 642-43 (1982).

²¹² *North Dakota v. Heydinger*, 825 F.3d 912 (8th Cir. 2016).

import or commit to import from outside the state power from a large energy facility that would contribute to statewide power sector carbon dioxide emissions; or (3) enter into a new long-term power purchase agreement that would increase statewide power sector carbon dioxide emissions.”²¹³ While all three of the judges on the Eighth Circuit panel that decided *Heydinger* agreed that the Minnesota law was invalid, they disagreed on the reasoning. Judge James B. Loken agreed with the district court that the law violated the Commerce Clause’s extraterritoriality doctrine, while Judge Diana E. Murphy argued that it was preempted by the FPA, and Judge Steven M. Colloton found that it was preempted by the Clean Air Act.

One important distinction between *Heydinger* and any potential challenge to California’s EPS is the nature of the extraterritoriality test that would be used. Judge Loken’s opinion rejected the contention that the extraterritoriality doctrine should be limited to price-control and price-affirmation laws.²¹⁴ However, both the Ninth Circuit—which covers California—and the Tenth Circuit *have* recognized such a limit.²¹⁵ As discussed above in Part II.C.3, this limitation represents a significant narrowing of the extraterritoriality doctrine. If a dormant Commerce Clause challenge to the EPS were raised in the Ninth or Tenth Circuits, California would be able to argue that its law is not extraterritorial because it addresses only the emissions standards for baseload plants that wish to enter into long-term contracts with California utilities; it does not set prices. This argument is based on the terms of the statute and would not change based on whether CAISO becomes a regional ISO.

The specific language of the California EPS statute also presents an important opportunity to distinguish *Heydinger*. Judge Loken found that the Minnesota law regulated “activity and transactions taking place *wholly outside* of Minnesota” because the law applied to any “person” who imported electricity and the physics of the grid mean that out-of-state generators “cannot prevent energy they place in the MISO grid to serve *non*-Minnesota customers from being imported into Minnesota.”²¹⁶ By contrast, the California law applies only to utilities serving California customers, not to “all persons,” as the ill-fated Minnesota law did.²¹⁷ The California law’s limitations on long-term investments to serve Californians do not affect transactions involving only parties and activities outside of the state. Because the California statute is more narrowly tailored in terms of the parties on whom it imposes restrictions, it is less vulnerable to

²¹³ *Id.* at 913.

²¹⁴ *Id.* at 919 (Loken, J.).

²¹⁵ *Association des Eleveurs de Canards et D’oies du Quebec v. Harris*, 729 F.3d 937, 951 (9th Cir. 2013); *Energy & Env’t. Legal Inst. v. Epel*, 793 F.3d 1169, 1175 (10th Cir. 2015).

²¹⁶ *North Dakota v. Heydinger*, 825 F.3d 912, 921 (8th Cir. 2016) (Loken, J.). While the reference to the MISO grid may initially create the impression that Minnesota’s status as part of a multi-state RTO was a factor, the same logic could be applied to the Western Interconnection as a whole. Thus the fact that CAISO is currently a single-state ISO would not be a point of distinction.

²¹⁷ See Cal. Pub. Utils. Code §8341(a) (West 2017) (“No load-serving entity or local publicly owned electric utility may enter into a long-term financial commitment unless any baseload generation supplied under the long-term financial commitment complies with the greenhouse gases emission performance standard”); Allison Clements & Miles Farmer, *California Clean Energy Laws Do Not Violate Commerce Clause*, NRDC (June 29, 2016), <https://www.nrdc.org/experts/allison-clements/california-clean-energy-laws-do-not-violate-commerce-clause>.

dormant Commerce Clause challenges. Since this argument is tied to the text of the statute, California's ability to rely on it would not be affected by enhanced regional grid integration.

Additionally, one of the other judges on the Eighth Circuit panel, Judge Murphy, pushed back against Judge Loken's understanding of electricity imports, arguing that electrons do not actually "flow" over the grid but rather act as part of "an undifferentiated electromagnetic wave."²¹⁸ Based on this understanding, Judge Murphy concluded that the import provision applied only to bilateral contracts, not all transfers over the MISO grid.²¹⁹ While the wording of the California law should be sufficient to distinguish it from the Minnesota program, this is another argument that California could muster in defense of the EPS. Given that this argument is based on the basic physics of the electric grid, California would be able to make this argument regardless of whether CAISO remains a single-state ISO or becomes a multi-state ISO.

In addition to potential dormant Commerce Clause challenges, California's EPS could also be challenged based on the Supremacy Clause. Such a challenge would argue that the EPS conflicts with and is therefore preempted by a federal law, such as the FPA. While the FPA gives FERC authority over the transmission and wholesale sales of electricity in interstate commerce, states retain power "over facilities used for the generation of electric energy."²²⁰ Decisions regarding the mix of generation that in-state utilities must procure are squarely within the traditional realm of state jurisdiction under the FPA.²²¹ Indeed, in its most recent decision on preemption issues under the Federal Power Act, *Hughes v. Talen Energy Marketing*, the Supreme Court emphasized that "Nothing in this opinion should be read to foreclose Maryland and other States from encouraging production of new or clean generation through measures 'untethered to a generator's wholesale market participation.'"²²² California could defend its EPS law by arguing that it is a valid exercise of state authority over generation, a power reserved to the states by the FPA. Since the EPS does not tie long-term contracts to wholesale market participation, it does not raise the same preemption concerns as the policy at issue in *Hughes*. CAISO's transformation into a multi-state ISO would not affect the contours of this argument. As part of the Western Interconnection, California's grid is already subject to FERC jurisdiction under the FPA. But the statutory limits on such jurisdiction and the powers reserved to the states under the statute will not change due to enhanced regional grid integration.

²¹⁸ 825 F.3d 912, at 924 (Murphy, J., concurring in part and concurring in the judgment).

²¹⁹ *Id.* at 925 (Murphy, J., concurring in part and concurring in the judgment).

²²⁰ 16 U.S.C. § 824(b)(1) (2012).

²²¹ See *S. Cal. Edison Co.*, 70 FERC ¶ 61,215, at 61,676 (1995) ("[W]e acknowledge California's ability under its authorities over the electric utilities subject to its jurisdiction to favor particular generation technologies over others. We respect the fact that resource planning and resource decisions are the prerogative of state commissions and that states may wish to diversify their generation mix to meet environmental goals in a variety of ways."); Steven Ferrey, *Sustainable Energy, Environmental Policy, and States' Rights: Discerning the Energy Future Through the Eye of the Dormant Commerce Clause*, 12 N.Y.U. Envtl. L.J. 507, 628 ("It is clear that states may regulate the mix of generating/efficiency resources that regulated utilities must procure.").

²²² *Hughes v. Talen Energy Mktg., LLC*, 136 S. Ct. 1288, 1299 (2016) (quoting Brief for Respondents 40).

Heydinger provides clues as to what a Supremacy Clause challenge to the California EPS might look like but is ultimately distinguishable. In that case, the plaintiffs argued that the Minnesota law was preempted by both the Federal Power Act²²³ and the federal Clean Air Act.²²⁴ While the district court and Judge Loken decided the case on dormant Commerce Clause grounds, the two other judges on the Eighth Circuit panel held it invalid on Supremacy Clause grounds.²²⁵ Judge Murphy held that the law was preempted by the Federal Power Act because by banning “contracts for power from new large power plants, it thus bans wholesale sales of electric energy in interstate commerce.”²²⁶ Recall however, that the Minnesota law was worded quite broadly, declaring that “no person shall ... import or commit to import from outside the state power from a large energy facility that would contribute to statewide power sector carbon dioxide emissions.”²²⁷ By contrast, the California law is limited to long-term contracts involving companies that serve California consumers. It does not, therefore, “ban[] wholesale sales of electric energy in interstate commerce” but rather sets limits on the long-term procurement decisions of in-state utilities, an action that is consistent with state authority under the FPA. This argument—based on the statutory language of the EPS and the FPA—would not be affected by the shift to a multi-state ISO.

3. Carbon Cap-and-Trade Program

a. Existing Policy

The Global Warming Solutions Act (GWSA) of 2006, or AB 32, establishes a statewide target to reduce greenhouse gas (GHG) emissions to 1990 levels by 2020. The law was created to reduce California’s contribution to climate change through economy-wide reductions in GHG emissions. AB 32 states, “Global warming poses a serious threat to the economic well-being, public health, natural resources, and the environment of California.” The state is currently on track to achieve the emission reduction goal for 2020, and in 2016 the goal was amended, committing California to reduce emissions 40 percent below 1990 levels by 2030.²²⁸

AB 32 requires the California Air Resources Board (CARB) to find “the maximum technologically feasible and cost-effective greenhouse gas emission reductions.”²²⁹ One strategy that CARB

²²³ Amended Complaint for Declaratory and Injunctive Relief at para. 104-118, *North Dakota v. Heydinger*, 15 F. Supp. 3d 891 (D. Minn. 2014).

²²⁴ *Id.* at para. 99-103.

²²⁵ *North Dakota v. Heydinger*, 825 F.3d 912 (8th Cir. 2016). Since this memo focuses on preemption under the Federal Power Act, it will not examine Judge Colloton’s opinion, which found that the law was preempted by the Clean Air Act. However, the general conclusion of this paper also applies to Clean Air Act preemption claims: California is already subject to the Clean Air Act, so the potential for preemption under that law will not increase with a move to a regional ISO.

²²⁶ *Id.* at 926 (Murphy, J., concurring in part and concurring in the judgment).

²²⁷ *Id.* at 913 (Loken, J.).

²²⁸ S.B. 32 (2006).

²²⁹ A.B. 32 (2006).

employs to meet the ambitious goals of AB 32 is a cap-and-trade program, which launched in 2012.²³⁰

The cap-and-trade program encompasses all electricity generators inside the state, all importers of electricity to California, and all industrial sources that emit 25,000 metric tons of carbon dioxide equivalent or more annually.²³¹ As of 2015, distributors of transportation fuel, natural gas, and other fuels are also subject to the program, which now covers approximately 85% of California's total GHG emissions.²³² The program sets a maximum cap for statewide GHG emissions and allows entities to sell off allowances or permits they do not need. Entities can meet their obligations by purchasing offsets and the carbon price is driven by allowance trading. Each year the number of allowances is reduced, effectively lowering the level of emissions. The program is managed and regulated by CARB.²³³

Some argue that cap-and-trade has led to 'leakage' of emissions as utilities divest from non-conforming energy generating units and reinvest in lower emissions alternatives, without retiring the higher emissions plants.²³⁴ These emissions, otherwise known as "secondary emissions," result from electricity generated to meet demand that may not have been generated if not for the generation of cleaner energy serving California's load.²³⁵ CAISO does track secondary emissions and it is currently developing a protocol to measure these emissions that result from the energy imbalance market (EIM).

Overall, cap-and-trade has succeeded in limiting GHG emissions, and regulators are confident²³⁶ that covered entities will be able to reduce their emissions to 334 million metric tons in 2020, a reduction of 15% from 2015 levels.²³⁷ Since the cap-and-trade program is set to expire after 2020, the legislature is currently reviewing proposals for how to structure it after that date.

²³⁰ *Cap-and-Trade Program*, Cal. Air Resources Bd. (Mar. 22, 2017), <https://www.arb.ca.gov/cc/capandtrade/capandtrade.htm>.

²³¹ Anne E. Carlson & William Boyd, *Evaluation of Jurisdictional and Constitutional Issues Arising from CAISO Expansion to include PacifiCorp Assets*, Cal. Indep. Sys. Operator Corp. (Aug. 1, 2016), http://docketpublic.energy.ca.gov/PublicDocuments/16-RGO-01/TN212588_20160802T154524_Stacey_Crowley_Comments_Evaluation_of_Legal_Issues_Arising_from.pdf.

²³² *California Cap and Trade*, Ctr. for Climate & Energy Solutions (Mar. 15, 2017), <https://www.c2es.org/us-states-regions/key-legislation/california-cap-trade#Details>.

²³³ *Cap-and-Trade Regulation Instructional Guidance*, Cal. Air Resources Bd. (Sept. 2012), <https://www.arb.ca.gov/cc/capandtrade/guidance/chapter1.pdf>.

²³⁴ Danny Cullenward, *Leakage in California's Carbon Market*, 27 *Electricity J.* 36 (2014).

²³⁵ *Greenhouse Gas Emission Tracking Report: FAQ*, Cal. Indep. Sys. Operator Corp. (Dec. 28, 2016), <https://www.caiso.com/Documents/GreenhouseGasEmissionsTrackingReport-FrequentlyAskedQuestions.pdf>.

²³⁶ Michael Hiltzik, *California's Cap-and-Trade Program Has Cut Pollution. So Why Do Critics Keep Calling it a Failure?*, L.A. Times (July 29, 2016), <http://www.latimes.com/business/hiltzik/la-fi-hiltzik-captrade-20160728-snap-story.html>.

²³⁷ *California Cap and Trade*, Ctr. for Climate & Energy Solutions (Mar. 15, 2017), <https://www.c2es.org/us-states-regions/key-legislation/california-cap-trade#Details>.

b. Policy Analysis

The shift to regional Western wholesale electricity markets would not interfere with California's cap-and-trade program, and if anything, it would strengthen it. **As previously mentioned, enhanced Western grid integration would reduce renewable energy curtailment and allow for the addition of more renewable energy resources, thereby reducing emissions and making it easier for industry to comply with the cap-and-trade program.** Although California is on track to achieve the target of reducing emissions to 1990 levels by 2020, reducing emissions 40% further by 2030 will be more challenging. Enhanced grid integration would make reaching that goal much easier.

A recent study predicts that by 2030, a shift to an integrated Western grid would allow California to decrease emissions by an additional 4-5 million tons (8% to 10% of total electric generation emissions) than it otherwise would if no such shift occurs. **In addition, California would achieve a 55% to 60% emission reduction from 1990 levels as soon as 2030.**²³⁸

Since enhanced grid integration increases transparency, it can improve the accuracy of emissions accounting. As of July 2016, California imports roughly 40,000 GWh annually (13.5% of energy used) of electricity combined from the Southwest and Northwest that are currently designated as coming from 'Unspecified Sources' meaning the CEC does not know the source.²³⁹ For purposes of the carbon cap-and-trade program, these unknown sources are assigned an emissions factor equivalent to that of an average natural gas combined cycle plant. With enhanced Western grid integration, the sources would no longer be unspecified, and the CAISO could therefore more accurately calculate the emissions that result from the state's electricity demand.

The existing CAISO EIM currently spans eight states and successfully accommodates policy discrepancies among states, including California's cap-and-trade program.²⁴⁰ To accommodate the requirements stipulated under cap-and-trade, CAISO is developing a methodology to account for secondary emissions from the EIM.²⁴¹ The methodology established for the EIM to account for GHG emissions is being considered for the expanded day-ahead market that would be a component of the enhanced regional market. If the accounting methodology for the EIM can conduct complex calculations to track primary and secondary emissions for the real-time

²³⁸ *SB 350 Study: The Impacts of a Regional ISO-Operated Power Market on California*, Cal. Indep. Sys. Operator Corp. et al. (July 26, 2016), https://www.caiso.com/Documents/Presentation-SenateBill350Study-Jul26_2016.pdf.

²³⁹ *QFER CEC-1304 Power Plant Owner Reporting Database*, Cal. Energy Comm'n. (Aug. 19, 2016), http://www.energy.ca.gov/almanac/electricity_data/web_qfer/.

²⁴⁰ *Proposed Principles for Governance of a Regional ISO*, Cal. Indep. Sys. Operator Corp. (June 9, 2016), <http://www.caiso.com/Documents/ProposedPrinciples-Governance-RegionalISO.pdf>.

²⁴¹ *Greenhouse Gas Emission Tracking Report FAQs*, Cal. Indep. Sys. Operator Corp. (Dec. 28, 2016), <https://www.caiso.com/Documents/GreenhouseGasEmissionsTrackingReport-FrequentlyAskedQuestions.pdf>

market, effectively running twice in five minutes, then it should be applicable for the day-ahead market which involves unit commitments in the hour.²⁴²

Since electricity is imported into California from other states, CARB adopted a policy to impose a charge on imports, called a greenhouse gas emissions adder, intended to level-out the price discrepancy for in-state generators that are subject to the state cap. Every day, CAISO determines the greenhouse gas bid adder for each EIM participant.²⁴³ Electricity generators from inside and outside of California include the GHG compliance costs²⁴⁴ within their day-ahead and real-time market bids, and CAISO selects the least-cost dispatch available. CAISO relies on the carbon market price to determine the dispatch order and price of electricity imported from outside California.²⁴⁵ If the EIM participating resource does not include an emissions bid adder, it sends a signal to CAISO not to include the generation for delivery into the CAISO balancing authority area.²⁴⁶

c. Legal analysis

While California's treatment of rules for electricity imports under its cap-and-trade program might face dormant Commerce Clause and preemption challenges, the force of those challenges would not change with regional expansion of CAISO.

California's cap-and-trade program has already been the target of a number of legal challenges, but none to date have focused on potential dormant Commerce Clause or Supremacy Clause violations.²⁴⁷ The Northeast's Regional Greenhouse Gas Initiative has also faced legal

²⁴² Interview with Phil Pettingill, Dir. of State Regulatory Affairs, Cal. Indep. Sys. Operator Corp., in Folsom, Cal. (Mar. 20, 2017).

²⁴³ *California Independent System Operator Corporation Fifth Replacement FERC Electric Tariff*, Cal. Indep. Sys. Operator Corp. § 29.32 (Feb. 1, 2017), https://www.caiso.com/Documents/ConformedTariff_asof_Mar6_2017.pdf (describing the function and application of the CAISO GHG Bid Adder).

²⁴⁴ The compliance cost is calculated based on the EIM resource's highest incremental heat rate and emission rate in the EIM, the applicable Greenhouse Gas Allowance Price, and with respect to bids at EIM External Interties, and the carbon dioxide equivalent emission rate of the resource with the highest such rate in the WECC region and the applicable Greenhouse Gas Allowance Price index. *California Independent System Operator Corporation Fifth Replacement FERC Electric Tariff*, Cal. Indep. Sys. Operator Corp. § 29.32 (Feb. 1, 2017), https://www.caiso.com/Documents/ConformedTariff_asof_Mar6_2017.pdf (describing the function and application of the CAISO GHG Bid Adder).

²⁴⁵ Danny Cullenward & Andy Coghlan, *Structural Oversupply and Credibility in California's Carbon Market*, 29 *Electricity J.* 7 (2016).

²⁴⁶ *California Independent System Operator Corporation Fifth Replacement FERC Electric Tariff*, Cal. Indep. Sys. Operator Corp. § 29.32 (Feb. 1, 2017), https://www.caiso.com/Documents/ConformedTariff_asof_Mar6_2017.pdf (describing the function and application of the CAISO GHG Bid Adder).

²⁴⁷ See *Ass'n of Irrigated Residents v. State Air Res. Bd.*, 206 Cal. App. 4th 1487, 1489 (Cal. Ct. App. 2012) (state law procedural challenge to scoping); *Morning Star Packing Co. v. Cal. Air Res. Bd.*, No. 34-2013-80001464, 2013 Cal. Super. LEXIS 169 (Cal. Super. Ct. Dec. 20, 2013) (joint ruling also applying to *Cal. Chamber of Commerce v. Cal. Air Res. Bd.*, No. 34-2012-80001313, 2013 Cal. Super. LEXIS 1798

challenges, some of which touched on federal constitutional issues. A 2009 complaint alleging preemption under the Public Utility Regulatory Policies Act and FERC regulations and violations of the interstate compact clause was settled by New York²⁴⁸ while a more recent complaint claiming violations of the interstate commerce clause was dismissed on procedural grounds.²⁴⁹

While some scholars have argued that California's cap-and-trade program is vulnerable to dormant Commerce Clause challenges,²⁵⁰ these arguments have not yet been litigated. However, the key inquiries in such a challenge would be whether the California law (1) is discriminatory, (2) excessively burdens interstate commerce, or (3) is impermissible extraterritorial legislation. **Regional expansion of CAISO will not change the analysis under any of these tests.**

Under the first dormant Commerce Clause inquiry, laws that discriminate against interstate commerce face strict scrutiny and are invalid unless the state shows that they "advance[] a legitimate local purpose that cannot be adequately served by reasonable nondiscriminatory alternatives."²⁵¹ California's cap-and-trade program imposes obligations on all "first deliverers of electricity," which includes both generating facilities "located in California" and "[e]lectricity importers."²⁵² The regulatory scheme also prohibits resource shuffling²⁵³ and requires imports to meet certain standards in order to qualify as coming from a specified source.²⁵⁴ The program should be safe from challenges based on discrimination grounds since the goal of these

(Cal. Super. Ct. Nov. 12, 2013)) (challenging CARB's authority under state law); *Citizens Climate Lobby & Our Children's Earth Found. v. Cal. Air Res. Bd.*, No. CGC-12-5195944, 2013 Cal. Super. LEXIS 7820 (Cal. Sup. Ct. Mar. 25, 2013) (challenging additionality rules).

²⁴⁸ Steven Ferrey, *Courts Cap the "Trade": Regulation of Competitive Markets When Courts Overturn State and Federal Cap-and-Trade Regulation*, 117 W. Va. L. Rev. 681, 718 (2014); *Indeck Coringht, L.P. v. Paterson*, <http://www.lawandenvironment.com/uploads/file/InDeck%20Complaint.pdf>. The complaint also alleged violations of the interstate compact clause and of plaintiff's due process and equal protection rights.

²⁴⁹ *Thrun v. Cuomo*, 112 A.D.3d 1038 (2013).

²⁵⁰ See, e.g., Thomas Alcorn, *The Constitutionality of California's Cap-and-Trade Program and REcommendations for Design of Future State Programs*, 3 Mich. J. Envtl. & Admin. L. 87, 176-77 (2013) ("While California's regulations are ideal from a regulatory standpoint, it is unlikely that a court will uphold all of them in their current form."); James W. Coleman, *Importing Energy, Exporting Regulation*, 83 Fordham L. Rev. 1357, 1384 (2014) (arguing that because the cap-and-trade program "appl[ies] to emissions in the supply chain of electricity ... under conventional dormant Commerce Clause doctrine these exported regulations will remain in legal jeopardy"); but see Erin Parlar et al., *Legal Issues in Regulating Imports in State and Regional Cap and Trade Programs*, Colum. L. Sch. Ctr. for Climate change L. 54 (Oct. 2012), <http://wordpress.ei.columbia.edu/climate-change-law/files/2016/06/Parlar-et-al.-2012-10-Imports-in-StateRegional-Cap-and-Trade.pdf> ("Based on our analysis of the dormant Commerce Clause and the FPA, we believe that the imports regulations are likely to ultimately be ruled constitutional by a reviewing court.")

²⁵¹ *Ore. Waste Sys., Inc. v. Dep't of Envtl. Quality of Ore.*, 511 U.S. 93, 101 (1994) (quoting *New Energy Co. of Ind. v. Limbach*, 486 U.S. 269 (1988)).

²⁵² Cal. Code Regs. tit. 17, § 95811 (West 2017).

²⁵³ Cal. Code Regs. tit. 17, § 95852(b)(2) (West 2017).

²⁵⁴ Cal. Code Regs. tit. 17, § 95852(b)(1)(C) (West 2017).

provisions is to treat out-of-state resources on the same terms as in-state resources.²⁵⁵ Since this defense is based on the structure and purpose of the law, it will not be weakened if CAISO becomes a regional ISO.

One set of cases that may be relevant to potential legal challenges to the cap-and-trade program are those involving low-carbon fuel standards (LCFSs). Although not aimed at electricity generators, these laws also assess the carbon intensity of energy used by in-state consumers and in the process effectively set standards for out-of-state energy sources that want to be able to sell to California consumers. Both the Ninth Circuit and the federal district court for Oregon have rejected challenges to low-carbon fuel standards based on the Commerce Clause and the Supremacy Clause.²⁵⁶ The Ninth Circuit held that California's LCFS was not discriminatory merely because it "assign[ed] different carbon intensity to ethanol from different regions."²⁵⁷ The court said that "if an out-of-state ethanol pathway does impose higher costs on California by virtue of its greater GHG emissions, there is a nondiscriminatory reason for its higher carbon intensity value."²⁵⁸ This line of reasoning may be valuable in defending the treatment of imports in California's cap-and-trade program. Although imports face different requirements than in-state resources, there is a nondiscriminatory reason for such a disparity (i.e., the desire to treat imports in a way that captures the true carbon intensity of out-of-state resources). Importantly, this frame of analysis focuses on the rationale for the treatment of out-of-state resources, which would not be affected by CAISO's regional expansion.

If a court agrees that the cap-and-trade program does not discriminate against interstate commerce, the law could still be challenged under the *Pike* test, which asks whether "the burden imposed on [interstate] commerce is clearly excessive in relation to the putative local benefits."²⁵⁹ Opponents of the cap-and-trade program could argue that it burdens interstate commerce by making it more difficult to sell power into California and undermines uniformity of state laws. However, it is important to keep in mind that since California is already physically integrated into the Western Interconnection's regional grid, electricity sales into and within the state are already transactions in interstate commerce, so the *Pike* inquiry regarding burdens on interstate commerce would not change with the creation of a regional ISO. Similarly, the lack of uniformity in state laws would not become a more legally significant problem merely because of enhanced regional grid integration. The fact that only two of the 13 PJM states (Delaware and Maryland) are members of the Regional Greenhouse Gas Initiative shows that a cap-and-trade market can work even when a state is part of a multi-state ISO in which other states are not participants in its carbon market. Additionally, California would be able to defend its law by pointing to the local benefits of the law. As the legislature noted when it enacted A.B. 32, "[g]lobal warming poses a serious threat to the economic well-being, public health, natural

²⁵⁵ See Erin Parlar, Micahel Babakitis & Shelley Welton, *Legal Issues in Regulating Imports in State and Regional Cap and Trade Programs*, Colum. L. School Ctr. for Climate Change L. 29-37 (Oct. 2012).

²⁵⁶ *Rocky Mountain Farmers Union v. Corey*, 730 F.3d 1070 (9th Cir. 2013); *Am. Fuel & Petrochemical Mfrs. v. O'Keeffe*, 134 F. Supp. 3d 1270 (D. Ore. 2015).

²⁵⁷ *Rocky Mountain Farmers Union v. Corey*, 730 F.3d 1070, 1089 (9th Cir. 2013).

²⁵⁸ *Id.* at 1089-90.

²⁵⁹ *Pike v. Bruce Church, Inc.*, 397 U.S. 137, 142 (1970).

resources, and the environment of California.”²⁶⁰ California could argue that the program’s local benefits in avoiding or mitigating the harms associated with climate change outweigh any incidental burdens on interstate commerce. California’s ability to make this argument does not depend on CAISO remaining a single-state ISO.

The final dormant Commerce Clause inquiry focuses on whether the law is improperly extraterritorial in that it applies “to commerce that takes place wholly outside of the State’s borders, whether or not the commerce has effects within the state.”²⁶¹ However, as discussed above, the Ninth and Tenth Circuit have adopted a narrow version of this extraterritoriality test, holding that laws will only be struck down as extraterritorial if they set prices or tie in-state prices to out-of-state prices.²⁶² The cap-and-trade program limits carbon emissions; it does not set the price of electricity. Any prices that out-of-state generators must bear in order to purchase allowances are only incurred if they choose to sell into the California market. As such, the program does not set prices for exclusively out-of-state transactions and is not vulnerable under the extraterritoriality test as it is applied in the Ninth and Tenth Circuit. This fundamental characteristic of the cap-and-trade program would not change with regional expansion of CAISO.

In addition to possible dormant Commerce Clause challenges, California’s cap-and-trade program could face suits under the Supremacy Clause. Such suits could argue that the state program conflicts with and is therefore preempted by a federal law like the Federal Power Act.²⁶³ Opponents of the law could argue that by putting a price on greenhouse gas emissions, for instance, the cap-and-trade program influences wholesale electricity rates, which are the exclusive province of FERC jurisdiction. However, the Supreme Court has recently stated that in energy law preemption cases, courts must consider “the *target* at which the state law *aims* in determining whether that law is preempted.”²⁶⁴ The target at which the California cap-and-trade program aims is clearly greenhouse gas emissions, not wholesale electricity rates. This analysis would not change with enhanced regional grid integration. Nor does the cap-and-trade program link emissions credit prices to wholesale rates. **Moreover, and most significantly for the purpose of this analysis, California’s grid is already subject to FERC jurisdiction since its position in the Western Interconnection means that transmission and wholesale sales in California are already part of interstate commerce. Thus, the strength of potential Federal Power Act preemption challenges would not be affected by the decision to shift to a regional ISO.**

²⁶⁰ Cal. Health & Safety Code § 38501(a) (West 2017).

²⁶¹ *Edgar v. MITE Corp.*, 457 U.S. 624, 642-43 (1982).

²⁶² *Association des Eleveurs de Canards et D’oies du Quebec v. Harris*, 729 F.3d 937, 951 (9th Cir. 2013) (quoting *Pharm. Research & Mfrs. of Am. v. Walsh*, 538 U.S. 644, 669 (2003)); *Energy & Env’t. Legal Inst. v. Epel*, 793 F.3d 1169, 1175 (10th Cir. 2015).

²⁶³ The law could also face a preemption challenge under other federal laws, such as the Clean Air Act. While this paper focuses on preemption issues under the Federal Power Act, it is worth noting that California is already subject to the Clean Air Act and that would not change with a move to a regional ISO.

²⁶⁴ *Oneok, Inc. v. Learjet, Inc.*, 135 S. Ct. 1591, 1599 (2015).

B. Benefits from Enhanced Grid Integration

1. Cost Savings

Studies show many financial benefits associated with improved regional grid integration due to a competitive electricity market, resource sharing and avoided redundancy, less curtailment of renewable energy resources, and reduced capital investments related to Renewable Portfolio Standard (RPS) compliance.

A recent study titled, “Senate Bill 350 Study: The Impacts of a Regional ISO-Operated Power Market on California” estimates that **California utility customers could save between \$1 billion to \$1.5 billion annually by 2030 from enhanced grid integration, which represents between 2% to 3% of all retail electricity sales in California.**²⁶⁵ The estimated annual savings by 2030 are attributed to the following sources: a reduction in renewable energy investment expenditures (\$800 million); a reduction in costs related to the production, purchase, and sale of wholesale power (\$543 million); a reduction in generation capacity costs to meet planning reserve requirements (\$120 million); and a reduction in CAISO’s annual operating costs (\$103 million).²⁶⁶

If California increases its 2030 RPS goal from 50% to 60%, the estimated annual savings would increase to from \$1.5 billion to \$2.8 billion for California utility customers.²⁶⁷ This significant benefit increase is primarily driven by the excess renewable energy capacity investments necessary to meet the 60% RPS in a “business as usual” scenario.

Generation capacity costs will decrease with integration because the need for excess capacity shrinks as wider geographies are covered by a single system operator. This can reduce the charge needed to recover grid management costs and meet resource adequacy needs.²⁶⁸ For example, the aforementioned study found that enhanced grid integration would allow California to reduce its own capacity requirements by 1,594 MW, which alone could save approximately \$120 million annually.²⁶⁹

It is important to recognize that these substantial cost savings are likely to be considerably greater. The authors of the study acknowledge that their modeling assumptions “tend to

²⁶⁵ *SB 350 Study: The Impacts of a Regional ISO-Operated Power Market on California*, Cal. Indep. Sys. Operator Corp. et al. (July 8, 2016), https://www.caiso.com/Documents/SB350Study_AggregatedReport.pdf.

²⁶⁶ *Id.*

²⁶⁷ *SB 350 Study: The Impacts of a Regional ISO-Operated Power Market on California*, Cal. Indep. Sys. Operator Corp. et al. (July 26, 2016), https://www.caiso.com/Documents/Presentation-SenateBill350Study-Jul26_2016.pdf.

²⁶⁸ *Senate Bill 350 Study Volume VII: Ratepayer Impact Analysis*, Cal. Indep. Sys. Operator et al. (July 8, 2016), <http://www.caiso.com/Documents/SB350Study-Volume7RatepayerImpactAnalysis.pdf>.

²⁶⁹ *Id.*

understate the potential benefits of a regional market.”²⁷⁰ The modelers assumed load demand would shift to daylight hours (when solar generation and renewable curtailment is high) through time-of-use retail electricity rates and daytime charging of five million electric vehicles with access to workplace charging stations. They also assumed that costly pumped storage would be built to facilitate renewable integration and that out-of-state renewable capacity would be capped at 6,000 MW, among other assumptions.²⁷¹ These conservative assumptions underestimate the benefits of enhanced grid integration because they result in unrealistically low costs in the “business as usual” scenario. In all likelihood, the benefits of a Western integrated grid would be considerably greater if the modelers adjusted these assumptions.

2. Integrating Renewable Energy Resources

Enhanced grid integration is expected to support California’s renewable energy industry by enabling California to sell excess renewable energy in a regional market.²⁷² Currently if California generates excess energy that cannot be sold through the EIM, it has to be shut-down or “curtailed.” In January 2017, over 40,000 MWhs of California renewables were curtailed, an increase of more than five times the amount curtailed the previous January.²⁷³ As renewable energy generation increases, curtailment is only expected to continue, and it is estimated that between 6,000 to 8,000 MW of renewable energy capacity will have to be shut-down during some hours in the spring of 2017.²⁷⁴ However, since grid integration opens new markets for demand, curtailment is expected to decrease in 2030 from 4.5% to 1.2%, resulting in a savings of 3,592,000 MWh annually.²⁷⁵ The benefits of avoiding curtailment may be understated in the SB 350 study because the researchers assumed “normal weather, normal hydrology.”²⁷⁶ However, some experts believe that climate change may lead to more extreme weather in California, including rain events that lead to flooding²⁷⁷ and to potentially more must-take hydroelectric generation that forces more solar and wind curtailment.

²⁷⁰ Arne Olson et al., *Senate Bill 350 Study: Volume IV: Renewable Energy Portfolio Analysis*, Energy & Env’tl. Econ., Inc. (July 8, 2016), <https://www.caiso.com/Documents/SB350Study-Volume4RenewableEnergyPortfolioAnalysis.pdf>.

²⁷¹ *Id.*

²⁷² James L. Sweeney, *Integrate Western Power Grid to Reduce Emissions, Energy Costs*, Sacramento Bee (Mar. 3, 2017), <http://www.sacbee.com/opinion/op-ed/soapbox/article135866278.html>.

²⁷³ *Market Performance Report: January 2017*, Cal. Indep. Sys. Operator Corp. (Feb. 28, 2017), <http://www.caiso.com/Documents/MarketPerformanceReportforJan2017.pdf>.

²⁷⁴ Jeff St. John, *California’s Flood of Green Energy Could Drive a Record 8GW of Curtailment This Spring*, Greentech Media (Mar. 21, 2017), <https://www.greentechmedia.com/articles/read/californias-flood-of-green-energy-could-drive-a-record-6-to-8-gigawatts-of>.

²⁷⁵ Arne Olson et al., *Senate Bill 350 Study: Volume IV: Renewable Energy Portfolio Analysis*, Energy & Env’tl. Econ., Inc. (July 8, 2016), <https://www.caiso.com/Documents/SB350Study-Volume4RenewableEnergyPortfolioAnalysis.pdf>.

²⁷⁶ *Id.*

²⁷⁷ Lauren Sommer, *With Climate Change, California Is Likely To See More Extreme Flooding*, Nat’l Pub. Radio (Feb. 28, 2017), <http://www.npr.org/2017/02/28/517495739/with-climate-change-california-is-likely-to-see-more-extreme-flooding>.

By facilitating regionally planned transmission lines, enhanced grid integration can help integrate disperse renewable energy generation at the least cost.²⁷⁸ This is important for connecting wind resources in states such as Wyoming with load centers in California and throughout the West. In addition, because enhanced grid integration increases geographic diversity and decreases aggregate wind variability and the frequency of extremes, wind energy becomes more economically valuable.²⁷⁹ A study by Lawrence Berkeley National Laboratory (LBNL), found that in a regional market the marginal value of wind increased rapidly as new wind capacity was built in geographically diverse locations because the variability of the aggregate wind generation was minimized.²⁸⁰ If California increases its RPS standard, geographic diversity made possible by enhanced grid integration would allow the state to meet the higher goal more reliably and cost-effectively.

The additional renewable energy generation across the WECC can achieve a substantial reduction in greenhouse gas emissions. **By 2030, California would reduce its annual emissions by 4.6 million metric tons of carbon dioxide due to enhanced grid integration, representing a 10% reduction of total electricity sector emissions (in 2030).²⁸¹ Across the Western Interconnection, enhanced grid integration could reduce emissions by 10 to 11 million metric tons per year by 2030, representing a 3.5% decrease in electricity sector emissions.²⁸²**

3. Job Creation

A regional electricity market is estimated to create between 10,000 to 20,000 jobs in California from infrastructure investments—which create both short-term and long-term jobs—and lower electricity prices.²⁸³ The primary driver of job creation would be indirectly gained through lower energy costs. As total retail costs are expected to decline by 2% to 3% than they otherwise would have, this additional capital can be reinvested in the economy.²⁸⁴

²⁷⁸ Patrick Luckow, Tommy Vitolo & Joseph Daniel, *A Solved Problem: Existing Measures Provide Low-Cost Wind and Solar Integration*, Synapse Energy Econ., Inc. (Aug. 25 2015), <http://www.synapse-energy.com/sites/default/files/A-Solved-Problem-15-088.pdf>.

²⁷⁹ EnerNex Corp., *Eastern Wind Integration and Transmission Study*, Nat'l Renewables Energy Laboratory (Feb. 2011), <http://www.nrel.gov/docs/fy11osti/47078.pdf>.

²⁸⁰ Andrew Mills & Ryan Wiser, *Strategies for Mitigating the Reduction in Economic Value of Variable Generation with Increasing Penetration Levels*, Ernest Orlando Lawrence Berkeley Nat'l Laboratory (Mar. 2014), <https://emp.lbl.gov/sites/all/files/lbnl-6590e.pdf>.

²⁸¹ Brattle Grp. et al., *Senate Bill 350 Study: The Impacts of a Regional ISO-Operated Power Market on California*, Cal. Indep. Sys. Operator Corp. (July 8, 2016), https://www.caiso.com/Documents/SB350Study_AggregatedReport.pdf.

²⁸² *Id.*

²⁸³ *Id.*

²⁸⁴ Brattle Grp. et al., *Senate Bill 350 Study: The Impacts of a Regional ISO-Operated Power Market on California*, Cal. Indep. Sys. Operator Corp. (July 8, 2016), https://www.caiso.com/Documents/SB350Study_AggregatedReport.pdf.

IV. Conclusion

The movement toward enhanced regional grid integration is at a critical juncture. California's political leaders can move this project forward by passing legislation that would allow for necessary changes in CAISO's governance structure.

California has implemented a number of statewide policies to advance clean energy and reduce greenhouse gas emissions. Enhanced regional grid integration will help California realize these goals in a cost-effective manner while conferring additional benefits. Achieving California's energy policies without enhanced regional integration will be much more costly. Without it, California will be forced to curtail increasing quantities of renewable energy, which would restrict additional clean energy supply. Expanding the transmission system operator's geographic footprint enables renewable energy supply to meet electricity demand, furthering production, increasing reliability, and cutting costs for utility customers.

Transitioning from a single-state to a multi-state wholesale electricity market will *not* increase the risk that California's clean energy policies face from challenges under the Supremacy Clause and dormant Commerce Clause. Making the necessary changes to allow CAISO to add out-of-state balancing authorities as full-scale members will improve the reliability of the Western grid and will help facilitate cost-effective renewables integration without jeopardizing California's existing clean energy policies.

Acknowledgements

We are grateful for the advice and feedback that we received from John Moore of the Sustainable FERC Project, Julia S. Prochnik, Pat Remick, and Carl Zichella from the Natural Resources Defense Council, Marc D. Joseph from Adams Broadwell Joseph & Cardozo, and Rachele Heunnekens from RALLY. We also grateful to Mary McDonald, Phil Pettingill, and Andrew Ulmer from the California Independent System Operator Corporation for providing background information about how the CAISO system works. All errors are our own.

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