The Californian Case for a Western RTO

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INTRODUCTION

The extreme effects of climate change are no longer a future problem—they exist today. Across the country and the world, heat waves, heavy precipitation, tropical storm activity, and, in some regions (like the American West), droughts have increased in frequency and severity.[1] These threats to the status quo impact every facet of life and must be addressed through long-term policy decisions and structural changes across our economy.

In response to the threats of climate change, California has implemented ambitious decarbonization goals.[2] Most notably, it passed legislation in 2018 requiring electrical utilities to source 100 percent of electricity in the state from carbon-free fuels like wind, solar, and hydro by 2045.[3] Currently, around half of California's electricity comes from renewable energy sources.[4] While the state is excelling compared to other states and countries,[5] it still has much to do to reach its goal.[6]

One crucial component in the drive toward carbon neutrality is reshaping how states govern the electrical grid. Presently, California's grid is managed by the California Independent System Operator (CAISO), a non-profit regional transmission organization (RTO) that plans grid expansion and manages electricity markets.[7] Whether California can reach its lofty goals largely depends on how the state manages CAISO's design and governance. For example, if CAISO's policies do not promote the creation of new transmission lines, new renewable energy generation facilities will not be able to connect to the grid and so will not be able to displace greenhouse gas-emitting plants.

The recent Ninth Circuit decision *California Public Utilities Commission v. Federal Energy Regulatory Commission* (*CPUC v. FERC*) centered on CAISO's

1. *Climate Change Indicators*, EPA, https://www.epa.gov/climate-indicators/weather-climate (last updated July 26, 2023).

2. *State Renewable Portfolio Standards and Goals*, NAT'L CONF. OF STATE LEGISLATURES, https://www.ncsl.org/research/energy/renewable-portfolio-standards.aspx (last updated Aug. 13, 2021); *CPUC Orders Historic Clean Energy Procurement to Ensure Electric Grid Reliability and Meet Climate Goals*, CAL. PUB. UTILITIES COMM'N: NEWS & UPDATES (June 24, 2021), https://www.cpuc.ca.gov/news-and-updates/all-news/cpuc-orders-clean-energy-procurement-to-ensure-electric-grid-reliability.

3. *State Renewable Portfolio Standards and Goals*, *supra* note 2.

4. *See 2021 Total System Electric Generation*, CAL. ENERGY COMM'N, https://www.energy.ca.gov/data-reports/energy-almanac/california-electricity-data/2021-total-system-electric-generation (last visited May 29, 2023) (California's non-CO2 emitting electric generation categories (nuclear, large hydroelectric, and renewables) accounted for 49 percent of its in-state generation).

5. *See California Releases World's First Plan to Achieve Net Zero Carbon Pollution*, OFF. OF GOVERNOR GAVIN NEWSOM (Nov. 16, 2022), https://www.gov.ca.gov/2022/11/16/california-releases-worlds-first-plan-to-achieve-net-zero-carbon-pollution/.

6. I have not differentiated between clean and renewable energy in this paper. Clean energy is energy that does not generate carbon emissions, while renewable energy is energy generated from an unlimited source. Some clean energy sources are not renewable, e.g., nuclear power. Some renewable sources are not clean, e.g., biomass. In any case, renewable and clean power are both necessary alternatives to carbon intensive sources of energy like natural gas and coal, so they are not distinguished here.

7. *Understanding the ISO*, CAISO, https://www.caiso.com/about/Pages/OurBusiness/Default.aspx (last visited May 29, 2023).

design.[8] In CAISO's current form, utilities volunteer to participate in CAISO by handing over transmission operations to the RTO and engaging in CAISO's markets.[9] In return, the federal government allows the participating utilities to increase the amount they charge their customers.[10] The Court upheld this structure, which means that Californians are effectively paying their utilities to participate in CAISO.[11] However, CAISO is worth this cost because it connects utilities' transmission lines into a single, governable unit, increasing the efficiency of electric markets and development of new transmission lines.[12] And yet, the RTO can be improved by scaling it beyond California to capture greater efficiency.

California should coordinate with neighboring states to create a regional RTO to manage the grid and its expansion. The prospect of a western grid operator is not novel; industry players have debated it for decades.[13] Some experts have argued that RTOs often favor industry incumbents, thereby delaying the clean energy transition.[14] However, it is uncontested that regional collaboration, when governed properly, "is a prerequisite to integrating sufficient renewable energy into the U.S. energy system."[15] Thus, California and nearby states should develop a regional grid operator but remain wary of the potential downsides of RTOs.

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8. 29 F.4th 454 (9th Cir. 2022).

9. *The Role of the California ISO*, CAISO, https://www.caiso.com/about/Pages/OurBusiness/ /The-role-of-the-California-ISO.aspx (last visited May 29, 2023).

10. *CPUC v. FERC*, 29 F.4th 454, 458 (9th Cir. 2022) ("FERC regulations allow for these incentive adders to induce voluntary membership in independent system operators.").

11. *See id*. at 468.

12. *See generally* ENERGY STRATEGIES, LLC, WESTERN RTO ECONOMIC IMPACT STUDY (ADVANCED ENERGY ECONOMY, 2022), https://info.aee.net/hubfs/Western%20RTO%20Economic%20Impact%20Study%20Report.pdf.

13. *See* Letter from former FERC Commissioners to current FERC Commissioners re: Organized Wholesale Power Markets (June 2, 2021), https://acrobat.adobe.com/link/track?uri=urn%3Aaaid%3Ascds%3AUS%3A5a7f3ba2-5a11-42da-ad75-5c80039e8582&viewer%21megaVerb=group-discover; Chris Hansen & Doug Howe, *The West needs an RTO*, UTIL. DIVE (Aug. 7, 2020), https://www.utilitydive.com/news/the-west-needs-an-rto/583099/ (an article written by a Colorado state senator and a former commissioner of the New Mexico Public Regulation Commission in response to the article by Clark et al., *infra*, advocating for a western RTO). *See also* Letter from former PUC Commissioners and a former FERC Commissioner to current FERC Commissioners re Former Commissioners' Letter (June 24, 2021), https://s3.documentcloud.org/documents/20985288/former-commissioners-letter-to-ferc-c3.pdf; Tony Clark et al., *It's Time for Emergent Markets to Take Center Stage in Non-RTO Regions of the Country*, UTIL. DIVE (July 27, 2020), https://www.utilitydive.com/news/its-time-for-emergent-markets-to-take-center-stage-in-non-rto-regions-of-t/582228/.

14. Shelley Welton, *Rethinking Grid Governance for the Climate Change Era*, 109 CAL. L. REV. 209, 209–10 (2021).

15. *Id*. at 215.

I. UNDERSTANDING THE GRID

A. Electricity Sector Overview

The process of providing consumers with electricity has three components: generation, transmission, and distribution.[16] Generation is the creation of electricity.[17] This can be from a carbon-based generation plant, in which fuel sources are combusted, creating steam that spins a turbine.[18] It can also be through renewable generators, like wind farms that use power from the wind to spin a turbine or photovoltaic solar panels that absorb energy from the sun's electromagnetic waves (i.e., light).[19] Next, transmission is the delivery of electricity over long distances through high-voltage lines from generators to areas of high demand or "load," like cities.[20] Finally, distribution is the delivery of electricity over shorter distances through lower voltage lines to the end users.[21] This Note pertains mostly to transmission, and how changes in transmission governance can affect generation.

Electricity is transmitted over the electrical transmission grid ("the grid"), which comprises hundreds of thousands of miles of power lines that crisscross the country.[22] The grid compares aptly to our country's highway system. Just as people enter a highway, travel long distances at high speeds (assuming no traffic), and then exit the highway to take slower local roads to reach their destination, generated electricity enters the grid, travels long distances at efficient high voltages, and then exits into local distribution grids at safer low voltages to navigate local distribution lines before arriving at end users' homes or businesses. This is an oversimplification, considering highways operate under the rules of the road and the grid operates under the much more complex rules of physics, but it sufficiently explains how the grid works for the purposes of this Note.

The continental United States' grid is split into two major regions: the Western and Eastern Interconnections.[23] The Western Interconnection runs from the Pacific Coast to the eastern borders of New Mexico, Colorado, Wyoming, and Montana, and the Eastern Interconnection covers the rest of the country (besides Texas, which has its own transmission grid—a subject worthy of its own

16. Alexandra Klass & Elizabeth J. Wilson, *Interstate Transmission Challenges for Renewable Energy: A Federalism Mismatch*, 65 VAND. L. REV. 1801, 1805 (2012).

17. *Id.*

18. *See id.*

19. *See id.*

20. *Id.*

21. *Id.* at 1805–06.

22. *Id.* at 1805.

23. *Learn More About Interconnections*, U.S. DEP'T OF ENERGY, https://www.energy.gov/oe/services/electricity-policy-coordination-and-implementation/transmission-planning/recovery-act-0 (last visited May 29, 2023).

paper).[24] The two interconnections operate almost entirely independently, with very little electricity traveling between them.[25]

The grid is mainly federally regulated by an independent agency called the Federal Energy Regulatory Commission (FERC).[26] Congress has empowered FERC to regulate transmission to ensure "just and reasonable" prices for all electricity consumers.[27] FERC wields its power by passing numbered orders and has broad discretion to create policy that leads to fair energy prices, even if the policy does so indirectly.[28] For example, FERC passed Order 888 in 1996, which required utilities to give all generators access to their transmission lines at non-discriminatory rates.[29] Order 888 revolutionized the entire electrical industry, allowing for competition among generators, and FERC justified their decision by claiming that competition would lower prices to more just and reasonable levels.[30] Furthermore, FERC has authority to regulate RTOs under this transmission jurisdiction.[31]

B. Regional Transmission Organizations

Each region of the country manages their portion of the grid differently, but there are two general ways in which the grid is managed. In the Southeast and

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24. *Id.*

25. *Where the East Meets the West: Interconnections Seam Study Shows Value in Joining U.S. Transmission Grids*, NAT'L RENEWABLE ENERGY LAB'Y (Oct. 18, 2021), https://www.nrel.gov/news/program/2021/where-the-east-meets-the-west-interconnections-seam-study.html ("Currently, the three major portions of the U.S. power system—the Western Interconnection, the Eastern Interconnection, and [Texas]—operate virtually independently of each other.").

26. FERC regulates wholesale sales of electricity and the transmission of electricity, while state public utility commissions regulate retail sales of electricity and electricity distribution. States also permit and site new transmission lines. Alexandra B. Klass, *The Electric Grid at a Crossroads: A Regional Approach to Siting Transmission Lines*, 48 U.C. DAVIS L. REV. 1895, 1913–16 (2015).

27. *See* Federal Power Act § 205, 16 U.S.C. § 824d ("All rates and charges made . . . by any public utility for . . . the transmission of electric energy . . . shall be *just and reasonable* . . . ." (emphasis added)).

28. *See id.* ("All rates and charges made . . . by any public utility for . . . the transmission . . . of electric energy . . . *and all rules and regulations affecting or pertaining to such rates* . . . shall be just and reasonable . . . ." (emphasis added)); *see also* Federal Power Act § 206, 16 U.S.C. § 824e ("Whenever [FERC] . . . shall find that any rate . . . collected by any public utility for any transmission . . . or *that any rule, regulation, practice or contract affecting such rate* is unjust, unreasonable, unduly discriminatory or preferential, [FERC] shall determine the just and reasonable rate, charge classification, rule, *regulation, practice*, or contract to be thereafter observed and in force, and shall fix the same by order." (emphasis added)).

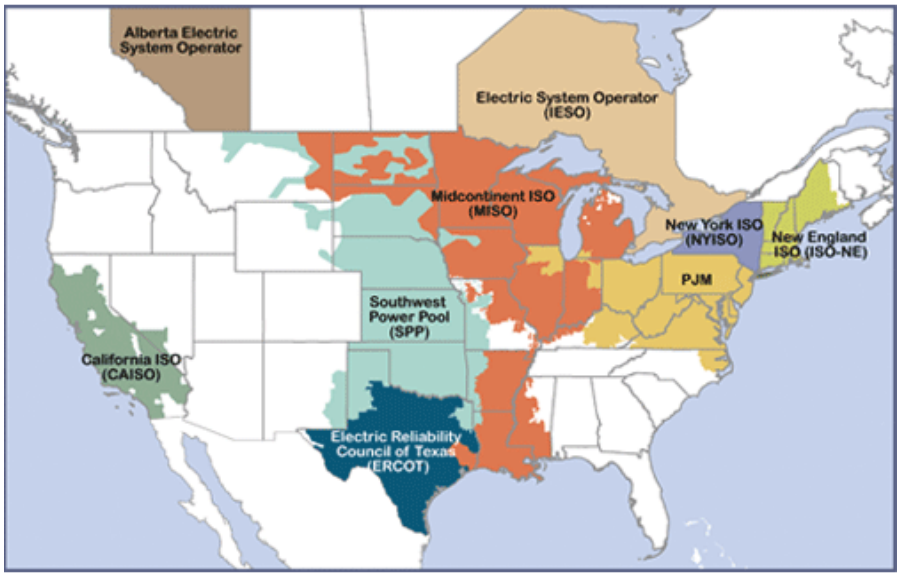
29. *Promoting Wholesale Competition Through Open Access Non-discriminatory Transmission Services by Public Utilities; Recovery of Stranded Costs by Public Utilities and Transmitting Utilities*, Order No. 888, 75 FERC ¶ 61,080 (Apr. 24, 1996) at 5 ("[FERC] requires all public utilities that own, control or operate facilities used for transmitting electric energy in interstate commerce to file open access non-discriminatory transmission tariffs that contain minimum terms and conditions of non-discriminatory service[.]").

30. *Id.* at 4 ("In this Rule, the Commission seeks to remedy both existing and future undue discrimination in the industry and realize the significant customer benefits that will come with open access. Indeed, it is our statutory obligation under sections 205 and 205 of the Federal Power Act . . . to remedy undue discrimination.").

31. *See* Federal Power Act § 205, 16 U.S.C. § 824d; *see also* § 206, 16 U.S.C. § 824e.

the West (besides California), the grid is managed in a piecemeal fashion, with each utility overseeing their portion of the grid independently.[32] Contrastingly, in California, Texas, the Midwest, and the Northeast, the grid is managed regionally by RTOs.[33]

There are currently seven RTOs in the continental United States.[34] Below is a map of each RTO's region or "footprint."[35]



Source: *FERC, RTOs and ISOs (May 3, 2022), https://www.ferc.gov/power-sales-and-markets/rtos-and-isos.*

RTOs do not actually own the transmission lines they operate—utilities that participate in an RTO voluntarily hand operational control of their transmission facilities to the RTO while maintaining ownership of the lines.[36] RTOs move electricity from seller to buyer and pass the profits through to the utility whose lines were used.[37] RTOs also conduct regional transmission planning, manage energy markets, balance energy supply and demand, and ensure grid reliability

32. STAFF REPORT, FERC, ENERGY PRIMER: A HANDBOOK FOR ENERGY MARKET BASICS (Apr. 2020) at 39 [hereinafter ENERGY PRIMER].

33. *Id*. at 39–40.

34. The Energy Reliability Council of Texas is not under FERC's jurisdiction because it does not engage in interstate wholesale sales or interstate transmission of electricity. ERCOT's territory covers a large majority of Texas. *See ERCOT*, FERC, https://www.ferc.gov/industries-data/electric/electric-power-markets/ercot (last updated July 14, 2022); *RTOs and ISOs*, FERC (May 3, 2022), https://www.ferc.gov/power-sales-and-markets/rtos-and-isos.

35. *RTOs and ISOs*, FERC (May 3, 2022), https://www.ferc.gov/power-sales-and-markets/rtos-and-isos.

36. ENERGY PRIMER, *supra* note 32, at 61.

37. *See id*.

(i.e., making sure the lights will go on each time a flip is switched).[38] This Note focuses on regional transmission planning and energy market management in the context of creating a Western RTO.

1. Regional Transmission Planning

Regional transmission planning is a three-step process.[39] First, utilities propose to the RTO potential transmission line projects that benefit a large portion of the grid.[40] Second, the RTO selects projects that sufficiently benefit its footprint.[41] These selected projects get to allocate their costs across the region.[42] That is, instead of the utility that owns the new transmission line paying the entire cost of the project, the cost of the project will be distributed among the beneficiaries of the new transmission line. Third, the RTO determines how the costs will be allocated.[43] The general principle established by FERC in determining cost allocation is that "[t]he cost of transmission facilities must be allocated to [utilities] within the [RTO's footprint] in a manner that is at least roughly commensurate with estimated benefits."[44]

In measuring the benefits of a potential transmission line, RTOs may consider the new line's effects on the grid's reliability, the economic opportunities the new line offers, and whether the new line addresses public policy concerns.[45] The public policy category serves as a catch-all and enables RTOs to approve new transmission projects for cost allocation that promote the development of renewable energy generators.[46] For example, a transmission line that would connect an area with abundant wind power potential to a heavily populated area might be approved because it would advance many states' policies to combat climate change by decreasing carbon emissions.[47]

The purpose of regional transmission planning is to stimulate the creation of transmission lines with regional benefits.[48] FERC passed Order 890 in 2007[49]

38. Ashira Pelman Ostrow, *Grid Governance: The Role of a National Network Coordinator*, 35 CARDOZO L. REV. 1993, 2003 (2014).

39. JOSEPH H. ETO & GIULIA GALLO, REGIONAL TRANSMISSION PLANNING: A REVIEW OF PRACTICES FOLLOWING FERC ORDER NOS. 890 AND 1000 (Lawrence Berkeley Nat'l Lab'y, 2017) at 2.

40. *Id.*

41. *Id.*

42. *Id.*

43. *Id.*

44. *Transmission Planning and Cost Allocation by Transmission Owning and Operating Public Utilities*, Order No. 1000, 136 FERC ¶ 61,051 (July 21, 2011) at ¶ 622.

45. *Id.* at ¶ 11 ("This plan will identify transmission facilities that more efficiently or cost-effectively meet the region's reliability, economic and Public Policy Requirements.").

46. *See* Klass, *supra* note 26 ("One of the purposes of [the public policy basket] is to prioritize lines to serve renewable energy goals and make those lines more affordable.").

47. *See id.*

48. Alexandra B. Klass et al., *Grid Reliability Through Clean Energy*, 74 STAN. L. REV. 969, 1024–1026 (2022) ("Regional planning . . . recognized that transmission lines often generate substantial nonlocal benefits.").

49. *Preventing Undue Discrimination and Preference in Transmission Service*, 72 Fed. Reg. 12, 266 (Mar. 15, 2007) (codified at 18 C.F.R. pts. 35 & 37); *Transmission Planning and Cost Allocation by*

and Order 1000 in 2011,[50] which established the rules surrounding regional transmission planning. Regional transmission planning has seen mixed results, with some regions actively using it to improve their grids and other regions not using the function at all.[51] For example, the Midcontinent Independent System Operator ("MISO") has very effectively used its regional transmission planning recently to approve an enormous group of transmission lines.[52] In contrast, the non-RTO regional transmission planning authorities have not approved a single project using regional transmission planning.[53] Regional transmission planning will be discussed further in Part IV.A.

2. Energy Markets

RTOs also manage energy markets within their regions.[54] Energy markets come in varying shapes and sizes. For example, most RTOs have separate energy markets for different time scales. Day-ahead markets allow utilities to trade energy the day before its use, enabling utilities to purchase and sell energy in anticipation of their projected needs.[55] In contrast, energy imbalance markets allow utilities to trade energy minutes before its deployment.[56] These markets are used to correct for small real-time imbalances between a utility's projected energy needs and its actual needs.[57]

Furthermore, energy markets exist for different commodities.[58] The aforementioned day-ahead and imbalance markets sell energy in the form of electricity, which is used by consumers.[59] There are also capacity markets in which utilities pay generators for commitments to provide energy in the future, thereby ensuring that there will be enough generation available to cover the

Transmission Owning and Operating Public Utilities, Order No. 1000, 136 FERC ¶ 61,051 (July 21, 2011).

50. *Id.*

51. ROB GRAMLICH ET AL., TRANSMISSION PLANNING FOR THE 21ST CENTURY: PROVEN PRACTICES THAT INCREASE VALUE AND REDUCE COSTS 15, 17 (The Brattle Group & Grid Strategies LLC, 2021).

52. Ethan Howland, *MISO Board Approves $10.3B Transmission Plan to Support 53 GW of Renewables*, UTIL. DIVE (July 26, 2022), https://www.utilitydive.com/news/miso-board-transmission-plan-midcontinent-renewables/628108/; *infra* Part IV.A.

53. GRAMLICH ET AL., *supra* note 51, at 15, 17.

54. ENERGY PRIMER, *supra* note 32, at 62.

55. *Id.* at 62 ("In day-ahead markets, the schedules for supply and usage of energy are compiled hours ahead of the beginning of the operating day. The RTO/ISO then runs a computerized market model that matches buyers and sellers throughout the market footprint for each hour throughout the day.")

56. *Id.* at 63 ("The real-time market is used to balance the differences between the day-ahead scheduled amounts of electricity cleared in the day-ahead market and the actual real-time load.")

57. *Id.*

58. *Id.* ("The RTO/ISO markets include the day-ahead energy market, real-time energy market (sometimes called a balancing market), capacity markets (designed to ensure enough generation is available to reliably meet peak power demands), ancillary services markets, and financial transmission rights markets (markets for congestion revenue contracts for hedging the cost of limited transmission capability).").

59. *Id.*

utilities' loads at that future time.[60] However, capacity markets do not actually sell energy, so when the utility wants to buy energy at that future time, it will have to do so through a separate transaction.[61] Additionally, there are markets for ancillary services, which are services used by utilities to ensure their portion of the grid operates correctly and reliably.[62] For example, generators can sell a portion of their unused capacity—energy they could generate but will not—as a reserve to be accessed if something were to go wrong with another generator.[63]

Utilities do not solely rely on markets to meet their energy demands. They can generate their own electricity, although some states prohibit transmission-owning utilities from owning generation facilities.[64] Utilities can also purchase energy through bilateral transactions, in which a generator sells electricity directly to a utility.[65] In regions without RTOs, utilities largely do not have access to markets, although two markets have recently sprung up in the West, which will be discussed further in the following Part.

II. WESTERN GRID MANAGEMENT

A. CAISO: California's RTO

CAISO is California's RTO. Its footprint covers almost all of California's electric transmission grid, along with a small portion of southwest Nevada, as can be seen on the map in Part I.B. It is managed by a five-member Board of Governors selected by the governor of California and confirmed by the California Senate.[66] Each CAISO governor has a three-year term and the terms are staggered.[67] This corporate structure effectively gives California's government control over CAISO's policy decisions.[68]

CAISO produces an annual regional transmission plan in which the RTO analyzes potential reliability, economic, and public policy transmission

60. *Id.*; *What is Generation Capacity*, U.S. DEP'T OF ENERGY, https://www.energy.gov/ne/articles/what-generation-capacity.

61. *See* Adam James, *Explainer: How Capacity Markets Work*, ENERGY NEWS NETWORK (June 17, 2013), https://energynews.us/2013/06/17/explainer-how-capacity-markets-work/ ("The basic idea is that power plants receive compensation for capacity, or the power that they will provide at some point in the future.").

62. ENERGY PRIMER, *supra* note 32, at 77 ("Ancillary services are functions performed by electric generating, transmission, and system-control equipment to support the transmission of electric power from generating resources to load. RTOs procure or direct the supply of ancillary services to maintain the reliability of the transmission system.").

63. *Id.* at 77 ("[A]ncillary services . . . include compensation to generators for making available unloaded operating capacity that can be converted into electrical energy when needed, such as to meet system contingencies caused by unexpected outages.").

64. *Id.* at 58.

65. *Id.*

66. CAISO, AMENDED & RESTATED BYLAWS OF CALIFORNIA INDEPENDENT SYSTEMS OPERATOR CORPORATION 2 (2021).

67. *Id.*

68. *See id.*

projects.[69] CAISO analyzes each category of project sequentially, although the process allows CAISO to revisit projects analyzed in an earlier stage if it finds a new project can serve the same purpose as the earlier project but with additional benefits.[70] Thus, CAISO's transmission planning resembles multi-benefit analysis, a function that will be discussed further in Part IV.A.[71]

CAISO also manages an energy imbalance market, as described above in Part I.B.2., which operates across most of the West, called the Western Energy Imbalance Market (WEIM). WEIM was launched in 2014 and currently has nineteen participating utilities across Washington, Idaho, Montana, Oregon, Wyoming, Utah, Nevada, New Mexico, and Arizona.[72] Three more members (two in Arizona and one in New Mexico) plan to join the market in 2023.[73] After that, WEIM will cover nearly 80 percent of all electricity demand in the western United States.[74]

WEIM has been successful economically and environmentally. As of October 2022, the market has provided almost $2.9 billion worth of total benefits—measured as the difference between market energy costs and estimated energy costs if there were no market[75]—to its participants, with each member individually benefitting.[76] More specifically, WEIM has allowed utilities to decrease the amount of reserve energy they carry (i.e., the amount of extra energy the utility can access to ensure demand always matches supply), and thereby decrease their costs.[77] WEIM has also helped decarbonization efforts, reducing greenhouse gas emissions by 700,000 metric tons of carbon.[78] These environmental benefits derive from the market's ability to efficiently move renewable energy from where it can be produced to where it is most needed, which has a multiplicative effect of both increasing renewable energy deployment today and promoting the creation of new renewable generators in the future.[79]

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69. CAISO, 2021-2022 TRANSMISSION PLAN 2 (2022).

70. *Id.*

71. *See id.*

72. *See About*, WESTERN ENERGY IMBALANCE MARKET, https://www.westerneim.com/Pages/About/default.aspx (last visited May 29, 2023).

73. *Id.*

74. Press Release, CAISO, Western Energy Imbalance Market surpasses $2 billion in benefits (Apr. 21, 2022), http://www.caiso.com/Documents/Western-Energy-Imbalance-Market-Surpasses-2-Billion-in-Benefits.pdf.

75. *See* CAISO, WESTERN ENERGY IMBALANCE MARKET BENEFITS, THIRD QUARTER 3 (2022).

76. *See* CAISO, *supra* note 74; *Benefits*, WESTERN ENERGY IMBALANCE MARKET, https://www.westerneim.com/Pages/About/QuarterlyBenefits.aspx (last visited May 29, 2023).

77. *How it works*, WESTERN ENERGY IMBALANCE MARKET, https://www.westerneim.com/Pages/About/HowItWorks.aspx (last visited May 29, 2023) ("Reduced costs for participants by lowering the amount of costly reserves utilities need to carry, and more efficient use of the regional transmission system.").

78. CAISO, *supra* note 74.

79. *How it works*, *supra* note 77 ("Reduced carbon emission and more efficient use and integration of renewable energy. For instance, when one utility area has excess hydroelectric, solar or wind power, the ISO can deliver it to customers in California or to another participant. Likewise, when the ISO has

CAISO also has plans to create a regional day-ahead market, called the Extended Day-Ahead Market (EDAM), and is in the process of receiving stakeholder input regarding how the market should be designed.[80] The EDAM is estimated to create another $95 to $400 million worth of benefits to participants each year.[81] Thus, California has made recent strides in regionalizing the western grid, but the West's regional connectivity essentially starts and ends with these market-related efforts.

B. The Rest of the West

Outside of CAISO and its imbalance markets, the West lacks significant regional coordination. For example, across the West, forty separate organizations called "balancing authorities" maintain exact equilibrium between energy demand and supply in their respective areas.[82] Meanwhile, CAISO and the other RTOs serve as single balancing authorities for their entire footprints.[83] The effect of this lack of regionality is that utilities inefficiently develop their portion of the grid with a focus on local benefits rather than developing transmission lines with multitudinous benefits for large swaths of the country.[84]

In the last decade, two real-time balancing markets have emerged in the West: WEIM, as described above, and the Western Energy Imbalance Service (WEIS) managed by the Southwest Power Pool (SPP).[85] WEIS began operations in February 2021 and is similar to WEIM.[86] As of October 2022, WEIS has seven participating utilities with three more joining in 2023.[87] The market covers all of SPP's footprint (North Dakota, South Dakota, Nebraska, Kansas, Oklahoma, and parts of Iowa, Missouri, Arkansas and northern Texas) as well as most of Colorado, Wyoming, and parts of Montana.[88]

The main difference between WEIS and WEIM is that SPP operates in the Eastern Interconnection while CAISO operates in the Western Interconnection.

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excess solar energy, it can help meet demand outside of California that otherwise would be met by more expensive – and less clean – energy resources.").

80. Jason Fordney, *CAISO Developing Straw Proposal for Extended Day-Ahead Market*, NEWSDATA (Mar. 25, 2022), https://www.newsdata.com/clearing_up/supply_and_demand/caiso-developing-straw-proposal-for-extended-day-ahead-market/article_ffe6c0e8-ac84-11ec-9059-f3acf531cc8b.html; Milos Bosanac, *Revised EDAM Straw Proposal Continues to Progress*, CAISO (Aug. 26, 2022), http://www.caiso.com/about/Pages/Blog/Posts/Revised-edam-straw-proposal-continues-to-progress.aspx.

81. CAISO, EXTENDED DAY-AHEAD MARKET REVISED STRAW PROPOSAL 6 (2022).

82. ENERGY STRATEGIES, LLC, *supra* note 12, at 8.

83. ENERGY PRIMER, *supra* note 32, at 61.

84. *See* Klass et al., supra note 48, at 1024 ("[T]ransmission planning continues to be done primarily at the local level . . . . The result is that we are not investing enough in transmission, and the transmission built primarily serves local reliability needs.").

85. *Western Energy Imbalance Service Market*, SW. POWER POOL, https://spp.org/western-services/weis/ (last visited May 29, 2023).

86. *See id.*

87. *Id.*

88. *Id.*

Thus, CAISO's real-time market operates within an electric grid that is already well-established and well-connected, whereas SPP's real-time market operates both in the Eastern and Western Interconnections, which presents several engineering obstacles.[89] This issue will be further discussed in Part V.C.

III. *CPUC v. FERC* ASKS WHETHER CAISO MEMBERSHIP IS WORTH ITS COST

A. The Case

The Ninth Circuit recently upheld a rule enabling Californian utilities to charge retail customers extra for the utilities' participation in CAISO.[90] The case, *CPUC v. FERC*, revolves around Order 679, a FERC regulation passed in 2006.[91] Order 679 established "incentive adders," which allow utilities to increase energy prices slightly if they participate in an RTO.[92] FERC decides on a case-by-case basis whether to award the incentive adder to a utility based on the circumstances surrounding a utilities participation in an RTO.[93] FERC passed Order 679 in response to decreasing investment in transmission facilities despite an increasing amount of energy consumed.[94] The agency believed that utilities could better engage in transmission development through RTOs and their transmission planning processes.[95]

In March 2022, the Ninth Circuit Court of Appeals affirmed FERC's decision to grant the incentive adder to the northern California electrical utility, Pacific Gas and Electric ("PG&E"), for participating in CAISO.[96] As a result of this decision, PG&E was permitted to increase its rate of return, thereby increasing energy costs for Californians.[97]

From the passage of Order 679 in 2006 to 2014, PG&E annually requested the incentive adder due to its participation in CAISO.[98] Each of those years,

89. *See* Jeff Stanfield, *Across the Divide: Mountains of Obstacles Confront SPP Push to Bridge East, West*, S&P GLOBAL (June 24, 2020), https://www.spglobal.com/marketintelligence/en/news-insights/latest-news-headlines/across-the-divide-mountains-of-obstacles-confront-spp-push-to-bridge-east-west-56629390.

90. CPUC v. FERC, 29 F.4th 454, 468 (9th Cir. 2022).

91. *Id.* at 459.

92. *Id.*; *Promoting Transmission Investment through Pricing Reform*, Order No. 679, 116 FERC ¶ 61,057 (2006) at ¶ 4 ("[T]he Final Rule provides additional incentives . . . to any transmitting utility . . . that joins a Transmission Organization.").

93. *Id.* at ¶ 326 ("However, we are not persuaded that we should create a generic adder for [membership in an RTO], but instead will consider the appropriate . . . when public utilities request this incentive. The decision in this rule to consider specific incentives on a case-by-case basis fulfills the Congressional mandate to the Commission.").

94. *Id.* at ¶ 10 ("[I]nvestment in transmission facilities in real dollar terms declined significantly between 1975 and 1998. . . . This decline in transmission investment in real dollars has occurred while the electric load using the nation's grid more than doubled.").

95. *Id.* at ¶ 332 ("A regional planning process is very important to meeting regional transmission needs, and, we believe it will produce benefits for customers.").

96. *CPUC v. FERC*, 29 F.4th at 468.

97. *See id.*

98. *Id.* at 459.

FERC summarily accepted PG&E's request.[99] But in 2014 and 2015, the CPUC protested PG&E's incentive adder requests.[100] CPUC claimed that PG&E's transfer of operational control of its transmission facilities to CAISO was mandated by California law, so the incentive adder was not appropriate: no incentive is needed to induce what is required.[101]

FERC rejected the CPUC's protest and granted PG&E's incentive adders.[102] The CPUC then petitioned the Ninth Circuit for review,[103] claiming that FERC's decision was "arbitrary and capricious."[104] In 2018, the Ninth Circuit held in the CPUC's favor, finding that FERC was obligated to conduct a case-by-case review and did not have the power to summarily accept PG&E's request.[105] The Ninth Circuit remanded the case back to FERC to complete the required case-by-case analysis before rewarding the incentive adder.[106]

On remand, the court held that the statutes the CPUC pointed to as mandating PG&E's membership in CAISO did not do so, and thus FERC's decision was not arbitrary, capricious, or contrary to California law.[107] First, Section 330(m) of the California Public Utility Code declares that utilities "should" give CAISO control of their transmission facilities but does not use the mandatory "shall" or "must."[108] Second, Section 365(a) of the California Public Utility Code directs the CPUC to "encourage" the utilities to join CAISO, but this again creates no mandate for the utilities beyond encouragement.[109] Lastly, the CPUC argued that in its 1998 decision approving the utilities' relationships with CAISO, it claimed the right to review any decision by the utility to withdraw from CAISO pursuant to Section 851 of the California Public Utilities Code.[110] However, the scope of Section 851 is limited to the transfer of ownership of utility-owned facilities, not the transfer of operations.[111] Thus, the Ninth Circuit concluded that no California law mandated California utilities to join CAISO, and so FERC's decision to reward the incentive adder was proper.[112]

The takeaway from *CPUC v. FERC* is simple: Californians are currently paying extra on their utility bills so that their utilities remain members of CAISO, and Californians will continue to pay extra until the California legislature passes

99. *Id*. at 459–60.
100. *Id*. at 460.
101. *Id*.; *see* Cal. Pub. Util. Code § 330(m); Cal. Pub. Util. Code § 365(a); Cal. Pub. Util. Code § 851.
102. *CPUC v. FERC*, 29 F.4th at 460.
103. *CPUC v. FERC*, 29 F.4th at 460; CPUC v. FERC, 879 F.3d 966 (9th Cir. 2018) (*CPUC I*).
104. *See* Administrative Procedure Act, 5 U.S.C. § 706 (1966) (prohibiting agency actions that are "arbitrary, capricious, an abuse of discretion, or otherwise not in accordance with law").
105. *CPUC v. FERC*, 29 F.4th at 460–61; *CPUC I*, 879 F.3d at 979–80.
106. *CPUC v. FERC*, 29 F.4th at 460–61.
107. *Id*. at 466–68.
108. *Id*. at 466; Cal. Pub. Util. Code § 330(m).
109. *CPUC v. FERC*, 29 F.4th at 466; Cal. Pub. Util. Code § 365(a).
110. *CPUC v. FERC*, 29 F.4th at 466; *see* Cal. Pub. Util. Code § 851.
111. *CPUC v. FERC*, 29 F.4th at 466–67; *see* Cal. Pub. Util. Code § 851.
112. *CPUC v. FERC*, 29 F.4th at 467–68.

a law mandating California utilities to participate in an RTO. The holding poses the question: is CAISO worth the cost of the incentive adder?

B. CAISO's Benefits Outweigh the Costs

CAISO is worth its cost to Californians due to the myriad benefits RTOs provide. The main such benefits included promoting renewable energy generation, enhancing grid resilience, and decreasing energy costs. Furthermore, a larger, West-wide RTO would maximize these benefits, as will be discussed in Part IV.

RTOs and their markets promote renewable energy generation in three ways: by favoring low-cost generation, decreasing renewable curtailment, and increasing reliable deployment of renewables. First, RTOs promote renewable energy generation by favoring low-cost generation through market procedures. Energy markets select which generators to deploy based on the cost that generator has bid into the market.[113] Once the generators have bid into the market, the RTO organizes the bids from cheapest to most expensive and selects each of the cheapest sources until energy demand has been met.[114] Each market buyer then must pay the price of the most expensive energy source that cleared the RTO's auction.[115] While this process is indifferent to the energy sources it ends up selecting, it is generally favorable to renewable generation because renewable energy is now one of the cheapest forms of energy at market.[116] In fact, the cost of renewables continues to fall, so this factor will increasingly favor renewables.[117]

Second, RTOs promote renewable energy by spreading surplus renewable energy across a region, thereby reducing curtailment.[118] Solar and wind energy production depends on variables that cannot be controlled, like how much the sun shines or the wind blows. Carbon-based generators, on the other hand, can produce as much or as little energy as needed to meet energy demand. Sometimes, regions produce more clean energy than needed to meet their demand, and as a result, renewable energy production must be reduced or "curtailed" so energy supply can match energy demand.[119] RTOs decrease the need for curtailment by delivering what would otherwise be superfluous energy

113. Shelley Welton, *Electricity Markets and the Social Project of Decarbonization*, 118 COLUM. L. REV. 1067, 1081 (2018).

114. *Id.*

115. *Id.*

116. *See* James Ellsmoor, *Renewable Energy Is Now The Cheapest Option – Even Without Subsidies*, FORBES (June 15, 2019), https://www.forbes.com/sites/jamesellsmoor/2019/06/15/renewable-energy-is-now-the-cheapest-option-even-without-subsidies/?sh=4e0b37165a6b.

117. *See id.*

118. ENERGY STRATEGIES, LLC, *supra* note 12, at 6–7.

119. *Id.* at 7.

to areas with energy deficits.[120] Thus, through RTOs and regional connectivity, renewable energy capacity can be maximally utilized.[121]

Third, RTOs promote clean energy by deploying it more reliably.[122] Just as the variability of renewable generation sometimes leads to the production of too much energy leading to curtailment, it also sometimes leads to the production of too little energy due to its intermittency.[123] Thus, if a portion of the grid was too dependent on renewables, it could risk not being able to provide energy to its consumers reliably.[124] However, because an RTO's footprint expands over a large region, sunny areas can compensate for the lack of solar energy in cloudy areas, and windy areas can compensate for the lack of wind energy in still areas.[125] In other words, the large size of an RTO's footprint incentivizes the creation of more renewable generators by mitigating fears of less reliable energy production.[126]

RTOs also increase grid resilience by enabling regional coordination.[127] The grid is always vulnerable because it requires constant balance between demand and supply.[128] One unanticipated event, such as a wildfire or a winter storm, can lead to system failure.[129] While a non-RTO-participating utility must rely on its own resources to manage strain from an unforeseen dilemma, RTOs can shift resources from around the region to manage the problem.[130] Thus, a grid managed by an RTO is more resilient because deficits in one area can be made up for by surpluses in another.[131]

Additionally, RTOs make electrical transmission grids more resilient through regional transmission planning.[132] Reliability is one of the three reasons that a transmission project may be selected through transmission planning. If a

120. *Id.*

121. *See id.*

122. *See id.*

123. *See* Robert Fares, *Renewable Energy Intermittency Explained: Challenges, Solutions, and Opportunities*, SCI. AM. (Mar. 11, 2015), https://blogs.scientificamerican.com/plugged-in/renewable-energy-intermittency-explained-challenges-solutions-and-opportunities/ ("Solar energy is inherently only available during daylight hours . . . . In addition to daily fluctuations caused by sunrise and sunset, the output from solar panels can also change suddenly due to clouds."). *But see* Amory B. Lovins & M. V. Ramana, *Three Myths About Renewable Energy and the Grid, Debunked*, YALE ENVIRONMENT 360 (Dec. 9, 2021), https://e360.yale.edu/features/three-myths-about-renewable-energy-and-the-grid-debunked ("The myths boil down to this: Relying on renewable sources of energy will make the electricity supply undependable . . . . In reality, it is entirely possible to sustain a reliable electricity system based on renewable energy sources . . . .").

124. *But see* Klass et al., *supra* note 48, at 1070 ("The grid cannot remain reliable under conditions of climate change without a commitment to decarbonization through clean energy.").

125. *See* ENERGY STRATEGIES, LLC, *supra* note 12, at 7–8.

126. *See id.*

127. *Id.* at 6–8.

128. *Id.*

129. *See* Peter Cramton, *Lessons From the 2021 Texas Electricity Crisis*, UTIL. DIVE (Mar. 23, 2021), https://www.utilitydive.com/news/lessons-from-the-2021-texas-electricity-crisis/596998/.

130. ENERGY STRATEGIES, LLC, *supra* note 12, at 6–8.

131. *Id.*

132. *Id.*

utility proposes to build a transmission line within its area that could increase resilience throughout its RTO's entire footprint, the RTO could approve the cost of that line to be split among the utilities in the region, thereby making an otherwise too costly transmission line affordable.[133] Thus, RTOs incentivize the development of transmission projects that increase resilience within a region.

As a final benefit, RTOs decrease the cost of energy through market efficiency.[134] Non-RTO-participating utilities (excluding those utilities engaged in WEIM or WEIS) fulfill their energy load by either generating energy from facilities they own or by purchasing energy in bilateral transactions.[135] Thus, their energy prices are subject to little to no competition.[136] In contrast, RTO-participating utilities have the additional benefit of participating in energy markets in which the RTO efficiently sets energy prices based on demand, supply, and congestion of transmission lines.[137] As such, energy prices for utilities in RTOs are properly constrained by market forces.[138] Additionally, RTOs decrease transactional costs by removing inefficient "pancaked rates," named for the stackable fees accrued when a power purchaser must pay each utility whose transmission lines their electricity runs through.[139]

Simply by being an RTO, CAISO greatly benefits the citizens of California, and so is worth the cost of the incentive adder. However, CAISO is limited compared to its peers due to its relatively small footprint.[140] CAISO operates over a small area compared to other RTOs, as can be seen on the map in Part I.B.[141] The larger an RTO is, the greater ability it has to take advantage of economic efficiencies, as energy can be moved across longer distances from locations with lower energy costs to locations with higher energy demand.[142] Large RTOs can also make better forward-looking plans to build transmission

133. Utilities that do not participate in an RTO still must engage in regional transmission planning with their neighboring utilities but do so without much transparency. Furthermore, non-RTO transmission planning has thus far failed to lead to cost-allocated projects. *See* GRAMLICH ET AL., *supra* note 51, at 15, 17.

134. *See* ENERGY STRATEGIES, LLC, *supra* note 12, at 6–7 ("RTOs use market-based mechanisms to optimize dispatch of electricity generation resources to meet demand, resulting in lower costs by infusing competition into the energy market and maximizing use of the transmission system."); *but see State Electricity Profiles*, U.S. ENERGY INFO. ADMIN. (last updated Nov. 10, 2022), https://www.eia.gov/electricity/state/ (indicating that energy prices in some RTOs (e.g., ISO-NE and CAISO) are very high.).

135. ENERGY PRIMER, *supra* note 32, at 58–61.

136. *See id*.

137. *Id*. at 62–66.

138. *See id*.

139. *Regional Transmission Organizations*, Order No. 2000, 89 FERC ¶ 61,285 (1999) at 516 ("A main reason that an RTO can expand the marketplace for generation to a large region is that an RTO can implement non-pancaked rates for each transaction. A wider area served by a single rate means more generation is economically available to any customer which means greater competition for energy.").

140. *See* ENERGY PRIMER, *supra* note 32, at 59 (map of RTOs' footprints (also in Part I.B)).

141. *See id*.

142. *See, e.g.*, Ethan Howland, *MISO Board Approves $10.3B Transmission Plan to Support 53 GW of Renewables*, UTIL. DIVE (July 26, 2022), https://www.utilitydive.com/news/miso-board-transmission-plan-midcontinent-renewables/628108/.

lines with the most total benefits to the region at the lowest cost.[143] Furthermore, they can connect the regions of the country best fit for solar and wind production with portions of the country that most desire renewable energy sources and demand the largest quantity of energy.[144]

However, RTOs often favor industry incumbents, such as natural gas utilities or coal-burning generation facilities, over grid transformation in light of climate change.[145] In this way, CAISO's small size and control by the governor and state legislature actually promote climate-related grid transformation.[146] Yet, connecting large swaths of the country to more efficiently share energy and connecting new renewable energy sources to the grid remain crucial to combating climate change.[147] Californians would benefit from their utilities participating in a larger RTO, so long as all the parties involved agree on a clean-energy friendly governance structure.[148] Currently, CAISO exists on an electrical island. It can only take advantage of efficiencies available within the borders of California and a sliver of Nevada, aside from its nascent energy markets. Meanwhile, the utilities in the rest of the West mostly manage their affairs without coordination, unable to cost-effectively build an electrical transmission grid conducive to clean energy production.[149] There is a golden opportunity for improved coordination between California and the rest of the West that would benefit all parties involved and further justify the Ninth Circuit's decision in *CPUC v. FERC*.[150]

IV. CALIFORNIA SHOULD FACILITATE THE CREATION OF A WESTERN RTO

Climate change is already affecting daily life in California.[151] Joining a western RTO would empower the state to best confront its effects by enhancing regional transmission planning, promoting clean energy generation, and improving grid resilience. Additionally, creating a western RTO would have positive economic effects on the entire West.

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143. *See, e.g.*, *id*.

144. *See, e.g.*, *id*.

145. Welton, *supra* note 14, at 209–10, 253 ("In aggregate, this research suggest that these processes (outside California) excel at producing reforms that serve incumbents' business interests but struggle to effectuate reforms that enhance competition or shrink the demand for electricity.").

146. *Id*. at 251–52.

147. *See id*. at 259, 264 ("The goal for reformers should not be to abandon the regional format . . . . [T]he growing policy mandate to transition to clean energy demands even greater regional cooperation on climate.").

148. *See id*. at 265 ("The answer, then, is not the scrap RTOs but to transform them into regional entities capable of accomplishing evolving public objectives.").

149. *See* ENERGY PRIMER, *supra* note 32, at 72 ("[The West] contain[s] over 30 [balancing authorities] responsible for dispatching generation, procuring power, operation the transmission grid reliably, and maintaining adequate reserves.").

150. *See* CPUC v. FERC, 29 F.4th 454, 468 (9th Cir. 2022).

151. *See generally* GABRIEL PETEK, LEGIS. ANALYST'S OFF., CLIMATE CHANGE ISSUES ACROSS CALIFORNIA (2022).

A. Enhanced Regional Transmission Planning

A western RTO would have greater transmission planning capabilities than CAISO currently does. For instance, more potential transmission projects could be selected for cost allocation, and the cost of those new transmission projects could be allocated across more benefitting parties. Other multi-state RTOs serve as examples of the benefits of effective regional transmission planning over a larger footprint. MISO, the RTO whose footprint stretches from Minnesota to Louisiana (see the map in Part I.B.), recently engaged in very successful regional transmission planning, approving a $10.3 billion tranche of new transmission projects that crisscross the Midwest.[152] The group of projects consists of eighteen new transmission lines that are estimated to enable the addition of ninety gigawatts of renewable energy to the grid by 2039.[153] That would make up around eight percent of the entire country's generation capacity.[154]

MISO was able to get this bundle of projects approved because they conducted a multi-benefit analysis of the proposed new transmission lines before determining a cost-benefit ratio.[155] Multi-benefit analysis consists of an RTO considering a proposed transmission line's reliability, economic, and public policy (i.e., decarbonization) benefits together against the cost of the project. The lesser alternative approach would be siloing a project into one of the three baskets and potentially ignoring the total benefits a new transmission line could bring to a region.[156]

Through multi-benefit analysis, MISO determined that the overall benefits from the new transmission lines were estimated to be between $37.3–69.1 billion, while the cost was only $14.1–16.8 billion.[157] If MISO had considered each of the categories of benefits separately, they might have concluded that the costs of the project outweighed the benefits.[158] This would have prevented them from allocating the cost of the projects across the region and therefore would likely have prevented the projects from being built.[159]

As it stands, the western transmission planning organizations have not effectively used regional transmission planning to develop valuable new regional

152. Howland, *supra* note 52.

153. *Id.*

154. *See Electricity generation, capacity, and sales in the United States*, U.S. ENERGY INFO. ADMIN. (last updated July 5, 2022), https://www.eia.gov/energyexplained/electricity/electricity-in-the-us-generation-capacity-and-sales.php (At the end of 2021, the United States had 1,143.8 GW of total utility scale electricity generating capacity and about 32.9 GW of small-scale solar electricity generating capacity, totaling 1,176.7 GW. 1,176.7 GW/ 90 GW = about 8 percent).

155. ROB GRAMLICH, GRID STRATEGIES LLC, ENABLING LOW-COST CLEAN ENERGY AND RELIABLE SERVICE THROUGH BETTER TRANSMISSION BENEFITS ANALYSIS 2 (2021) ("Multi-value transmission planning sums the multiple benefits of proposed transmission, as opposed to many regions' standard practice of putting transmission projects into economic, reliability, or public policy siloes and only evaluating benefits within that silo, ignoring the project's other benefits.").

156. *See id*.

157. *Id.* at 8.

158. *See id*. at 1.

159. *See id*.

transmission lines, partially as a result of not incorporating multi-benefit analysis in their transmission planning process (notwithstanding CAISO's quasi-multi-benefit analysis approach described in Part II.A). This failure is most notable outside of CAISO's footprint. NorthernGrid is the regional transmission planning entity for Washington, Oregon, Idaho, and most of Nevada, Utah, Wyoming, and Montana,[160] and WestConnect is the regional transmission planning entity for Arizona, New Mexico, Colorado, and parts of Wyoming, South Dakota, and Southern California.[161] Since the creation of NorthernGrid and WestConnect, neither entity has employed multi-benefit analysis, nor have they approved a single project for regional cost allocation.[162] Meanwhile, CAISO uses something like multi-benefit analysis but has approved negligible amounts of transmission project costs for regional cost allocation.[163]

For California and the rest of the West to follow in the footsteps of MISO, they should mimic MISO's structure and processes. MISO has succeeded because it has a large footprint and uses multi-benefit analysis in its regional transmission planning. Likewise, California should conduct regional transmission planning together under the umbrella of a western RTO, thereby enlarging its grid operator's footprint. It should also use multi-benefit analysis to capture the most beneficial and extensive projects. CAISO's regional transmission planning is currently limited by its footprint's relatively small size. The effect of a larger footprint size can be seen in MISO's successful regional transmission planning. MISO's footprint covers an entire column of the continental United States from its northern to southern border.[164] As a result, MISO has more transmission projects that it can consider through regional transmission planning, and the cost of those new transmission projects will not be unduly saddled on any one party.

CAISO's regional transmission planning process, in its current form, is ineffective compared to the regional transmission planning of large RTOs like MISO. For example, when considering the benefits and costs through regional transmission planning of a new transmission line that connects the large energy demand of Los Angeles to the abundant solar resources in Arizona and New Mexico, CAISO: (1) cannot consider the benefits to Arizona and New Mexico utilities; and (2) cannot allocate the costs of the project to the Arizona and New Mexico utilities because those utilities are not within CAISO's footprint. Such a transmission line should be built due to its potential reliability, economic, and decarbonization benefits, and thus a western RTO with its increased potential to

160. *Regions Map Printable Version Order No. 1000*, FERC (Nov. 9, 2021), https://www.ferc.gov/media/regions-map-printable-version-order-no-1000.

161. *Id.*

162. GRAMLICH ET AL., *supra* note 51, at 15, 17.

163. *Id.* at 17. As of October 2021, CAISO has designated $3.6 million in transmission costs specifically for reliability projects for regional cost allocation.

164. *RTOs and ISOs*, FERC (last updated May 3, 2022), https://www.ferc.gov/power-sales-and-markets/rtos-and-isos.

approve multi-benefit transmission lines should be created to ensure the new transmission line gets built.

B. More Clean Energy

A western RTO would also promote clean energy development by connecting California's large demand for renewables with the abundant untapped potential for renewable generation across the west. California is one of the country's leaders in clean energy.[165] Over 50 percent of the state's electricity comes from clean energy sources,[166] and in 2021, the CPUC ordered California's utilities to procure 11.5 gigawatts of new renewable energy between 2023 and 2026—enough to power 2.5 million homes.[167] Furthermore, California has one of the most stringent Renewable Portfolio Standards (RPS) in the country.[168] Its RPS requires that 44 percent of the energy consumed in the state be renewable by 2024, 52 percent by 2027, 60 percent by 2030 and 100 percent clean energy by 2045.[169] Ten other states, Washington, D.C., and Puerto Rico and Guam have set a date by which 100 percent of generation must come from renewables.[170] Another nineteen states have less stringent RPSs, while 20 states do not have an RPS at all.[171]

Thus, California has a large demand for clean energy and the western states have great potential to provide clean energy to meet that demand. In the United States, the Southwest (Arizona, New Mexico, and Nevada) offers the greatest potential for solar energy,[172] and the Rocky Mountains states (Montana, Wyoming, and Colorado) and the Heartland (North and South Dakota, Nebraska, and Kansas) offer the greatest potential for wind energy.[173] Moreover, as was discussed in Part III.B, RTOs create a friendly environment both for current renewable generators and future renewable projects. While the Heartland states are already part of SPP's and MISO's footprints, the solar potential from the Southwest and the wind potential from the Rockies remain outside the footprint of an RTO.[174] As such, creating a western RTO would promote the creation of new renewable generators in the county's most auspicious regions.[175]

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165. *See* OFF. OF GOVERNOR GAVIN NEWSOM, *supra* note 5.
166. *See* CAL. ENERGY COMM'N, *supra* note 4.
167. CAL. PUB. UTILITIES COMM'N, *supra* note 2.
168. NAT'L CONF. OF STATE LEGISLATURES, *supra* note 2.
169. *Id.*
170. *Id.*
171. *Id.*
172. NAT'L RENEWABLE ENERGY LAB'Y, RENEWABLE ENERGY TECHNOLOGY RESOURCE MAPS AND TECHNICAL POTENTIAL FOR THE UNITED STATES 4–5 (2012).
173. *Id.* at 6.
174. FERC, *supra* note 164.
175. *See* ENERGY STRATEGIES, LLC, *supra* note 12, at 3 (estimating that the creation of a western RTO would lead to investment in .84–4.4 GW worth of new renewable generation).

C. Improved Grid Resilience

A western RTO would improve California's grid resilience, thereby bolstering the state's ability to deal with worsening wildfires and extreme weather events resulting from climate change.[176] Both wildfires and heatwaves put intense pressure on the electrical grid: wildfires incapacitate portions of electrical infrastructure, and heatwaves cause consumers to turn their air conditioners on and turn them on high, leading to historically high energy demand.[177] In the case of wildfires, the electrical grid's load remains the same but the capacity to handle the load decreases.[178] In the case of heatwaves, the electrical grid's load increases and utilities strain to procure enough energy to match that load.[179] For example, California's transmission grid reached record energy demand during the September 2022 heatwave[180] and was only able to avoid a blackout by texting California energy consumers to conserve power.[181] California utilities cannot rely on consumers to cut back their consumption at times of greatest need (e.g., to turn off their air conditioning during a heatwave), so improving grid resilience is crucial. By creating a western RTO, both

176. Alan Buis, *The Climate Connections of a Record Fire Year in the U.S. West*, ASK NASA CLIMATE (Feb. 22, 2021), https://climate.nasa.gov/ask-nasa-climate/3066/the-climate-connections-of-a-record-fire-year-in-the-us-west/ (explaining that five of the ten worst wildfires in California history occurred in 2020 alone); Press Release, Off. of Governor Gavin Newsom, *California Charts Course for Whole-of-Government Action on Extreme Heat At First-Ever Symposium* (Oct. 18, 2022), https://www.gov.ca.gov/2022/10/18/california-charts-course-for-whole-of-government-action-on-extreme-heat-at-first-ever-symposium/ ("September's heat wave was the hottest ever recorded in California, with the state's best climate science projecting higher average temperatures and more frequent and severe heat waves in the decades to come.").

177. *See* Saul Elbein, *Climate Change Overwhelming California Power Grid*, THE HILL (Sept. 6, 2022), https://thehill.com/policy/equilibrium-sustainability/3631118-climate-change-overwhelming-california-power-grid/.

178. *See* Anne C. Mulkern, *Soaring Temperatures and Wildfire Threaten California's Power Grid*, SCI. AM. (July 12, 2021), https://www.scientificamerican.com/article/soaring-temperatures-wildfire-threaten-californias-power-grid/ ("Flames from the Bootleg Fire in Oregon threatened an electricity inner tie that sends power to Northern California, eliminating about 5,500 megawatts of power bound for the Golden State. That's equivalent to the generating capacity of about 10 large natural gas-fired power plants.").

179. *See* Elbein, *supra* note 177 ("As temperatures in the state capital of Sacramento head toward 114 degrees, California ISO said Tuesday that demand could hit an all-time record of 51,000 megawatts by 5:30 p.m., as solar capacity begins to taper off with sunset while temperatures — and power demand for air conditioner use — remain high.").

180. Jenna Cohen, *California's Electricity Demand Breaks All-Time Record During Severe Heat Wave*, PBS (Sept. 7, 2022), https://www.pbs.org/newshour/nation/californias-electricity-demand-breaks-all-time-record-during-severe-heat-wave.

181. *See* Jennifer Hiller, *California's Last Ditch Effort to Avoid Blackouts: Texting Consumers*, THE WALL ST. J. (Sept. 8, 2022), https://www.wsj.com/articles/california-avoids-blackouts-by-texting-convincing-consumers-to-slash-power-use-11662658114 ("Entering the critical evening hours of a crushing heat wave Tuesday night, California power grid officials were down to their last recourse to avoid rolling blackouts: customer conservation. It worked. Consumers heeded officials' pleas to cut power use on Tuesday, which included an unprecedented text message to 27 million Californians, and the state narrowly avoided its first controlled power outages since a heat wave in 2020.").

California and its regional partner states could share their energy load and better react to the ever-pressing, ever-worsening effects of climate change.

D. Job Creation and Other Economic Benefits

Lastly, a western RTO would have an enormous positive impact on the West's economy as a whole.[182] According to a report published in July 2022, forming a West-wide RTO would create 159,000 to 657,000 permanent jobs, $18.8 to $79.2 billion of gross regional product, and $619 million to $2.4 billion in tax revenue overall, with each state benefitting individually.[183] The report reaches these results by concluding that a western RTO would decrease energy costs, which would have a ripple effect on the economy.[184] Households would have increased spending power,[185] and businesses would have a greater incentive to consume energy, thereby increasing production.[186] The report also accounts for an increase in clean energy investment.[187] Even the low-end scenario of 159,000 new jobs, $18.8 billion increase in gross regional product, and $619 million in tax revenue would massively benefit the entire West.

Furthermore, a study from August 2020 bolsters the conclusions of the 2022 western RTO report, as it indicates that forming an RTO in the Southeast would similarly benefit the region. Specifically, the study estimates close to $400 billion in cumulative economic savings, a 37 percent decrease in carbon emissions, and the creation of 285,000 jobs.[188] Evidently, the commonsense notion that a more interconnected grid would lead to greater efficiency, and thus lower costs and a more robust economy, is backed up by hypothetical studies. Whether these rosy predictions would come true if there were a western or southeastern RTO is a different question, although the success of WEIM and WEIS align with the studies' results.

V. SURMOUNTABLE BARRIERS TO CREATING A WESTERN RTO

California should make all efforts to cooperate with its neighboring states to create a western RTO. However, the creation of a western RTO has been a

182. *See* ENERGY STRATEGIES, LLC, *supra* note 12.

183. *Id.* at 2, 18–19.

184. *Id.* at 23 ("[T]he formation of an RTO is expected to reduce electricity costs in the West by about $2 billion annually in 2030, after accounting for the likely costs of operating the RTO.").

185. *Id.* at 24–26 ("The analysis shows that, after accounting for leakage, the increased spending power provided from RTO-related electricity cost savings, will help support nearly 18,000 additional permanent jobs across the region . . . .").

186. *Id.* at 27–37 ("The analysis shows that the growth from lower electricity prices may be substantial, ranging from about 51,000 to 230,000 jobs, and would affect industries crucial to the West's long-term economic prospects.").

187. *Id.* at 37–44.

188. ERIC GIMON ET AL., ENERGY INNOVATION POL'Y & TECH. LLC, SUMMARY REPORT: ECONOMIC AND CLEAN ENERGY BENEFITS OF ESTABLISHING A SOUTHEAST U.S. COMPETITIVE WHOLESALE ELECTRICITY MARKET 1–2 (2020).

controversial topic in the energy world for the past quarter century.[189] Some believe a western RTO is necessary for the West to add enough clean energy and sufficiently enhance grid reliability to face the worsening effects of climate change.[190] Others believe that organized markets and RTOs are not a panacea for the effects of climate change, and that states should decide what is best for themselves.[191] If it were to push forward with plans for a western RTO, California would face both internal opposition and external opposition from other states, along with competing efforts by the Southwest Power Pool. However, this opposition is outweighed by changing climate, economic, and political landscapes all moving in a western RTO's favor, along with the fact that the West can support more than one RTO.

A. Internal Opposition

Before creating a western RTO, California would have to gain approval from within its ranks. Unfortunately, previous efforts to reconfigure California's grid management have failed. In 2018, a bill was rejected by California's Senate that would have established a pathway for CAISO to become a multi-state RTO.[192] The bill's opponents feared that expanding CAISO would take away California's control of its energy sector, allowing parties less interested in addressing climate change to exert influence on the California's energy policies.[193] The detractors' fears are not unfounded: CAISO's board of governors is chosen by California's governor and confirmed by California's

189. Robert Mullin, *Changing Grid, State Policies Favor Western RTO*, RTO INSIDER LLC (Feb. 28, 2022), https://www.rtoinsider.com/articles/29669-changing-grid-state-policies-favor-western-rto ("Providing a rundown of the West's failed efforts was former Bonneville Power Administration (BPA) executive Steve Kerns . . . . He tallied off IndeGo (1995-1998), RTO West (2000-2004), Grid West (2004-2006) and [the Northwest Power Pool's] MC initiative (2012-2016), which sputtered in the face of growing interest in CAISO's lower-cost Western Energy Imbalance Market (WEIM).").

190. *See* Letter from former FERC Commissioners to current FERC Commissioners re: Organized Wholesale Power Markets, *supra* note 13 (a letter written by nine former FERC commissioners to FERC advocating for wholesale power markets to be established in the West and Southeast); HANSEN & HOWE, *supra* note 13 (an article written by a Colorado state senator and a former commissioner of the New Mexico Public Regulation Commission in response to the article, Clark et al., *supra* note 13, advocating for a western RTO).

191. *See* Letter from former PUC Commissioners and a former FERC Commissioner to current FERC Commissioners re Former Commissioners' Letter, *supra* note 13 (a letter written by former state public utility commission chairpeople in response to the letter, *supra* note 13, advocating for the status quo regarding RTOs, i.e., that states and utilities can choose whether to join or not); CLARK ET AL., *supra* note 13 (an article complimenting energy markets in non-RTO regions, like the WEIM, and criticizing RTOs).

192. A.B. 813, Cal. Leg., 2017–18 Sess. (Cal. 2017); *see* Nikki Chandler, California Legislation Drops Bill to Expand Western Power Grid, T&D WORLD (Sept. 5, 2018), https://www.tdworld.com/overhead-transmission/article/20971635/california-legislation-drops-bill-to-expand-western-power-grid.

193. *See* Chandler, *supra* note 192 (" Critics warned that such a plan could prop up Western coal-fired plants and allow greater oversight from the Trump."); *see also* Kathryn Phillips, *Letter from Sacramento: Why We Oppose the Regional Grid Bill*, SIERRA CLUB CAL. (June 24, 2018), https://www.sierraclub.org/california/letter-sacramento-why-we-oppose-regional-grid-bill.

senate, but in a western RTO, all participating states would have input in choosing the RTO's leadership.[194] Thus, under a multi-state RTO, California would be required to hand some power over setting grid-related policy to the other participating states.[195]

Californians are further justified in losing control over grid-related policy based on what has occurred in other multi-state RTOs.[196] As Professor Shelley Welton explained in her paper, *Rethinking Grid Governance for the Climate Change Era*, regional RTOs like PJM and the ISO New England (ISO-NE) are largely controlled by incumbent utilities that stand to lose from the clean energy transition and so have adopted policy counter to the clean energy transition,[197] while California has managed to keep CAISO's policies aligned with the state through its sheltered governance structure of the governor selecting CAISO's directors.[198] However, the problem reveals the solution: a western RTO would need a governance structure more like CAISO than like RTOs like PJM and ISO-NE. Fortunately, MISO again serves as a valuable model for an effective, climate-combating regional grid operator.[199] MISO's governance structure tips the scale of decision-making toward state regulatory authorities, thereby allowing states to maintain oversight over the RTO's decisions rather than giving private interests excessive power over gird-related policy decisions.[200] While California may not want to tie its grid policy to states without RPSs like Utah and Idaho, connecting to states with clean energy policies aligned with California, like Nevada and Colorado, would still be greatly beneficial.

Additionally, climate-related issues are more pressing than they were four years ago, so the cost of doing nothing has increased.[201] California experienced its worst heatwave ever in September 2022 and was propped up by its regional imbalance market, WEIM.[202] Perhaps this event will tip the scale for the 2018

194. *See* CAISO, *supra* note 66; *see also* Phillips, *supra* note 193.

195. *See* CAISO, *supra* note 66.

196. *See* Welton, *supra* note 14, at 268 ("One primary concern has been that a regional RTO that relinquished the state-agency format [of CAISO] would cede too much control to private players or sister states with incompatible goals.").

197. *Id*. at 214, 268 ("RTOs are able to adopt positions against new clean energy technologies because their hybrid, quasi-governmental institutional structures allow incumbent industry members to dominate stakeholder processes.").

198. *Id*. at 268 ("California's ISO stands apart for having selected a unique governance structure in which the ISO functions more like a state agency than a private club. This agency-like structure allows California to have confidence that the goals of its ISO align with the goals of the state.").

199. *Id*.

200. *Id*. ("MISO, for example, has incorporated state regulatory authorities as the most powerful weighted voting bloc within its Membership Committee—thus building in a more direct state oversight role of its markets.").

201. *See* Buis, *supra* note 176; *see also* Mulkern, *supra* note 178; Cohen, *supra* note 180.

202. Herman K. Trabish, *Transmission as a Reliability and Affordability Strategy Drives CAISO and SPP Regional Market Ambitions*, UTIL. DIVE (Dec. 12, 2022), https://www.utilitydive.com/news/transmission-reliability-affordability-strategy-caiso-california-iso-spp-southwest-power-pool/638041/ ("The West's September 2022 power system collaboration that protected reliability against larger-than-anticipated spiking demand during a heat wave 'changed everything,' CAISO President and CEO Elliot

bill's detractors. If not that, then maybe MISO's recent hugely impactful approval of new long-distance transmission lines and its resulting environmental and economic benefits will be what convinces them.[203]

In any case, California is currently taking steps again toward reconsidering a regional RTO. In August 2022, the California legislature unanimously passed a resolution to conduct a study, scheduled to be completed in early 2023, on the impacts of expanding CAISO's footprint.[204] Depending on the results of the study, California may consider a similar bill as the one from 2018 in the near future.

B. Opposition from Western States

Just as California does not want to sacrifice control over its grid to less climate-change minded states, fossil-fuel friendly states also do not want their grids to be controlled by California.[205] However, signs point toward growing interest from the rest of the West in forming an RTO. For example, some states have already committed to joining an RTO in the next decade. Nevada and Colorado both passed laws in Summer 2021 requiring all utilities in their respective state to join an RTO by 2030,[206] and both states view joining an RTO as pivotal for advancing clean energy and meeting their RPSs.[207] The other western states, particularly those with RPSs (Washington, Oregon, Arizona, and New Mexico) will likely feel increased pressure to join an RTO as a result of Nevada's and Colorado's laws.[208]

Furthermore, states want to make sure they do not fall behind in the clean energy transition and to increase their grids' resilience. Among the western states, Nevada, Colorado, Washington, Oregon, Arizona, and New Mexico have

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Mainzer told Utility Dive in November. Western utilities and power providers now realize 'collaboration can take the West further,' and are 'ready for the next big step,' he said.").

203. *See* Howland, *supra* note 52.

204. A.C.R. 188, Cal. Leg. 2021–22 Sess. (Cal. 2022); *see* Press Release, Off. of Assemblymember Chris Holden, *California Legislature Passes ACR 188, Setting Stage for Conversations on Regional Electric Grid Collaboration* (Aug. 11, 2022), https://a41.asmdc.org/press-releases/20220811-california-legislature-passes-acr-188-setting-stage-conversations-regional.

205. *See, e.g.*, Emma Penrod, *Utah's Needs Ignored in California's Outline for Managing Regional Power Grid, Leaders Say*, THE SALT LAKE TRIB. (June 14, 2016), https://archive.sltrib.com/article.php?id=4001716&itype=CMSID ("State leaders, including Gov. Gary Herbert, have expressed concern that a regional system—billed as a move that would improve efficiency, save electrical customers millions of dollars and, in the long run, reduce the amount of pollution that comes from electrical generation—could give California undue influence over energy policy in all Western states.").

206. Jason Plautz, *Nevada Passes Clean Energy Bill Requiring State to Joint RTO, Accelerating $2B Transmission Project*, UTIL. DIVE (June 2, 2021), https://www.utilitydive.com/news/nevada-passes-clean-energy-bill-requiring-state-to-join-rto-accelerating/601106/; Emma Penrod, *Colorado Legislators Direct All Transmission Utilities to Join an Organized Wholesale Market by 2030*, UTIL. DIVE (June 8, 2021), https://www.utilitydive.com/news/colorado-legislators-direct-all-transmission-utilities-to-join-an-organized/601423/.

207. *See Penrod*, *supra* note 206.

208. *See id.* ("In combination with similar legislation passed last week in Nevada, . . . Colorado could be 'putting a finger on the scale' to push additional states toward joining regional energy markets.").

RPSs.[209] Joining a western RTO would help these states meet their renewable goals.[210] In contrast, Utah only has a voluntary RPS and Idaho, Montana, and Wyoming have none.[211] However, all of the West has reason to be concerned about grid resilience.[212] Droughts are causing a decrease in hydropower generation,[213] and heat waves and wildfires continue to put pressure on the entire Western Interconnection.[214]

Additionally, the western states have all experienced proof of product in that they have all benefitted from CAISO's and SPP's energy markets. WEIM's participants operate in every western state besides Colorado,[215] and each participant has individually received benefits from their participation in the market.[216] Meanwhile, WEIS participants operate mostly in Colorado and Wyoming, and the market created $103 million in benefits in its first year.[217] Thus, states are already experiencing the benefits of regional coordination. Perhaps this will make them less reluctant to explore the additional benefits of a truly regional RTO.

C. Competition between CAISO and SPP

Lastly, both CAISO and SPP are currently making efforts to expand into the West,[218] so California might find itself on the outside of RTO development discussions. SPP has enacted several initiatives in the past few years as precursors to expanding its footprint westward,[219] including WEIS (discussed in Part II.B). SPP also approved terms and conditions for its expansion into the Western Interconnection in July 2021[220] and is developing a day-ahead market with additional services called Markets+.[221] Evidently, SPP sees the balkanized West as an opportunity to expand. However, their efforts should not be a serious hindrance to Californian efforts to create a western RTO for two reasons: two

209. NAT'L CONFERENCE OF STATE LEGISLATURES, *supra* note 2.

210. *See* ENERGY STRATEGIES, LLC, *supra* note 12, at 7.

211. *Id*.

212. *See* Kate Winston et al., *High Summer Power Prices, Reliability Concerns Anticipated in Western Half of US*, S&P GLOBAL (June 2, 2022), https://www.spglobal.com/commodityinsights/en/market-insights/latest-news/electric-power/060222-high-summer-power-prices-reliability-concerns-anticipated-in-western-half-of-us.

213. *See id*.

214. *See infra* Part IV.C.

215. WESTERN ENERGY IMBALANCE MARKET, *supra* note 72.

216. WESTERN ENERGY IMBALANCE MARKET, *supra* note 76.

217. SW. POWER POOL, *supra* note 85.

218. *See* Fordney, *supra* note 80; Bosanac, *supra* note 80; *see also SPP board of directors approves western RTO expansion terms and conditions*, SW. POWER POOL (July 27, 2021), https://spp.org/newsroom/press-releases/spp-board-of-directors-approves-western-rto-expansion-terms-and-conditions/.

219. *See Western Services*, SW. POWER POOL, https://www.spp.org/western-services/.

220. SW. POWER POOL, *supra* note 218.

221. *Markets+*, SW. POWER POOL, https://spp.org/western-services/marketsplus/ (last visited October 24, 2023).

separate western RTOs can coexist, and the creation of an RTO that connects the Western and Eastern Interconnections would benefit the entire country.

First, California can help create and join a separate western RTO even if SPP captures a portion of the West. Based on the current makeup of the WEIM and the WEIS, California is in a position to coordinate with Washington, Oregon, Idaho, Nevada, Utah, Arizona, New Mexico, and parts of Wyoming,[222] while SPP is in a position to expand its footprint into Colorado and other parts of Wyoming.[223] While Colorado has excellent wind energy potential[224] and is one of only two western states to mandate participation in an RTO by 2030,[225] greater access to the solar-intensive Southwest and the hydropowered Northwest would still greatly benefit California.

Second, the transmission lines SPP must build to connect the Eastern and Western Interconnections would improve the entire country's transmission system, which would counter any detriment to California of SPP expanding westward. SPP currently operates almost exclusively in the Eastern Interconnection. In order for SPP to expand into the West, it will have to build several long-distance transmission lines to connect the two interconnections.[226] Currently, the Eastern and Western Interconnections operate almost independently, with only seven transmission lines connecting the two interconnections and a small amount of electricity flowing between the East and West.[227] A recent study found that the benefits of connecting the two interconnections could greatly outweigh the costs.[228] More specifically, connecting the interconnections would increase reliability and renewable proliferation, as solar in the Southwest could power the East during peak loads and wind from the Midwest could power the West once the sun goes down.[229]

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222. *See* WESTERN ENERGY IMBALANCE MARKET, *supra* note 72.

223. *See* SW. POWER POOL, *supra* note 85.

224. *See* NAT'L RENEWABLE ENERGY LAB'Y, *supra* note 172, at 6.

225. *See* Jason Plautz, *Nevada passes clean energy bill requiring state to joint RTO, accelerating $2B transmission project*, UTIL. DIVE (June 2, 2021), https://www.utilitydive.com/news/nevada-passes-clean-energy-bill-requiring-state-to-join-rto-accelerating/601106/; Penrod, *supra* note 206.

226. *See* Kassia Micek, *SPP takes steps to expand RTO footprint into Western Interconnection by 2024*, S&P GLOBAL (July 27, 2021), https://www.spglobal.com/commodityinsights/en/market-insights/latest-news/electric-power/072721-spp-takes-steps-to-expand-rto-footprint-into-western-interconnection-by-2024 ("Resolving outstanding terms and conditions, including cost allocation for the direct-current ties between the Eastern and Western Interconnections, is the next step to expand the RTO into the Western Interconnection, and will come before the board at its October meeting. Prospective participants plan to execute a financial commitment agreement in April 2022 to initiate the western RTO expansion.").

227. NAT'L RENEWABLE ENERGY LAB'Y, *supra* note 25.

228. *Id.* ("Across all the scenarios studied, the results show a robust benefit-to-cost ratio ranging from 1.2 to 2.5 over different HVDC designs and different conditions, indicating significant value to increasing the transmission capacity between the interconnections and sharing generation resources.").

229. *See id.* ("'Looking at the flow of power across our macrogrid design on a peak load day in August, you can see how transmission can help the system get out of tricky load-balancing situations,' said Aaron Bloom, Energy Systems Integration Group board member and lead author of the study. 'In this future power system, extra solar generated in the Southwest could be used to meet peak electricity demand

Thus, SPP's effort to expand into the West will benefit California even if it limits the areas in which a California-inclusive western RTO could expand.

CONCLUSION

CAISO's circumscribed borders limit its ability to efficiently operate and expand California's electric transmission grid. Nonetheless, the Ninth Circuit held in *CPUC v. FERC* that electricity consumers must continue paying a surcharge to their utilities to incentivize them to remain participants in CAISO.[230] CAISO provides many benefits to Californians, but a West-wide RTO could provide even more. Moreover, the urgent need to garner new sources of renewable electricity generation necessitates that California facilitate the creation of a regional grid operator that can effectively promote the development of new, green transmission lines. California has already taken the first step by approving a new study on the costs and benefits of a regional RTO. The state must act quickly upon finishing the study, which will likely indicate that California's participation in a western RTO would offer myriad benefits both to the state and the country, including greater proliferation of renewables, cheaper energy prices, and more clean energy jobs. California's climate change commitments are commendable, but transforming promises into reality requires large, structural change. Creating a western RTO will be a step in the right direction.

in the East. Then, as the sun sets in the West, the strong wind resources in the Midwest and Great Plains could be dispatched in the other direction.'").

230. 29 F.4th 454, 468 (9th Cir. 2022).