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A Western Interconnection Regional System Operator: Benefits and Barriers

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A WESTERN INTERCONNECTION REGIONAL SYSTEM OPERATOR:
BENEFITS AND BARRIERS

by

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Abbreviations

BA Balancing Authority
CAISO California Independent System Operator
CPP Clean Power Plan
CPUC California Public Utilities Commission
EIM Energy Imbalance Market
FERC Federal Energy Regulatory Commission
GHG Greenhouse Gas
ISO Independent System Operator
MISO Midcontinent Independent System Operator
MWTG Mountain Weser Transmission Group
NRDC Natural Resources Defense Council
RPS Renewable Portfolio Standard
RSO Regional System Operator
RTO Regional Transmission Organization
SPP Southwest Power Pool
WECC Western Electricity Coordinating Council
Abstract

A Regional System Operator in the Western Interconnection would create significant environmental and economic benefits. California alone could realize annual savings of up to 1.5 billion dollars while cutting the state’s greenhouse gas emissions by eight to ten percent in 2030. However, many stakeholders have rejected development of a Regional System Operator both historically and in recent California Legislative sessions. Ultimately, key stakeholders’ fears of repeating the California Electricity Crisis, relinquishing state authority, allowing greater interference from the Federal Energy Regulatory Commission, and sacrificing legislative environmental progress in California have created political opposition and legislative failures blocking efforts to develop a Regional System Operator. To overcome these political failures and realize the benefits of a better-organized regional electricity market, stakeholders will need to compromise and accept the vague risks of unforeseen consequences.

Introduction

As the world’s sixth largest economy and a major leader in environmental regulation, California must find economically efficient solutions to meet its substantial clean energy goals. In 2015, Senate Bill 350 mandated that the state’s Renewable Portfolio Standard (RPS) be set at 50 percent by 2030, thus requiring 50 percent of the state’s electricity generation to be procured from renewable sources. In accordance with an Executive Order signed in 2005, by 2050 the state must also reduce its greenhouse gas (GHG) emissions by 80 percent below 1990 levels. State policymakers recognize that to reach such lofty goals in the next three decades, dramatic changes in California’s energy sector will likely be necessary. Transforming California’s current energy system has become a major legislative
focus. In the pursuit of reducing GHG emissions in the electricity sector, the state has encouraged distributed electricity generation, customer demand response programs, solar and wind electricity generation, and utility and residential scale electricity storage, in addition to other programs. The state has also considered the creation of a Regional System Operator (RSO) as an avenue to significantly reduce GHG emissions while decreasing electricity costs by facilitating greater integration of electricity generation over a broader region.

The California Independent System Operator’s (CAISO’s) creation of a regional, real-time market—the Energy Imbalance Market (EIM)—has been particularly successful in enabling California to integrate more renewable generation into its electricity supplies and thereby reduce GHG emissions. Created in 2014 with just two participants, the EIM has already reduced GHG emissions by over 3.4 million metric tons per quarter and produced more than 213.34 million dollars in total benefits by enabling participating balancing authorities (BAs) to collaboratively and more efficiently meet last-minute supply and demand inequalities in a five-minute-ahead market (Trabish “Taming the Wild West”; Zichella “Energy Imbalance Market”). Though only five of the 38 functional BAs in the Western Interconnection currently participate in the EIM, seven more BAs have announced plans to join the market in the next three years (Trabish “Taming the Wild West”).
Figure 1: The Energy Imbalance Market

Although it covers only five percent of market transactions, the EIM has provided enormous benefits to its participants since its inception (Trabish “Taming the Wild West”). The other 95 percent of market transactions occur independently in each BA’s day-ahead market. Broad regional Independent System Operators (ISOs) or Regional Transmission Organizations (RTOs) handle the majority of these day-ahead market transactions in the Eastern Interconnection.¹ Beyond the CAISO in California, the Western Interconnection

¹ While there are technical nuances that differentiate ISOs and RTOs, they essentially provide the same kind of organized markets.
lacks structured regional day-ahead markets to facilitate short-term, efficiency-enhancing transactions. In addition to a day-ahead market, the CAISO also operates fifteen-minute scheduling and five-minute dispatch intervals within its limited footprint, while other Western BAs “are less operationally flexible” and primarily balance loads “through standard one-hour schedules with transfers held constant over the time period” (Lenhart et al. 98). Though this relatively coarse market structure has functioned reasonably well historically, the challenge of integrating substantially more intermittent renewable electricity requires greater flexibility, granularity, and improved grid visibility.

The Western U.S. contains one enormous, synchronous grid known as the Western Interconnection in which 38 BAs, managed by the federal regulated Western Electricity Coordinating Council (WECC), cooperate to ensure grid reliability. Grids are operated with the goal of maintaining electrical reliability to prevent blackouts and other malfunctions that can cause economic damage to customers by interrupting their activities and can physically damage grid infrastructure. To assure constant reliability, BAs (sometimes called “control area operators”) must ensure that local electricity injections constantly match local withdrawals, while also enabling scheduled interchanges across BA boundaries as requested by wholesale buyers and sellers of power. Wholesale commerce in electricity is important because it enables Load Serving Entities to control their power supply costs.\(^2\) Electricity commerce takes place among entities across the grid by increasing injections in one region while increasing withdrawal at another location on a precisely coordinated basis to ensure that the entire grid remains balanced. Electricity commerce was once dominated by bilateral contracts, in which a specific buyer and

\(^2\) Load serving entities provide electricity to wholesale customers and end-users
specific seller enter into a contract with one another to exchange electricity or generation capacity for a specified period of time.\(^3\) This commerce might require exchanges of electricity across one or more BAs before reaching the final destination, so there must be participation, cooperation, and close coordination by multiple BAs to achieve these commercial objectives while also maintaining grid reliability. Though actual electricity loads can vary greatly, bilateral contracts usually set fixed amounts of electricity in advance (something called a “block-loaded” transaction), creating inefficiencies when the contracted amount does not precisely match the amount of electricity required by the buyer at the time the transaction is physically executed. Furthermore, electricity markets have evolved greatly and are no longer dominated by utilities as the usual wholesale buyers and sellers of electricity. There are now many participants in electricity commerce, which makes gathering sufficient information about the financial strength and creditworthiness of a potential contract partner more difficult.

In contrast, many RTOs operate day-ahead markets utilizing a market clearinghouse model with anonymous buyers and sellers that serves to reduce transaction costs. This model allows for unique risk management. The clearinghouse model reduces financial risk incurred by the sellers by enabling participants to buy or sell electricity on an essentially anonymous basis without a unique seller being exposed to a unique buyer. Instead, the RTO simply operates centralized markets based on multiple bids from many buys and many sellers. The RTO then “clears the market” at a single price and informs the buyers that they are entitled to receive specific amounts of power and informs the sellers that they are obligated to provide specific amounts of power. The RTO later collects the

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\(^3\) Generation capacity is the standby ability to produce power
total amount of money owed by all buyers and disburses it to all of the respective providers of the power. By contrast, under a bilateral contract (which are also still permitted), it is incumbent upon the seller to understand the creditworthiness of a specific buyer, as it often takes a period of time for money to be transferred from the buyer to the seller and there is potential for defaults on payments. A clearinghouse market thus reduces transaction costs that may result from asymmetrical information, as the RTO administers general overall requirements for creditworthiness and any subsequent losses from default are spread over all participants. The system thus operates to create a mutual insurance feature among participants.

The CAISO is a relatively new institution that arose out of California’s electricity restructuring in 1998 and operates a day-ahead and five-minute market in the state. The Federal Energy Policy Act of 1992 facilitated competition in wholesale electricity commerce by mandating that transmission owners provide access to their transmission systems on a non-discriminatory basis. The FERC immediately followed up by promoting RTO formation in Orders Nos. 888 and 889, and later Order No. 2000, as a way to encourage a more competitive wholesale marketplace, ensure nondiscriminatory transmission access, and reduce the inefficiencies resulting from fragmented electricity markets (FERC “Regional Transmission”). In 1996, California adopted Assembly Bill 1890 requiring a restructuring of the state’s electricity markets to further facilitate wholesale competition and to also introduce retail competition—the ability of consumers to shop for their individual electricity providers. The bill ultimately led to greater “deregulation” and the creation of the CAISO in 1998, which in 2008 became a fully functioning ISO (FERC “Regional Transmission”; FERC “Electric Power Markets”).
to its intimate involvement in wholesale electricity commerce and bulk power system reliability, the CAISO is regulated by the FERC and acts as a BA and transmission grid operator (CAISO “Interconnection Basics” 3). The CAISO and other control area operators are often compared to air traffic controllers “because they independently manage the electron traffic on a power grid they don’t own” (CAISO “ISO History”). Like other RTOs, the CAISO facilitates idiosyncratic bilateral contracts in addition to highly structured, day-ahead and real-time five-minute clearinghouse markets in which individual buyers are not matched with individual sellers.

Outside of the CAISO and the EIM participants, the Western Interconnection currently lacks a unified organized market structure. The WECC oversees the coordination of grid reliability among the BAs, but it plays no material role in structuring wholesale electricity commerce. This responsibility is left to the BAs. In comparison, the Eastern Interconnection is home to several massive interstate RTOs and ISOs, like the Midcontinent ISO (MISO), Pennsylvania, Jersey, Maryland RTO (PJM), and the Southwest Power Pool RTO (SPP). The CAISO’s creation of an EIM in 2014 incrementally but significantly improved the region’s market structure by introducing a voluntary, real-time five-minute market to meet last minute inequalities in supply and demand. Each additional participant in the EIM strengthens the market by contributing greater generation and transmission capabilities. The EIM has greatly facilitated the integration of more intermittent renewables, such as wind and solar. However, an RSO would likely significantly further increase the efficient penetration of renewables into the Western
Interconnection while providing large economic savings for participants.

Figure 2: Existing North American RTOs

Benefits of an RSO

An RSO in the Western Interconnection would likely bring benefits in the form of greater grid stability, increased integration of renewables, efficiency from consolidated planning, and reduced transaction and investment charges. Implementing an RSO would save Californian consumers up to $1.5 billion per year while cutting the state’s emissions by eight to ten percent in 2030 and reducing total Western region emissions by three to four percent by the same year” (Trabish “The Head”) California would be able to reduce emissions by 55 to 60 percent from 1990 levels as soon as 2030 (Brint et al. 44). By choosing not to develop an RSO, stakeholders in the Western Interconnection are forgoing
lower transaction fees, better allocation of transmission project costs, and more comprehensive grid planning.

Though the Western Interconnection is an electrically unified grid, the 38 BAs are operationally balkanized and act as “islands” that independently maintain sufficient generation capacity within their geographic region to serve customers if something unexpected happens and they become disconnected from surrounding BAs. This self-sufficiency is less efficient than working under a unified grid to collaboratively meet demand, as the “smaller control areas have constrained access to the resources necessary to optimize reliability and system economics” (O’Boyle). The introduction of an EIM has effectively addressed last-minute inequalities in energy supply and demand for participating BAs, but it is unable to impact the other 95 percent of transactions occurring in day-ahead markets. By forgoing collaborative resource adequacy and conducting most day-ahead transactions independently and predominantly through bilateral contracts, the Western Interconnection does not operate as efficiently as possible.

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4 While individual capacity reserves are generally lower under RTOs, BAs might face increased risk depending on their own risk averseness. BAs have the ability to decide how self-reliant they want to be through the level of their capacity reserves. Though an RTO can operate with a smaller margin due to its ability to diversify loads and resources across a bigger base, individual BA’s who are “reliability obsessed” might have to accept that they might be more likely to go completely dark because of the lower margin. Operators within a smaller existing control area who are entertaining whether they want to become part of a bigger control area must consider that they are likely giving up their authority over how self-reliant they want to be and potentially making their own part of the grid more likely to have blackouts if the bigger RSO slims down reserve margins on the assumption that they can reliably source generation across a larger footprint.
Figure 3: The 38 Balancing Authorities (BAs) of the Western Interconnection

An RSO would create an organized market for day-ahead transactions that would dispatch least-cost generation from across the Western Interconnection by expanding the CAISO’s geographic footprint. The introduction of an RSO would lead to a decrease in individual energy generation, though participants would still be able to meet minimum reserve requirements at these lower levels of generation (CAISO “SB 350 Study”). For example, the “SPP decreased its reserve requirements from 18% to 13%, saving billions

5 The overall amount of electricity in the grid is not changing, as it must always remain in balance. However, there is a significant amount of ‘no load’ work done to operate spinning reserves, which is excess electrical capacity maintained by constantly operating plants at low levels. With a wider geographic footprint, shared capacity reserves reduce the need for spinning reserves, which in turn reduces the amount of fuel being used for ‘no load’ work.
without compromising reliability, because [its] operator can use pooled reserves” (Trabish “Transmission Developers”). California’s costs for the sale, generation, and purchase of wholesale power would also likely decrease. Assuming that an ISO has economies of scale, annual operating costs would be distributed across more states and thus decrease (CAISO “SB 350 Study”). Furthermore, an RSO would also create a more transparent marketplace and would do away with redundant transmission access charges as well as inefficient bilateral transmission contracts between BAs. Seam issues and resulting inefficiencies arise when two or more BAs have differing rules regarding transmission scheduling, market rules, and generation dispatch. With seams issues and reduced transaction costs no longer inhibiting otherwise profitable exchanges and, therefore, efficient incremental re-dispatches of the grid, there would be greater efficiencies and savings in the market. The grid would become more stable with the incorporation of more flexible plants available to each participant, as well as with better real-time visibility of system conditions and improved regional power-flow management (CAISO “ISO Regional”). Furthermore, the grid would also benefit from a consolidated planning approach that would better identify necessary improvements and reliability needs while more efficiently utilizing existing resources and avoiding unnecessary transmission or capacity investments.

The RSO’s large footprint would provide great environmental advantages due to participants’ increased ability to incorporate intermittent renewables into the grid. The majority of states in the Western Interconnection have established an RPS, and the entire grid will likely continue to see increased renewable energy production (Lew 1). Given that power production from some renewables -- especially wind and solar resources -- is intermittent and non-controllable, BAs are often forced to maintain high levels of flexible
ramping reserves to respond to rapid shifts in renewable energy production. Ramping reserves are resources continually operated at low levels with the ability to be increased quickly to instantly increase their injections into the grid if the wind suddenly dies down or a cloud comes over a solar facility. These plants must be operating, and thus generating more electricity, even when operators would rather meet demand with cheaper electricity from renewables. The RSO’s large geographic footprint would help mitigate the impacts of intermittency because increased generation capacity across the region would be capable of instantly compensating for reduced power injections from renewables. Rather than having to maintain enough individual resources to meet a BA’s load, participants in an RSO can instead work collaboratively to meet the region’s peak load and thus individually maintain lower peak generation capacity, resulting in savings for customers. Without action to unify the Western Interconnection, “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” (Brint 23). Thus, states with large RPS goals, like California, stand to benefit greatly from the collaborative nature of an RSO.

In addition to having larger aggregate energy supplies, the wider geographic scope of an RSO would better capture benefits from load diversity. Differing weather patterns across the region might mean that Oregon is having an extremely cloudy day without wind while Nevada has abundant solar production. An RSO would always dispatch least-cost resources first, which in this case would mean Nevada’s solar would help meet Oregon’s demand. In addition to weather-based variability, the RSO would include participants with summer-peaking and winter-peaking loads. Californians utilize more energy in their hot summers, while residents of Wyoming tend to use more electricity to keep warm in the
winter. Varying peaking seasons would, therefore, promote greater stability by lowering the combined capacity need in comparison to individual capacity needs. Participants would additionally benefit from the latitudinal scope of the RSO’s footprint. Californian demand for electricity starts rising at around 4:30 in the morning, before the state’s solar is generating. However, solar generation from states like New Mexico and Arizona is available and could be dispatched to California (Trabish “The Head”).

With aggressive renewable energy goals, Californians especially stand to benefit from the formation of an RSO. At times, generators in the state already experience overgeneration: producing more renewable energy than can be economically integrated into the power system. On these days, generators may have to sell their energy at negative prices during some hours. In other words, they will have to actually pay some buyer to “purchase” their energy. Under more extreme system conditions, some renewable energy generation may have to be curtailed—that is, the generator is actually disconnected from the grid or turned off. Obviously, such curtailment will have negative effects on new renewable generation investment: “Resource curtailment affects the economics of wind and solar development and can stymie progress toward policy goals” (Lenhart et al. 94). The CAISO curtailed 80 Gigawatt hours of renewable power in March 2017 due to overgeneration. Under the right institutional circumstances, other Western states might have absorbed this cheap, clean electricity, enabling them to reduce generation from fossil-fuels. A recent study found that in 2030, under a 50 percent RPS, Californian curtailment would stand around 4.8 percent (Nelson and Wisland 17). However, by adopting an RSO, as well as greater electricity storage and demand response programs, the state could decrease curtailment to .08 percent in 2030 (Brint 22). The RSO market structure is better
equipped to “fairly compensate and cost-effectively balance solar energy output” and can therefore incentivize new investment in solar while creating better returns for existing solar generation (Pfeifenberger 5). Utilities must still pay for renewables even during curtailment, so as the CAISO President and CEO Steve Berberich said, “It would be better for them to get something for them rather than nothing” (Trabish “The Head”). Reducing curtailment by dispatching overgeneration provides economic benefits for participants receiving cheap energy and utilities producing the energy, as well as environmental benefits by utilizing renewable energy rather than coal or gas-fired production.

An RSO is one of the most cost-effective ways to avoid excessive overgeneration and reduce the cost of integrating renewable generation in California, which is becoming crucial for the state to meet its ambitious policy goals. Many experts believe that “it would be vastly more expensive” to reach the state’s clean energy goals without the introduction of an RSO (Baker). There is a growing discrepancy between the region’s peak solar energy production and residents’ peak demand for electricity. Experts have termed this growing difference between forecasted load and expected electricity production the “Duck Curve” - and they expect it to worsen in upcoming years without action (John). By mid-morning on sunny days during the early months of the year, as people head to work and reduce their personal energy consumption, the CAISO “must find room for an additional 8,000 to 10,000 MW of largely photovoltaic-based generation - enough to supply roughly one-third of the ISO’s total demand from several million homes and businesses” (Staple). Furthermore, the Duck Curve worsens in the cooler winter season when less electricity is demanded to run air conditioning systems, creating large seasonal variance (John). To avoid the risk of overgeneration, the CAISO quickly reduces energy production from its
base load generators to the lowest possible level. When a BA’s generation is largely gas-fired, however, plants must continue to operate at least at minimum levels during the mid-day so that they can later ramp-up. This consistent generation further reduces the amount of renewable electricity the grid can receive throughout the day. Operators quickly ramp-up during the late afternoon hours to meet rising demand from workers returning home as the sun sets, reducing the amount of renewable generation available. This steep ramp is costly, stresses the grid, and is projected to worsen as versatile gas-fired plants are retired to meet California’s RPS goals. However, this ramp could be mitigated through the establishment of an RSO under which the state could dispatch excess solar generation during the day and import energy in the evening to meet the ramp.

Figure 4: The CAISO’s Duck Curve

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6 Handling the Duck Curve will be increasingly problematic as California retires gas plants because the state will likely lack generation that can quickly and reliably be ramped up or down. Without an acceptable replacement (like large batteries), the Duck Curve’s steep ramp may either inhibit the state from retiring gas plants or dramatically slow the retirement process.
A wider RSO may both serve to increase the usage of renewables and potentially decrease the amount of nonrenewable generation needed to serve total customer load within the RSO footprint. The RSO would dispatch lowest-cost generation first, which is generally renewable energy due to low or nonexistent fuel costs. With fewer flexible resources needed due to the large geographic footprint of the RSO, as well as the probable dominance of cheaper renewable resources, nonrenewable plants will likely operate less. An NRDC brief highlights that the less coal or gas plants operate, “the sooner they are likely to be retired as uneconomical” (Zichella “Regional Transmission” 3). Furthermore, the operating structure of RTO markets is more conducive to renewable energy integration. Costly barriers are reduced due to “improved regional transmission access and generation interconnection processes,” greater market and pricing transparency, “easier contracting for load-serving entities (including coops/munis) and commercial/industrial customers without their own transmission access to the region’s lowest-cost renewables” (Pfeifenberger 10). An RSO’s ability to support renewable energy will likely lead to greater renewable energy investment in the state, which will significantly aid California’s work to reach a 50 percent RPS by 2030. Furthermore, cheaper energy would support the state’s economic growth.

While increased investment in energy storage and Californian renewables would create many short-term jobs as well as some long-term employment, the long-term effects of an RSO might be more significant. University of California, Berkeley, Professor of Economics David Roland-Holst believes that expenditure shifting from cheaper energy under the proposed RSO “is long term, creates more jobs, more kinds of jobs, and is more
likely to be for California goods and services” (Trabish “Taming the Wild West”). The average California household income would rise by about $300 to $550 annually by 2030 from RSO-related savings (CAISO “ISO Regional”). Low-income households would also see proportionally greater economic benefits, as they spend more of their income on electricity consumption than the wealthy.

Despite an RSO’s numerous environmental and economic benefits, many stakeholders remain staunchly opposed to its development. Ultimately, key stakeholders’ magnified fears of repeating the Enron Scandal, relinquishing authority, allowing greater FERC interference, and sacrificing legislative environmental progress in California resulted in political failure that prevented legislators from garnering sufficient support to pass the necessary legislation in the 2017 legislative session. Though these fears constitute large roadblocks in the development of an RSO, they are not insurmountable. Successful RTOs already exist within the nation and the CAISO has demonstrated its willingness to compromise and work with stakeholders. However, this has not been enough to sway key stakeholders to support legislation that would have likely reduced GHG emissions and reduced economic inefficiencies in the Western Interconnection.

**Barriers to an RSO: Lingering Californian Electricity Crisis Fears**

The California Electricity Crisis left the majority of politicians fearful of the complex and arcane issue of electricity market deregulation. Much of the Eastern Interconnection adopted RTOs in the late 1990s, but the Western Interconnection did not undergo a similar transformation and many politicians in the region now remain wary of such a change. In 1999, a proposal to expand the western grid was introduced while the same movement was gaining traction in the Eastern Interconnection. Less than a decade later, Enron filed for
bankruptcy amidst rolling blackouts and increases in electricity prices. Western Interconnection stakeholders, who were already reluctant to give up authority for a geographically expansive RSO, were further disinclined after the apparent failure of California’s system (Penn “Top State”). The CAISO’s market regulations have developed greatly since the Enron Scandal, but some still worry that an RSO might foster a resurgence of conditions that encourage market manipulation. In response to the recent push for an expanded CAISO, Loretta Lynch, former president of the California Public Utilities Commission (CPUC), said, “I am gravely concerned that California is careening down a path to throw away all of the protections that we fought so hard for in the aftermath of the energy crisis. Once they’re gone, there is no getting those protections back” (McDonald).

Some have likened the creation of an RSO to “an Enron 2.0” due to the “potential reduction or loss of state oversight of the electric grid and the electric sales market” (Megerian and Penn). Certain parties fear that participants looking to exert market power could take advantage of preferential transmission rates for “no charge” EIM transactions or other proposed structural elements of the system (“Grid Forward”). Consumer Watchdog recently wrote to the California Senate that “the proposal is about going back to the [sic] arbitraging electricity on a free market so that no one can really keep track of the cost or the cleanliness of the energy being sold” and the creation of an RSO would “re-authoriz[e] the electricity de-regulation law that cost California ratepayers tens of billions of dollars” (“Watchdog Warns”). Largely motivated by the fear of repeating past mistakes, the Enron Scandal continues to deter some politicians from exploring an RSO.

Fueled by the fear of repeating an Enron Scandal, many stakeholders accept the notion that seemingly any deregulation could launch the Western Interconnection back into
conditions ripe for market manipulation. Some opponents of an RSO espouse the idea that the new system would lead to large-scale arbitrage and market manipulation, as was the case in the California Electricity Crisis. Prolonged resistance to political action that could result in a negative outcome has created a status quo dependence on the current balkanized system. Many California politicians are thus now more comfortable with inaction than passing legislation that could potentially vilify them for creating arbitrage conditions, resulting in the political failure to pursue a system that would likely benefit all stakeholders.

The California Electricity Crisis followed deregulation of the markets, yet many experts believe that it is potentially overly simplistic and misleading to equate this occurrence with causation. James Sweeney, Director of Stanford's Precourt Energy Efficiency Center claims that “California deregulation played only a minor role, if any at all, in creating the crisis” (Sweeney “The California Electricity” 279). At a time when too few plants were coming online to meet increasing population and economic growth, extremely low rainfall in Northern California and the Pacific Northwest resulted in a severe decrease in hydroelectric generation. Under these conditions, an already tight market gave way to electricity shortages. The financial crisis, according to Sweeney, was caused by “overly stringent regulation” that “precluded [utilities] from using long-term electricity purchase contracts to protect themselves financially from wholesale market price spikes” (Sweeney “The California Electricity 279). This lack of financial protection was compounded by the CPUC and governor’s unwillingness to allow necessary retail price increases and their refusal to let utilities hedge forward in longer-term transactions as wholesale spot markets exploded. This restriction created a disconnect between the quantity of energy demanded and the wholesale power price while keeping retail rates
artificially low and encouraging increased consumption, thereby increasing supply side price volatility and introducing a widening gap between wholesale and retail prices.

Many electricity experts believe that deregulation of California’s energy market was not the driving force of the Electricity Crisis, and there are current mechanisms in place at the CAISO and the Ferc to prevent market power. RTOs were designed to “oversee competitive energy markets to guard against market power manipulation” (Caspary 2). Furthermore, CASIO's Department of Market Monitoring works to ensure that no participant is “able to take unfair advantage of the rules or procedures or concentrate market power and inhibit competition” (CAISO “We keep a close”). The CAISO’s Market Surveillance Committee is composed of independent industry experts that are similarly charged with providing feedback and recommendations about the market’s functions. Under an RSO, these programs would likely continue to provide potentially preventive monitoring. Additionally, the FERC’s ability to impose penalties for market manipulation was strengthened in the Energy Policy Act of 2005 (Hale 198). The FERC is authorized to impose fines of $1 million per violation, and can also require disgorgement of gains” (“Grid Forward”). Nonetheless, it is often extremely difficult to recognize market power until later audits.

The successful existence of various RTOs around the world suggests that market failures do not necessarily follow deregulation. As a dominant energy policy leader in the US, California has often been forced to pave its own way without a model to follow. This is not the case with an RSO. Many states in the Eastern Interconnection and countries around the world have successfully restructured their electricity systems, including deregulation, and created RTO systems (Sweeney “The California Electricity” 278). The
seven American RTOs currently in existence “provide a template for development of an RSO in the Western U.S.” (“Grid Forward”). Studies have shown that RTOs often increase market transparency (Pfeinenberger). An examination of MISO, which also underwent deregulation, found that organized markets provide barriers to arbitrage, including regulation, “as high transaction costs imposed by the regulator restricted arbitrage” (Birge 1). Proponents of an RSO believe that “the full pricing transparency and operating efficiencies of an integrated grid would help safeguard against another crisis in an affordable, sustainable way” (Sweeney “How the West” 117). The Western Interconnection could incorporate the successful regulations of current RTOs to create a comprehensive governing structure capable of resisting arbitrage and reducing inefficiencies.

**State Authority**

In addition to fearing the creation of a modern day, regional California Electricity Crisis, many states perceive lessened authority under an RSO as a threat to their independence. For many states in a region that places an especially high value on autonomy, the threat of reduced authority has not outweighed projected environmental and economic benefits. In 2001, the FERC accepted RTO West’s proposal for an RTO that would control all transmission in the eight westernmost states, as well as the parts of California not included in the CAISO (Sweeney “The California Electricity” 247). After unsuccessful attempts to rally sufficient support, RTO West was later proposed as Grid West. Grid West faced substantial opposition, as many stakeholders doubted an RTO’s benefits at the time. In 2004, the Snohomish County Public Utility District unsuccessfully filed a lawsuit to stop a vote to proceed with a set of bylaws for Grid West, which at the time was a non-profit
Hacker corporation with the goal of becoming an operational RTO (Risman). These goals were never realized, and after talks with key stakeholders, especially the Bonneville Power Administration, failed, the movement fizzled out in 2006 (Risman). After historical reluctance, many Western BAs are starting to recognize the merits of an RSO. As renewable generation increases across the country, some Western BAs are now more willing to recognize the value of an RSO as an effective mechanism to increase efficient renewable generation and dispatch.

Some states, especially the Rocky Mountain states of Utah, Wyoming, and Montana, also worry that a California-dominated RSO governance structure would allow California’s aggressive climate policies to affect coal and natural gas dependent states’ ability to produce energy from nonrenewable sources. The CAISO’s governing board is currently composed of five governors appointed by the Governor of California and confirmed by the State Senate. This governance structure, which grants significant power to California politicians, is only grudgingly tolerated by the FERC. If an RSO was to move forward, political pressure from other participating states and the FERC’s regulation would require a transformation of the governing board structure. This new governing body must be capable of incorporating the authority and views of other the states, but the exact structure has been hotly contested.

States that heavily rely on nonrenewable energy generation, especially those with large natural reserves of nonrenewable resources, have expressed concern about an RSO governance structure that could privilege California’s and other clean energy state’s policy goals. The Rocky Mountain states “differ substantially in their politics, economics, and cultures, and have not embraced [California’s] aggressive clean energy policies” (Florio
2). Wyoming alone provides about 40 percent of the U.S.’s coal and has, since 1986, been the nation’s leading coal producer (Trabish “Taming the Wild West”). These states fear that ceding or diluting their decision-making authority will compromise their status-quo dependence on ‘less expensive’ coal and natural gas.\(^7\)

States have traditionally retained and exerted some authority over the composition of energy resources built or procured to serve utility customers within their borders, especially by type fuel used to generate the electricity. However, there are other dimensions of the resource portfolio that could be heavily influenced by collectively made decisions by an RSO. For instance, an RSO could compromise California’s ability to make independent decisions about how to achieve and maintain resource adequacy (“Grid Forward”). Because RSOs are charged with ensuring grid reliability, the governing structure will act to “ensure that adequate amounts of resources and reserves are available on the system to meet load” (“Grid Forward”). State regulators are thus concerned by the probable weakening of their ability to authorize which resources their utilities procure and how best to achieve and maintain resource adequacy. Historically, a state’s native resources often constitute the majority of the resource portfolio used to serve load within the state. However, many Rock Mountain State stakeholders fear that progressive renewable policies will drive the RSO to shift resource adequacy away from these states’ historical generation of electricity. Wyoming Governor Matt Mead shares the concern and believes that RSO governance is “a complicated issue because there’s no scenario that [he’s] willing to have Wyoming submit to the California Legislature, and [he] think[s] Gov. Brown would say

\(^7\) This typical characterization of coal and natural gas as “less expensive” often requires the improper exclusion of environmental externalities.
the same” (Siders). RSO participants would also be faced with shared costs from operating
the system, constructing new transmission infrastructure, and ensuring resource adequacy.
The socialization of costs is an especially substantial concern, especially for transmission
investments that some states might regard as excessive regards.

States who have historically enjoyed autonomy over their energy finances worry
that they would have to submit to a cost allocation system of which they disapprove.
Potential participants “want to ensure that they will be able to develop their own resource
choices or achieve their own public policy goals and not be subject to a public policy
requirement or cost imposed by a different state or new RSO authority” (“Grid Forward”).
Thus, many Western states remain anxious about an RSO governing structure that greatly
relinquishes their political autonomy.

In response to other Western states’ fears surrounding the RSO’s governance
model, the CAISO has proposed a Western States Committee that would be made up of
key stakeholders and each state’s energy leaders. Many non-Californian states believed the
CAISO’s first and second straw proposals for “Principles for Governance of a Regional
ISO” privileged Californian interests. Bryce Freeman, administrator of the Wyoming
Office of Consumer Advocate, called the first proposal “the mother of all California-centric
corns” (Mullin “Governance Plans Fails”). After increased stakeholder feedback, the
CAISO released their “Second Revised Proposal for Principles for Governance of a
Regional ISO.” This version includes relatively high-level provisions for the creation of a
Transitional Committee that would “develop the details of the governance structure,
adhering to the principles set forth in legislation, and that committee’s proposal would need
certain state and FERC approval before implementation could occur” (CAISO “ISO
Regional”). This committee would grant the flexibility necessary for various stakeholders to mold the governing structure. Furthermore, the revised proposal includes a provision for utilities’ right to voluntary withdrawal following a two-year written notice. Though there is no exit fee, the RSO retains the right to charge for decisions made before notice of withdrawal, such as allocation of costs for a regional transmission project approved before the submission of a written notice of withdrawal. Withdrawal may be an independent action taken by a utility, or it might occur “in light of an order by the state or local authority” (CAISO “Second Revised Proposal” 4). In this way, states still retain the ability to exert control over the behavior of their utilities. Freeman believes “that the revised proposal appears to be a step towards us rather than a step away” (“Grid Forward”). The proposal also “includes supermajority voting provisions intended to ensure a high degree of collaboration and consensus-building among the participants in this process” (CAISO “Revised Proposal” 9). At least 75 percent of voting members who collectively represent 75 percent or more of the total load must approve proposals, thus working to prevent smaller members or members representing large loads from steamrolling legislation (CAISO “Summary of Stakeholder” 10). Though Western States’ fears of reduced autonomy are certainly reasonable, the CAISO is working with stakeholders to mitigate as many roadblocks as possible.

Beyond mechanisms of an RSO governance structure, there are several other significant ways that states could exercise their authority. Section 205 filing rights allow transmission-owning utilities or transmission owners to request approval for the rates they wish to charge through a document filing process. The SPP and MISO have demonstrated the effectiveness of Section 205 filing rights as “means of ensuring that states’ perspectives
are provided due deference in the development of regional grid operator rules and procedures (Clements 4). States may also establish a regional state committee, as has been successfully executed by other RTOs like the SPP. A regional state committee can increase states’ status by allocating them “voting or advisory authority and direct interaction with the grid operator board and senior management” (Clements 2). When states do not have Section 205 filing rates, they may still intervene in FERC proceedings to express their stance on an RSO filling. Furthermore, states have the right to participate as stakeholders in RSO processes (Clements 5). The FERC “has made clear that states are priority stakeholders, and there is a shared belief that states’ views will hold weight once a filing makes it to the FERC” (Clements 5). In addition to a proper governing structure that represents their interests, states may utilize these valuable tools to participate in an RSO.

**Californian Resistance: State Autonomy**

While other states may fear California’s potential dominance of an RSO, California legislators are anxious about relinquishing its authority over electricity governance. As the California Governor and Senate appoint the CAISO’s Board of Governors, they are able to exert political influence on the system. As the only ISO in the country “whose board members are appointed by the governor and chosen on the basis of sector representation and experience,” the CAISO is in a unique position to adopt California’s energy policies (“Grid Forward”). An RSO would likely decrease California’s autonomy, a prospect that concerns many in the state’s legislature but is necessary to entice other states to join. For example, to gain support from other states in the Western Interconnection, the CAISO’s “Revised Principles for Governance of a Regional ISO” does away with an initial Board of Governors under “which California-appointed members would have held a 5-4 majority”
(Mullin “Revised Western”). Though similar sacrifices may encourage non-California states to join the RSO, some Californians worry they are sacrificing too much.

Many California opponents of an RSO worry that the State’s agenda - most importantly its clean energy goals- will be squashed by participants who do not share their progressive renewable energy policies, including two states who sued the Federal Government to dismantle the Clean Power Plan (CPP). In 2016, California Senate President pro tempore Kevin de Leon and Assembly speaker Anthony Redon wrote to Governor Jerry Brown that, “the proposed regionalization must not undermine state sovereignty or cede authority of our state’s cutting edge clean energy and climate policies to others who do not have the same strong commitment and legal framework to reduce climate pollution and promote clean energy” (Penn “Top State”). Mark Toney, executive director of The Utility Reform Network, which represents consumers in state regulatory proceedings, claims that the creation of an RSO “would permanently eliminate state authority over the governance of [CAISO] .... based on determinations made by an ad hoc commission, a result that is unacceptable as a matter of law, policy and progress” (Megerian and Penn). Without the support of the California Legislature, which, “due to its statutory history … holds the keys to moving forward,” little progress can truly be made toward the creation of an RSO. However, as long as California politicians remain fearful of losing their renewable policy progress, no significant steps can be taken.

Though the state may not be able to control generation resources across the RSO, a 2016 Sierra Club Docket to the California Energy Commission notes that, “California agencies would likely retain the authority in an expanded market to regulate the long-term investments of California-based utilities” as well as their procurement decisions (Ritchie
Furthermore, “Grid operators do not set state energy policy and have a long history of respecting it within other existing multi-state systems” (“Frequently Asked Questions”). An independent board with the proper framework in place, as “is the norm for the nation’s six other regional transmission operators,” would allow “all Western states [to] retain control over their respective energy policies” (Molgen).

Without the enforcement of the CPP or other stringent environmental laws from the Federal Government, participants like the Rocky Mountain States, who no longer have to worry about compliance with the CPP, could see reduced economic benefits from joining an RSO. California opponents of an RSO believe that “federal regulations that are likely to be relaxed in coal-dependent states could remove incentives for those states to participate in a regional grid” (Siders). Before, the decision might have looked much simpler for coal-dependent states. According to CAISO President Steve Berberich, when the CPP was still in place, these states “could face billions of dollars in costs to comply with the Clean Power Plan and other pollution regulations, or they could spend $20 million, join a regional market, and have access to zero marginal cost renewables” (Trabish “The Head”). Without compliance costs motivating behavior, the Rocky Mountain states have a greater ability to maintain their status-quo dependence on nonrenewable generation.

While the economic benefits of participating in an RSO may have been reduced, there are still potentially significant savings from increased efficiencies. In the Western Interconnection, “even red states have renewable energy they want to market” (Siders).

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Some electricity experts believe that California’s movement toward Community Choice Aggregation (CCAs) may do more to undermine state regulators’ ability to control generation resource choices in the state compared to what any RSO might be able to influence.
Laura Nelson, energy adviser to the Utah Public Service Commission, notes that parts of the Rocky Mountain West “really do have a different view of our resources,” but that “Utah has been engaged in those conversations” regarding RSO participation (Fordney). The state has historically been dependent on coal generation but now is being to increase exploitation of its “natural gas and is on track to increase its renewable penetration to 8%” (Fordney). Utah could benefit from a system that both rewards exports of renewable generation to progressive states like California and increases the efficiency of renewable dispatch within Utah’s own borders.

Many states in the Western Interconnection find themselves in a similar situation to Utah, especially due to the expected increasing renewable penetration across the Western Interconnection. The U.S. Energy Information Administration forecasts that “renewable energy will be the fastest-growing power source through 2040” (Hulac). Furthermore, many utility and transmission developers in the West are working on projects and initiatives that would be profitable under the current system, but would be even more beneficial under an RSO. Some companies are depending on regionalization to make their projects cost-effective. The electric transmission developer TransCanyon acknowledges that some of their lines under construction are not cost-effective under current market conditions, and they may not be “until a regional system makes the benefits throughout the entire region greater than the development costs” (Trabish “Transmission Developers”).

Pressure from stakeholders like TransCanyon or participants investing in renewable energy could further encourage states to move ahead with an RSO. Nonetheless, industry support

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9 TransCanyon has noted that their projects could also become economic if new renewable energy contracts were created between western off-takers and more midwestern generators.
and the increasing penetration of renewables may not be enough to push California politicians to overcome their fears.

**Californian Resistance: FERC Fears**

In addition to potentially reducing incentives for the Rocky Mountain States to comply with California’s progressive legislation, many California politicians and citizens fear that President Trump could use political appointees to the FERC to challenge the state’s energy goals through increased oversight and regulation. Some fear that opening the state’s “electricity market to other states could invite federal intervention in the state's energy policy, including through the Federal Energy Regulatory Commission” (Siders). Michael Picker, CPUC President, recently stated that the CPUC has “a long-standing fear of FERC” (Fordney). Jamie Court, president of Consumer Watchdog, believes that an RSO "puts California's tough laws on the chopping block for Donald Trump's ax” and further questions why “California legislature resisting Trump's evisceration of our environmental and consumer rights risk giving Trump appointees new power to invalidate California laws and agreements?” (Court). The anxiety over allowing greater FERC participation in Californian legislative goals prevents legislators from truly considering an RSO as a viable option.

It is highly unlikely that California would come under any greater FERC jurisdiction than it currently experiences. The CAISO maintains that California would not cede its energy authority to the FERC as it is currently already under FERC jurisdiction. Thus, this jurisdiction “would not change with a regional energy market” (CAISO “Regional ISO”). According to a report by Yale’s Environmental Protection Clinic, the FERC has always had the authority to regulate it as a public utility under the Federal Power
Act because “it operates transmission facilities, ... its markets set the rates for wholesale electricity sales, and ... its market rules ‘affect or pertain to’ rates for wholesale electricity sales” (Brint 9). Thus, the FERC has been regulating the CAISO since its creation and will continue to do so, whether California adopts an RSO or maintains its current system.

Furthermore, the FERC is authorized to regulate all investor-owned public utilities that own transmission facilities, meaning that participants who do not operate within an organized wholesale electricity market still fall under the FERC’s jurisdiction, and would likewise continue to be regulated by it under an RSO (Brint 10). Additionally, the FPA requires the FERC “to be apolitical and prevents it from interfering in state decisions” (Trabish “Transmission Developers”). However, if state policy directly frustrates federal policy, federal sovereignty will prevail whenever the intent to preempt state authority is a reasonable inference for a court to draw from the facts and the law. Though the President may make partisan appointments, according to Zichella, the FERC “has not historically been a ‘place for policy meddling’” (Siders). Even with Trump’s appointees to the FERC, Monique Watson, formerly deputy director of the Office of Energy Market Regulation’s Division of Pipeline Regulation, does not “anticipate the commission will take a political bent” (Grandoni). For California legislators worried about FERC intervention, Zichella has stated that a regional market could “help protect California from being singled out” (Siders). Thus, participation in an RSO would likely not allow for greater FERC interference in California’s policies, and could potentially add a layer of protection between the state and the Federal Government.

Some politicians wary of the Trump Administration worry that the FERC could specifically use the Supremacy Clause and the Commerce Clause to threaten California’s
aggressive clean energy agenda under an RSO. Opponents worry “that state policies might be challenged as … conflicting with (and thus being preempted by) the Federal Power Act” (“Environmental Protection”). The Trump Administration could theoretically utilize the Supremacy Clause to preempt California’s laws by claiming that they conflict with a federal law like the Federal Power Act. Critics also argue that because interstate commerce “falls squarely under federal control,” an RSO “could expose the state’s climate and energy policies to a new line of attack from a hostile administration (Baker). The Commerce Clause gives the Federal Government the authority to regulate interstate commerce, including limiting state behavior that attempts to control actions that occur beyond a state’s borders, discriminates against out-of-state commerce, or creates unwarranted obstacles for interstate commerce (Brint 8). The FERC could potentially impose sanctions if they found that the CAISO’s behavior was objectionable by the Commerce Clause.

However, California’s environmental laws already affect wholesale electricity transactions and thus affect interstate commerce, meaning that the FERC could already utilize and could continue to utilize the Commerce Clause and Supremacy Clause whether or not the CAISO is expanded into an RSO (Brint 16-17). Yale’s Environmental Protection Clinic report examined California’s RPS, cap-and-trade program, and GHG emissions performance standard for long-term contracts with base load power and “concluded that the creation of a regional system operator would not make challenges under the dormant Commerce Clause or the Supremacy Clause more likely to succeed” (“Environmental Protection”). Even if California's RPS was challenged, for example, the state could contend that their legislation does not unnecessarily burden interstate commerce in wholesale electricity but rather creates a new market (Brint 27). Legal precedent for this argument
was set in *Allco v Klee*, in which a federal district court upheld Connecticut’s RPS, “which limits eligible resources to those in the ISO-New England region or an agency region,” on the basis that it efficiently created a new market for renewable energy and does not impose a burden on pre-existing interstate commerce (Brint 26). It is unlikely that the FERC would be able to challenge California’s existing renewable energy legislation under an RSO in any manner that is substantially legally different than the methods that are currently available to the regulatory body.

**Californian Resistance: The Sierra Club and PacifiCorp**

Some Californian RSO opponents, including environmental organizations, citizens, and legislators, are primarily concerned over the state’s ability to implement aggressive renewable policy under a Trump appointed FERC, yet two of the country’s most prominent environmental organizations - the NRDC and the Sierra Club - disagree over the impacts of an RSO. The Sierra Club understands that there are potentially large long-term environmental and economic benefits; however, the organization fears an immediate rise in GHG emissions and the potential for increased FERC scrutiny of California’s progressive legislation under an RSO. The NRDC believes the RSO is one of the most cost-effective means of meeting California’s GHG and RPS legislative goals. The NRDC also chooses to focus on projected substantial long-term environmental benefits and recognizes that “myriad studies” have shown that “the key to deep penetration of renewable power into the grid … is operating the system over a large geographic footprint” (Zichella “Regional Transmission” 6-7). For the organization, the projected benefits clearly outweigh the potential costs.
The Sierra Club’s concerns over California’s ability to sustain its environmental progress under an RSO have led the group to become one of the most vocal and prolific opponents of the proposal. The organization now recognizes that California will be under FERC regulation regardless of RSO participation. However, Sierra Club California Director Kathryn Phillips worries that, even if the FERC under Trump chooses not to challenge policies formulated under the CAISO, the regulatory body “may be more inclined to get involved” if California “were to join a regional grid with other states that have vastly different approaches to energy issues - such as Utah or Montana” (Baker). Phillips draws attention to the uncertainty of an RSO, especially give the Trump Administration’s weakened environmental regulations.

While the Sierra Club is fearful of California losing their autonomy, all states will retain a good deal of authority, especially concerning their environmental policies. Ultimately, a proper governance structure, potentially modeled off of the eight successful Eastern Interconnection RTOs, would “still allow every participating state - including California - to control its own electricity policies while cooperating with neighboring states and provinces and lowering utility bills within them” (Sweeney “How the West” 117). However, there is no certainty that other states in an RSO would not challenge California’s policies by involving the FERC to the extent there is some avenue for doing so. Phillips believes that states could “run to the FERC and say, ‘You’ve got to get involved, because California’s being too green’” (Baker). Though there is no guarantee that California’s legislation will not face scrutiny from other states, RSO proponents hope that a proper Governing Board can create a structure that encourages compromise and recognizes state autonomy. Furthermore, the NRDC’s Zichella believes that Phillips is
“throwing up a red herring here, playing on concern about the Trump administration politicizing FERC. Moreover, any RTO construct will have a prominent role for states … some more than others” (Zichella “Re: Response”). As California has about 33 percent of the Western Interconnection entire load, the state will likely have a large voice in RSO proceedings (Zichella “Re: Response”). Furthermore, FERC regulation is largely based on Federal Power Act authority to regulate electricity sellers—not buyers. As the majority of environmental state electricity policies, such as an RPS, regulate purchasers of power by placing obligations on them directly. The CAISO has a very small role in enforcing or influencing California’s environmental legislation, and it would be unlikely that the FERC attempt to interfere with the state’s regulations on purchasers of power.

The Sierra Club is also concerned over the potential for an RSO to result in greater GHG emissions for a short period of time. In 2015, the CAISO and the PacifiCorp states entered into a Memorandum of Understanding to explore PacifiCorp’s full participation in the CAISO’s markets (Johnson 16). Other states have expressed interest in an RSO, but PacifiCorp is currently the CAISO’s sole partner, and, in the eyes of many environmentalists, a very problematic one. It is the largest owner of coal-fired plants in the Western Interconnection and more than 60 percent of the company’s electricity is generated from coal (Trabish “The Head”). According to the SB 350 Study, if PacifiCorp remained the only other participant, the Western Interconnection could see “a very small increase in GHG emissions” of about 0.4 percent “due to a slight increase in coal-fired generation outside of California” (CAISO “Senate Bill 350” 27). However, this increase is not projected to persist past the year 2020.
While PacifiCorp has indicated that they will likely be moving away from coal generation in the future, environmentalists, like the Sierra Club, object to the inclusion of the PacifiCorp states under the CAISO out of the fear that this participation may increase total GHG emissions across the Western Interconnection. Though California is a renewable energy leader at present, “the proposal to develop a regional energy market with PacifiCorp could” not only relinquish “control over state clean energy policies” but also “undermine [the state’s] leadership on climate change by giving new life to coal plants in the west” (Penn “Top State”). Sierra Club Staff Attorney Travis Ritchie worries that an RSO could increase “the dispatch of specific coal units across the PacifiCorp service territory,” which could “in turn prolong the life of some of the dirtiest plants in the West” (Trabish “The Head”). The Sierra Club believes this would be a result of the increased efficiency and dispatch of coal units in a regional market, which would improve the economics of these plants and provide market signals for PacifiCorp to invest more heavily in non-renewable generation (Ritchie 3). The Sierra Club also argues that an RSO could result in the increased dispatch of out-of-state non-renewable generation to meet California loads, or an increase in out-of-state non-renewable generation to meet other states’ loads that were previously met with generation from cleaner resources (Ritchie 3).

PacifiCorp’s lone participation does have the potential to increase GHG emissions by 0.2 percent across the entire Western Interconnection by 2020 according to the SB 350 Study; however, projections show that GHG emissions would decrease significantly after this period (CAISO “Senate Bill 350” 40). PacifiCorp seems committed to reducing their environmental impact, especially because the structure of an RSO makes renewable energy generation more cost-effective than the current balkanized system, further incentivizing
renewable energy development by potential participants. Bob Gravely, a PacifiCorp spokesman, states that PacifiCorp’s “trajectory continues to be toward more renewables” and that “a regional market helps facilitate that transition” (Megerian and Penn). An RSO’s broad geographic footprint would also “expose coal-fired generation in PacifiCorp (and in the rest of the regional footprint) to more competition from regional renewable generation … and efficient natural gas-fired generation” (CAISO “Senate Bill 350” 40). As other energy experts have noted, “The transition to a regional grid in the West could change the geopolitics of U.S. energy … Wyoming is a coal state but it could become the Saudi Arabia of wind. There are tectonic forces at work in these markets and California demand could be a decisive factor” (Trabish “Taming the Wild”). In fact, the benefits of an RSO are so imperative to renewable integration for PacifiCorp that their Midwest Utility (MidAmerican Energy), which is moving to 80 percent renewables, “could not do that without a regional ISO” (Mullin “Governance Plan Critics”). Though unlikely, if “regionalization did increase emissions from PacifiCorp’s coal plants, the company would work to mitigate them” (Mullin “Governance Plan Critics”). Additionally, though much more limited in scope and not a direct comparison, the EIM has seen quicker participation than opponents initially thought. PacifiCorp is currently the only company to announce an MOU with the CAISO but most experts believe that “as [other BAs] start to see the advantages in dealing with challenges they have, there will be an evolution to joining” (Trabish “Taming the Wild”). Under a scenario with multiple BAs participating, the projected GHG reductions leave no doubt about an RSO’s environmental benefit.

**Legislative Challenges**
Though the roadblocks and potential drawbacks to an RSO may seem great to opponents, many proponents believe that they are surmountable. One of the opponents’ largest fears - a Trump-appointed FERC meddling in California’s progressive energy legislation - is not more likely to occur than if the state stayed out of an RSO. The Sierra Club’s Phillips believes that it “would be a big mistake right now” to do “anything to further entangle ourselves with states that support [Trump’s] policies or agencies that he controls” (Baker). Trump’s presidency will not last for more than a total of eight years, but an RSO in the Western Interconnection created today could last for decades to come. Proponents might think it a big mistake to hold out on creating a system with as large a geographic footprint as possible just to avoid the hypothetical possibility of only vaguely founded federal entanglement. Furthermore, there is a large delay between when an RTO is proposed, developed, and operational. Existing RTOs have demonstrated “that it takes several years to set up a regional market” (CAISO “Senate Bill 350” 17). President Trump may therefore be out of office before an RSO is operating in the Western Interconnection.

Many politicians’ fear of repeating the mistakes that led to the California Electricity Crisis make them unwilling to develop an RSO, even though similar structures have been successful within the nation and around the world. For some wary legislators, inaction is a safer option than creating an organized market with the unlikely potential for severe consequences. The vaguely defined anxiety of organizations like the Consumer Watchdog group gives politicians further pause. In the rare case that a better-organized regional market should create conditions ripe for exertion of market power, politicians face great potential backlash from organizations who warn against an RSO.
The fears of various stakeholders have created a political roadblock that has slowed down progress toward the creation of an RSO. Before allowing legislation to move forward, some groups exhibiting highly risk-averse behavior, like the Sierra Club, want a governing structure that prioritizes California's climate policies and leaves no room for increased coal generation. Additionally, the Sierra Club has adopted a strict stance that rejects the creation of an RSO on the grounds that it could potentially include more coal, no matter that projected GHG emissions would significantly decline. Bill Corcoran, a Western director of the Sierra Club, stated that “the problem at the center of the issue is a very dirty utility that would be linked with the California grid” (Penn “Brown Wants”). The organization’s hardline position seemingly precludes the projected benefits from outweighing the potential costs of an RSO.

The Sierra Club, some California politicians, and other opposed stakeholders’ unwillingness to compromise is understandably worrisome to the Rocky Mountain States, who would already be adopting a market first engineered by Californians. These states must wait for “several key decisions, including governance, to be made by the current CAISO Board and the California Legislature before new participants can join the ISO” (“Principles and Issues” 1). Although the CAISO is consulting non-Californian stakeholders in creating governance proposals, the CAISO and California legislators are given the authority and responsibility of making some of the first imperative decisions. Disagreement within California is stalling action on these necessary, initial decisions. Furthermore, the last legislative session saw that “attempts to broker compromises between competing interests have repeatedly fallen short, and divisions have grown increasingly bitter” (Megerian). Throughout the Western Interconnection, “energy federalism continues
to shape decentralized decision-making and coordination has often been fractious” (Lenhart et al. 94). However, Californian opposition is serving to exacerbate the rest of the Western Interconnection’s propensity towards isolation and self-reliance. A pattern is emerging in which unwillingness to compromise compounds stakeholders’ existing fear, creating a political failure in which both sides are reluctant to move forward without strong concessions from the other side.

There is another cause for concern to this sustained period of inaction: if development of an RSO waits much longer, the CAISO may not be able to tap all 38 BAs that currently operate outside of an RTO. The NRDC’s Cavanagh predicted that if the venture for an RSO did not pick up steam, other organized markets would “take advantage of the missed opportunity” (Hering). Just a few days after California legislators failed to authorize the next steps to an RSO in 2017, the Mountain Transmission Group (MWTG) confirmed that they entered final negotiations to join SPP. Although “MWTG’s first choice was CAISO’s proposed regional market,” when “political pushback delayed it, they turned to SPP” (Trabish “Transmission Developers”). This loss is a huge “missed opportunity” for the proposed RSO which could lead to “domino effects” among other BAs who want to join a regional system, according to the NRDC’s Director of Western Renewable Grid Planning, Julia Prochnik (Trabish “Transmission Developers”). If California legislators want the best possible outcome for their RSO, they must move quickly before any more Western BAs join another organized market. Californians must decide if they prefer for other organized markets, like SPP, and their leaders to dominate the grid, or if they want the CAISO to become a leader in the west (Hering).
Though time is limited, politicians who rush to get legislation approved may not be met with support, as was the case with Representative Holden’s Assembly Bills 726 and 831. Holden hurriedly introduced his legislation providing the framework for California to take the next steps towards an RSO at the end of the state’s most recent legislative session. However, his actions drew suspicion, especially because opponents have linked the RSO movement with big companies looking to ram through legislation before Californians understand the true consequences. Consumer Watchdog’s Court believes that if the proposal were actually “good for California it wouldn't materialize in the last week of the session when no one has time to focus on the details and problems before voting. This is a last-minute ramrod that will come back to haunt you” (“Watchdog Warns”). Many opponents believe that such a complex bill with the potential to transform the Western Interconnection should only be passed when policymakers have hammered out all of the details of an RSO. However, given the complexity of an RSO, it is highly unlikely that opponents will ever have sufficient information or regulations regarding the new system’s structure before it is actually created.

Though opponents crave certainty, many electricity experts recognize that uncertainty and modifications are simply part of the process. As Sweeney states,

Any major restructuring of such important systems will continue to require modifications well after the initial changes have been implemented. System operation requires monitoring and may require wise and strong leadership to identify and implement changes that are needed after unintended adverse consequences of the system change become apparent (Sweeney “The California Electricity” 281).

Jennifer Gardner, staff attorney for Western Resource Advocates, believes that “any proposal taken to the legislature ‘should be as broad as possible to not tie the hands of the transitional committee’” (Mullin “Governance Plan Critics”). Robin Smutny-Jones,
director of California policy and regulations for Avangrid, has recognized that an RSO “would need to work through contentious issues such as transmission access charges and regional resource adequacy, both of which would be left to a newly constituted RTO” (Mullin “Governance Plan Critics”). However, she notes that “other states have done it, and the West can too” (Mullin “Governance Plan Critics”). While leaving details of the RSO’s functioning to future deliberation is risky in the eyes of the Sierra Club and other opponents fearful of the system’s potential consequences, it is likely the only way for development to progress.

If stakeholders remain unwilling to compromise on their demands, there is little hope for an RSO to move forward. The CAISO has been responsive to stakeholder input in their “Revised Principles for Governance of a Regional ISO,” but they cannot simultaneously satisfy Californian opponents and the other Western States’ desire for autonomy. The CAISO is thus forced to walk a fine line as it “must maintain the involvement and confidence of California utilities, transmission owners and policy makers” while “it interacts with and balances power and influence among new stakeholders as it seeks regionalization” (Lenhart et al. 105). Politicians must also carefully navigate the waters of an RSO by attempting to protect ratepayers, advancing their state’s economic goals and environmental agenda, and avoiding “burdens from transmission cost allocation, loss of rate stability, loss of local political and operational control, and exposure to fundamentally different energy system values and policy drivers” (Lenhart et al. 105). This balancing act, as well as continued risk-aversion resulting from the Enron Scandal, has historically prevented effective political action to advance an RSO. However, many California politicians and energy experts have begun to realize that an RSO “could be
critical in California’s bid to derive half the state’s electricity from renewable sources by 2030” and is probably the most cost-effective option (Yoder). California is likely the state that stands to benefit the most from an RSO due to the requirements of their progressive energy policies. Furthermore, the state will also need to be the first to compromise as “the rest of the West is not willing to engage more fully until [California] change[s] governance” (Hering). Until the California Legislature takes initiative, it is doubtful that progress towards an RSO can truly occur.

Conclusion

Although there are significant, legitimate questions arising from the development of a Western RSO, these issues have been successfully worked through in the formation of RTOs around the world. The barriers to an RSO in the Western Interconnection do not seem to be technical. Rather, political barriers constitute the greatest roadblock to creating a system that would garner large projected benefits. Risk-averse politicians apparently find inaction to be a safer option than exposing themselves to the unlikely possibility that an RSO could bring major negative consequences reminiscent of the California Electricity Crisis. Furthermore, stakeholders are extremely reluctant to compromise and find common ground, even when presented with evidence from legal analysis, comprehensive technical studies, and examples of existing RTOs that show substantial economic and environmental benefits. As clean energy expert Allison Clements simply states, “There’s a lot of fear about this change. Change is scary,” but “the fear is overstated” (Megerian and Penn). This overstated fear continues to drive politicians away from developing a system that could positively shape the future of Western Interconnection electricity markets.
The process of creating a regional market is not only complicated but also lengthy as participants must seek the necessary regulatory approvals—first among the individual state venues and then at the FERC—and then undertake complex logistical preparations prior to final market launch. It will likely take several years “to achieve a regional market of sufficient size to provide the available regional market benefits” (CAISO “Senate Bill 350” xiv). California’s clean energy goals are immediate and pressing. In just over a decade, the state must source 50 percent of its generation from renewable resources while maintaining economic growth. The state is well-endowed with renewable resources, but must act effectively to ensure that the incorporation of this generation does not create a steeper and costlier Duck Curve or lead to increased curtailment of renewable generation. Although there are other complementary means for facilitating California’s aggressive renewable energy goals and mitigating the Duck Curve—such as demand response programs and large-scale storage—the formation of an RSO is likely the cheapest method and could annually provide “$1 billion to $1.5 billion in savings to California electricity users” in addition to savings by other participating states (Trabish “The Head”). As Michele Beck, director of the Utah Office of Consumer Services, says: “Ultimately, policymakers will have to weigh whether a certain amount of loss of sovereignty is worth the benefit” (Mullin “Revised Western”). Opposing stakeholders will need to accept the risk of unforeseen consequences and compromise on their parochial “wish lists” for an RSO. As the NRDC states, “Given the demonstration of potential benefits stemming from regionalizing the current grid operator, it is well worth trying to find a workable option” (Clements). With little time to spare, especially as California nears its policy goal end-dates
and as the effects of climate change worsen, it is crucial for stakeholders to quickly move forward with development to realize the maximum benefits of an RSO.
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