RENEWABLE PORTFOLIO STANDARD OUTCOMES AND THE DORMANT COMMERCE CLAUSE

by Anthony Sacco

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SUMMARY

Over the last few decades, 30 states and Washington, D.C., have enacted renewable portfolio standard (RPS) programs. These programs vary substantially, with most states having a restriction or preference with respect to whether renewables are located in-state or in-region. This Article takes a cross-disciplinary approach to analyzing these programs: first, by looking at how geographic limitations may run afoul of the dormant Commerce Clause (DCC); and second, by considering empirical research on how geographic provisions affect RPS programs' cost-effectiveness. Prohibiting or restricting out-of-state renewables from counting toward RPS requirements is likely unconstitutional, but policies applying on a regional basis or pursuing a practical aim are likely to be viewed more favorably by courts. The DCC thus plays an important role in improving uniformity among state RPS programs and promoting free trade and efficiency.

Escalating concerns about climate change have prompted many governments to implement farther-reaching policies to reduce carbon emissions. The United States accounts for about 15% of worldwide carbon emissions,[1] having consumed about 93 quadrillion British thermal units (Btu) of energy and having generated 4,571 million metric tons (MMT) of energy-related emissions in 2020.[2] About 32% of total U.S. carbon emissions is produced by the electricity sector, primarily from natural gas and coal.[3] From 1973 to 1995, total greenhouse gas (GHG) emissions from the electricity sector increased by more than 50%.[4]

However, since the mid-2000s, there has been a shift from coal to natural gas and renewable energy. Carbon emissions from coal in the electric power sector peaked at 1,987 MMT—about 82% of such emissions—in 2007, when natural gas accounted for only 15% of emissions from electricity generation.[5] From 1970 to 2020, renewable energy production has increased by 189%, almost entirely due to growth in non-hydropower renewables, such as solar, wind, biomass, and geothermal.[6] About one-half of this growth occurred just in the last 15 years of that period.[7] Meanwhile, electricity-related carbon emissions, which peaked at 2,425 MMT in 2007, have fallen to 1,618 MMT by 2019, a 33.1% decline from peak levels.[8] Coal emissions fell to 60% of electricity-sector emissions while natural gas emissions more than doubled to 38%.[9] Undoubtedly, the progress in combatting carbon emissions from electricity production has been the result of both the renewable growth and a significantly reduced reliance on coal-fired power generation.

Roughly one-half of non-hydro renewable production over the past 20 years is either directly or indirectly

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1. U.S. Environmental Protection Agency, *Global Greenhouse Gas Emissions Data*, https://www.epa.gov/ghgemissions/global-greenhouse-gas-emissions-data (last updated July 27, 2021).
2. Office of Energy Statistics, U.S. Energy Information Administration, Monthly Energy Review: March 2021, at 3, 197 (2021), https://www.eia.gov/totalenergy/data/monthly/archive/00352103.pdf.
3. *Id.* at 203. Natural gas produces about one-half the carbon emissions of coal per unit of electric generation. U.S. Energy Information Administration, *Frequently Asked Questions (FAQs): How Much Carbon Dioxide Is Produced When Different Fuels Are Burned?*, https://www.eia.gov/tools/faqs/faq.php?id=73&t=11 (last reviewed June 1, 2021). Renewables produce no carbon emissions.
4. Office of Energy Statistics, *supra* note 2, at 197.
5. *Id.*
6. *Id.* at 5.
7. *Id.*
8. *Id.* at 203. In 2020, electricity-related emissions declined even further to 1,450 MMT, particularly because of lower electricity consumption in April and May during the beginning of the COVID-19 pandemic, *id.*, but the share of U.S. energy production from renewables also increased from 11.4% of overall production in 2019 to a record-high percentage of 12.3% in 2020 from a substantial increase in renewable energy production. *Id.* at 5.
9. *Id.* at 203.

the result of state renewable portfolio standard (RPS) programs.[10] Failure of the federal government to take meaningful action to cut emissions led state and local governments to experiment with various policies,[11] and RPSs are an important part of states' efforts to reduce electric utilities' contribution to carbon emissions. RPSs require utilities, also referred to as load-serving entities (LSEs), to supply a gradually increasing percentage of customer load (i.e., electricity demand or consumption) with electricity generated from qualified renewable sources. States have implemented RPS programs not only to reduce carbon emissions in the state, but also to diversify energy sources, reduce demand for fossil fuels, improve the reliability of their grid, stabilize electricity prices, and create jobs and local economic benefits.[12]

In the majority of RPS states, LSEs can meet their RPS obligations by themselves generating electricity from renewables or, alternatively, purchasing renewable energy credits (RECs) from other facilities that supply power from renewables. RECs serve as a proxy for one megawatt hour (MWh) of renewable electricity and represent the legal rights to the environmental and other benefits that come with renewable production. This has spurred a market for RECs where fossil fuel-reliant utilities seeking to comply with RPS requirements are REC buyers and renewable generators are sellers.

In many cases, RECs are purchased separate from the underlying electricity, or "unbundled," which expands the options for utilities in terms of renewable generators they can contract with, instead of being limited to generators in or near their service area. The result has been the development of large regional exchanges with substantial volumes of REC trading. Thus, the REC trading system represents a market-based means of implementing a command-and-control regulatory framework.

Programs can be designed in myriad ways, varying across target percentages, the timing of target increases, eligible renewable sources, carve-outs for certain renewables, requirements for compliance through RECs, and in-state or in-region generation requirements. As a result, no two states have identical programs. Even within the realm of REC trading, there is significant variation across states. Some states do not allow REC trading or out-of-state REC trading; some states allow out-of-state RECs, but heavily incentivize in-state generation through carve-outs and multipliers; some states impose prohibitively restrictive conditions on out-of-state renewable generation; others allow free trade of RECs with no preferential treatment to in-state RECs.[13] Further, some states may use regional—rather than state—boundaries to accept RECs.[14]

However, express or implicit preferences for in-state generation risk running afoul of the U.S. Constitution. The dormant Commerce Clause (DCC) precludes states from discriminating against interstate commerce or indirectly placing a burden on interstate commerce that outweighs any local benefits.[15] Courts have begun to grapple with the nuances of RPS programs and other similarly structured energy and environmental programs in the DCC context. If an RPS program or provision is deemed to be protectionist and clearly discriminatory, it is unconstitutional per se unless it can satisfy strict scrutiny. If a court finds that a law is not discriminatory on its face or in purpose or effect, but the burden on interstate commerce outweighs the local benefits, it is likewise unconstitutional.

This Article combines a legal analysis of RPS programs under the DCC with a discussion of economic and policy outcomes. There is a substantial body of research on the effectiveness of RPS programs, which, though offering mixed results, suggests that they have had a positive effect on renewable development and reduction of carbon emissions nationwide.[16] One major annual study estimates that 45% of U.S. renewable electricity generation and capacity has historically been attributable to state RPS programs.[17]

A few studies account for variation among RPS policies and examine the effects of individual provisions, such as credit multipliers and restrictions on REC trading. This research indicates that policies that facilitate compliance with RPS targets tend to reduce the efficacy of programs, and features that restrict or prohibit flexibility in REC trading across state or regional lines tend to reduce cost-effectiveness in achieving renewable development and reducing carbon emissions. However, while most studies note the potential legal issues with provisions that preference or limit compliance to in-state or in-region generation, the interplay between the constitutional constraints on these provisions and the efficacy and cost-effectiveness of RPS policies remains relatively unexplored.

I posit that the provisions that are most at risk of being found to be discriminatory against interstate commerce and protectionist, thus violating the DCC, simultaneously prevent the efficient allocation of resources to lower-cost renewable alternatives. In most regions, utilities will find that some out-of-state resources have lower marginal costs, whether because of differentials in renewable potential, diminishing marginal returns to in-state development, or transmission constraints. Greater flexibility in REC trad-

10. Galen Barbose, Lawrence Berkeley National Laboratory, U.S. Renewables Portfolio Standards—2021 Status Update: Early Release 16 (2021), https://eta-publications.lbl.gov/sites/default/files/rps_status_update-2021_early_release.pdf. Some states use similar names, such as renewable energy standard, renewable portfolio goal, alternative energy portfolio, energy portfolio standard, or clean energy standard. States with clean energy standards also allow nuclear power generation, which does not generate carbon emissions, to count toward the clean energy requirements.
11. *See* Kevin L. Doran, *Can the U.S. Achieve a Sustainable Energy Economy From the Bottom-Up?: An Assessment of State Sustainable Energy Initiatives*, 7 Vt. J. Env't L. 95, 107 (2006) ("[S]tate renewable portfolio standards . . . have arguably come to epitomize the idea of state action in the absence of strong federal support for renewable energy.").
12. Lincoln L. Davies, *Power Forward: The Argument for a National RPS*, 42 Conn. L. Rev. 1339, 1358 (2010).
13. *See* Steven Ferrey, *Solving the Multimillion Dollar Constitutional Puzzle Surrounding State "Sustainable" Energy Policy*, 49 Wake Forest L. Rev. 121, 135-37 (2014).
14. *See id.*
15. Allco Fin. Ltd. v. Klee, 861 F.3d 82, 102-03 (2d Cir. 2017); *see* U.S. Const. art. I, §8, cl. 3.
16. *See infra* Part V.
17. Barbose, *supra* note 10, at 16.

ing across state and regional lines increases overall welfare gains by allowing utilities more discretion—and thus lowering their costs—in compliance and planning.

Similarly, credit multipliers that preference in-state resources, which are also potentially constitutionally suspect, mitigate the effectiveness of RPS policies by lowering the cost of compliance and weakening RPS requirements. They also distort investment decisions by altering marginal costs and reducing the economic efficiency of RPS programs, even though they may have positive, localized impacts on carbon emissions, renewable development, public health, and green jobs.

The U.S. Supreme Court has opined that the Framers had in mind the notion of the Commerce Clause as a guardian of free trade among the states, to prevent the "tendencies toward economic Balkanization that had plagued relations among the Colonies and later among the States under the Articles of Confederation."[18] Of course, this is only true to the extent that states take constitutional constraints into account when developing these programs. On the one hand, states may anticipate potential legal challenges and shape their policies accordingly or respond to legal challenges by removing the challenged provisions. On the other hand, states may forge ahead with provisions that are discriminatory, expecting courts to strike down any unconstitutional components.

My analysis of all provisions containing geographical restrictions or preferences over the history of RPS programs shows that most states likely do take constitutional constraints into account, given a relative preference for in-region restrictions as opposed to in-state restrictions, as well as the actions of several states following some major legal moments. However, some states do continue to have constitutionally questionable provisions on the books. Overall, the patterns suggest that the DCC does play a limiting role in state legislative and regulatory decisions in most RPS states, narrowing the decisions available to policymakers to those that make RPS policies more cost effective and efficient.

The Article may also provide additional context to the Joseph Biden Administration's efforts to achieve a 50%-52% reduction in GHG emissions from 2005 levels by 2030, and to eventually reach a fully clean energy economy with net-zero emissions by 2050.[19] President Biden's infrastructure proposal released in April 2021 included an energy-efficiency and clean electricity standard that would set national requirements for utilities to transition not only to wind and solar, but also nuclear and hydropower, and also included investments in carbon-capture technologies that could make fossil fuel resources carbon-neutral.[20] Proponents of a nationwide program argue that it is the only way to create a completely fluid national market for renewables, increase aggregate renewables production, and maximize overall emissions reductions, given the limited impact of state programs.[21] It is possibly the most politically feasible option for national climate policy, with substantial environmental and health benefits flowing to more conservative states.[22]

In contrast, opponents claim that a national RPS would effect a transfer of wealth from states with few renewable resources like southeastern states to renewable-rich states, concentrating environmental and economic benefits in the states that already have RPS programs.[23] Instead, a more flexible, piecemeal approach may allow states to experiment and tailor their programs to state and local conditions and to pursue more aggressive renewables quotas than the modest requirement that could possibly be imposed under a national RPS.[24] A national standard would likely require massive investments in transmission infrastructure and expansion of federal authority over transmission line siting.[25]

Further, Republican opposition to major climate policies led the clean electricity standard to be left out of the latest bipartisan infrastructure deal, leaving the bare Democratic U.S. Senate majority with budget reconciliation as potentially the only option for moving forward.[26] However, even if the Administration fails to secure passage of a national program, the DCC still promotes many of the same concepts embodied in a national RPS by reducing barriers to interstate renewables markets, pushing states

18. Hughes v. Oklahoma, 441 U.S. 322, 325, 9 ELR 20360 (1979).
19. Fact Sheet, The White House, President Biden Sets 2030 Greenhouse Gas Pollution Reduction Target Aimed at Creating Good-Paying Union Jobs and Securing U.S. Leadership on Clean Energy Technologies (Apr. 22, 2021), https://www.whitehouse.gov/briefing-room/statements-releases/2021/04/22/fact-sheet-president-biden-sets-2030-greenhouse-gas-pollution-reduction-target-aimed-at-creating-good-paying-union-jobs-and-securing-u-s-leadership-on-clean-energy-technologies/; Biden Harris, *The Biden Plan for a Clean Energy Revolution and Environmental Justice*, https://joebiden.com/climate-plan/ (last visited Sept. 8, 2021).
20. Fact Sheet, The White House, The American Jobs Plan (Mar. 31, 2021), https://www.whitehouse.gov/briefing-room/statements-releases/2021/03/31/fact-sheet-the-american-jobs-plan/.
21. *E.g.*, Davies, *supra* note 12, at 1366-67, 1370-71.
22. *See* Daniel Esposito, *Three Reasons Why Democrats AND Republicans Should Love Biden's Clean Electricity Standard*, Forbes (Aug. 10, 2021), https://www.forbes.com/sites/energyinnovation/2021/08/09/three-reasons-why-democrats-and-republicans-should-love-bidens-clean-electricity-standard/?sh=5a73c2543224 (arguing that Republican-led and swing states will see the greatest reduction in pollution from the elimination of coal and the greatest benefits in terms of premature deaths avoided from ozone and fine particulate matter reduction).
23. *E.g.*, Joshua P. Fershee, *Changing Resources, Changing Market: The Impact of a National Renewable Portfolio Standard on the U.S. Energy Industry*, 29 Energy L.J. 49, 59-61 (2008); Mary Ann Ralls, *Congress Got It Right: There's No Need to Mandate Renewable Portfolio Standards*, 27 Energy L.J. 451, 455-56 (2006); Jim Rossi, *The Shaky Political Economy Foundation of a National Renewable Electricity Requirement*, 2011 U. Ill. L. Rev. 361, 367-68 (2011).
24. *See* Daniel A. Lyons, *Federalism and the Rise of Renewable Energy: Preserving State and Local Voices in the Green Energy Revolution*, 64 Case W. Rsrv. L. Rev. 1619, 1665-66 (2014); Ralls, *supra* note 23, at 456-60.
25. *See* Fershee, *supra* note 23, at 66-68; Rossi, *supra* note 23, at 377-79.
26. *See* Josh Lederman, *What's a Clean Energy Standard? Democrats Try Carrots and Sticks on Climate Change*, NBC News (July 15, 2021), https://www.nbcnews.com/politics/congress/what-s-clean-energy-standard-democrats-try-carrots-sticks-climate-n1274086. As of early October 2021, critics of the reconciliation bill's Clean Energy Performance Program claim that its one-time, up-front rebates for purchasing new renewable electricity make it more like the Investment Tax Credit rather than a national clean energy standard and "will result in less new clean energy at higher cost." Severin Borenstein et al., *The CEPP Is Not a Clean Energy Standard*, Energy Inst. Blog (Oct. 4, 2021), https://energyathaas.wordpress.com/2021/10/04/the-cepp-is-not-a-clean-energy-standard/.

toward a more efficient allocation of resources, and helping achieve more cost-effective emissions reduction and renewables production.

Part I describes state RPS policies and notes their reliance on provisions that address the geographic origin of renewable generation. In Parts II and III, I discuss how these provisions risk violating the DCC of the Constitution on the grounds that they preference or limit compliance with RPS obligations by placing a burden on interstate commerce.

After discussing changes to RPS programs over time and the role of DCC limitations on policymaking in Part IV, I proceed in Part V to argue that the RPS features most likely to be found unconstitutional operate to limit the cost-effectiveness of RPS programs by reducing the efficiency of resource allocation in renewable investment and development. The DCC may actually serve to create more uniform and fluid markets for REC trading that allow RPS programs to incentivize renewable deployment and reduce carbon emissions more cost effectively. Part VI concludes.

I. RPS Design and Policy Options

Thirty states and Washington, D.C., have RPS policies, covering 58% of all U.S. retail electricity sales.[27] States without mandatory RPS policies are largely in the Southeast and the Midwest.[28] Target percentages that LSEs must provide from eligible renewable energy resources vary from 8.5% (Ohio) to 100% (Hawaii) of net electricity sales, and target years range from 2015 to 2045.[29]

Most states allow solar, wind, biomass, and landfill to count toward meeting renewable requirements—but not hydroelectric or nuclear power—and some states also allow biogas, municipal solid waste, geothermal, or fuel cells to qualify.[30] In some states, the requirements apply to all utilities while in others they apply only to investor-owned utilities (IOUs), or set different target percentages for different classes of utilities. Oregon requires IOUs with 3% or more of the state's load to provide 50% of its load from renewable energy resources by 2040, but those with less than 3% must only reach 5% or 10% by 2025.[31]

Sixteen states and D.C. have carve-outs for solar, wind, or distributed generation within the target percentages.[32] For example, Illinois requires electric utilities to provide 25% of their retail supply from renewables by 2026, with 75% of this coming from wind or solar photovoltaic (PV).[33] Colorado set a renewables target of 30% of retail sales beginning in 2020, and at least 3% of retail sales must be from distributed generation.[34] Many states only allow generation from new assets or allow generation from some, but not all, existing resources. Maine requires LSEs to supply at least 30% of retail sales from renewable and certain energy-efficiency resources, but an additional 10% must come from renewables that come online after September 1, 2005.[35]

Nearly all states allow compliance with RPS requirements through a market-based REC trading mechanism. Generally, a utility earns one REC for each MWh of electricity generated from an eligible renewable energy resource, which can count toward the state's RPS requirement. Utilities that cannot generate renewable electricity themselves must purchase electricity or RECs from other renewable energy suppliers to meet their requirements. Conversely, firms that generate renewable energy beyond their obligations may sell their surplus RECs on the market. RECs can be sold with their underlying energy (i.e., bundled), whereby the generator transmits that energy onto the same grid to which the buyer is connected.

In most states, RECs can also be sold separately from the associated electricity (i.e., unbundled). The purchasing utility may comply with the RPS requirements by purchasing RECs from other suppliers even though the actual electricity delivered to the customer may or may not have been from a renewable source. The renewable energy associated with an unbundled REC may not have even been transmitted onto the same grid as the buyer. Unbundling RECs from the underlying electricity enlarges the geographic area from which LSEs may purchase renewable energy to comply with RPS requirements, since the electricity need not be able to be transmitted to their customers.

The introduction of RPS programs throughout the country spurred regional REC markets that allow LSEs to purchase not only from in-state renewable facilities, but also from out-of-state facilities.[36] Many states concerned

27. Barbose, *supra* note 10, at 9. This does not include states with voluntary renewable electricity goals (Kansas, North Dakota, South Dakota, and Utah) or broader clean energy requirements that do not have a renewables-specific component (Indiana).
28. *Id.*
29. *Id.*
30. Ferrey, *supra* note 13, at 133.
31. Or. Rev. Stat. Ann. §§469A.052(1), 469A.055(1)-(3) (West 2016).
32. Barbose, *supra* note 10, at 10.
33. 20 Ill. Comp. Stat. Ann. 3855/1-75(c)(1)(C) (West 2020). In 2016, Illinois also set a numerical target of 4,000,000 RECs by 2030 from new solar PV projects, one-half from distributed generation or community projects, 40% from utility-scale solar projects, and 2% from brownfield site PV projects. *Id.*
34. Colo. Rev. Stat. Ann. §40-2-124(1)(c)(I)(E) (West 2019).
35. Me. Stat. tit. 35-A, §3210(2)(B-4) (2019).
36. These markets are facilitated by REC tracking systems, which are primarily regional, though a few states—Michigan, Nevada, New York, North Carolina, and Texas—have set up their own REC tracking systems. Center for Resource Solutions, Renewable Energy Certificate Tracking Systems in North America (2019), https://resource-solutions.org/wp-content/uploads/2018/02/Tracking-System-Map.pdf. These tracking systems document renewable generation of participating facilities, track ownership of RECs, ensure that there is no double-counting, and retire RECs that have been applied to RPS requirements. Jennifer Martin, Center for Resource Solutions, Presentation, Renewable Energy Certificate Tracking Systems (Apr. 30, 2015), https://www.epa.gov/sites/production/files/2016-01/documents/webinar_20150430_martin.pdf; *The Importance of REC Tracking Systems*, OneEnergy Renewables (Aug. 8, 2012), https://www.oneenergyrenewables.com/news/the-importance-of-rec-tracking-systems/. All tracking systems allow some, if not full, REC trading with adjacent registries (e.g., RECs can be traded between the North American Renewables Registry, which covers the Midwest and South, and the Michigan Renewable Energy Certification System, while RECs can be exported from, but not imported into, the Western Renewable Energy Generation Information System, PJM Generation Attribute Tracking System, which covers PJM, Ohio, Virginia, and West Virginia, and the Electric Reliability Council of Texas system). M-RETS, *REC Imports & Exports*, https://www.mrets.org/registries/ (last visited Sept. 8, 2021).

with leakage—the loss or spillover of the economic and environmental benefits of their RPS programs into neighboring states—have imposed various restrictions or preferences to incentivize in-state or in-region generation of renewable energy over out-of-state generation. As of 2021, six states have REC multipliers for in-state utility-scale or customer-sited generation.[37]

For example, Delaware allows a 300% credit for in-state distributed solar.[38] LSEs may also receive a 150% credit for energy from wind turbines sited in Delaware on or before December 31, 2012.[39] Four states also give preference, including through credit multipliers, to in-state manufacturing or in-state work force.[40] Delaware and Michigan offer 110% credits toward compliance for systems manufactured in state or using in-state work force.[41] Similarly, Montana requires contractors to give preference to in-state work force in procurement contracts.[42]

Geographic restrictions can come in many forms that vary in restrictiveness. Only one state—Hawaii—does not allow any out-of-state renewable generation to count for compliance because it does not use RECs and it is not interconnected with any other states.[43] Since its inception in 1983, Iowa's program has required LSEs to wheel electricity from renewable facilities located in their service area, and in 2003, it further allowed them to own renewable facilities located in state.[44] Michigan followed suit by allowing out-of-state generation to the extent that it is within utilities' service area.[45] California's original RPS program, passed in 2002, only allowed resources "located in the state or near the border of the state with the first point of connection to the Western Electricity Coordinating Council (WECC) transmission system located within this state."[46] In 2006, the state expanded eligible resources to include certain renewable electricity generated within the WECC service area, or the Western Interconnection.[47]

Illinois has had some form of in-state preference since the program was created in 2007. The original legislation required renewable energy resources to be generated from in-state facilities so long as they were cost effective.[48] If they could not be procured in state at a cost less than the average amount paid per kilowatt hour (kWh) in the prior year, utilities could seek more cost-effective renewables in adjoining states, and if more cost-effective renewable electricity could not be obtained in those states, utilities could turn to facilities in any other state.[49] The legislature overhauled its RPS program in 2016 and changed this restriction to still give preference to in-state facilities, but allowed the Illinois Power Agency to accept RECs from facilities in adjacent states if it will further the state interest in minimizing pollution, increasing fuel and resource diversity, enhancing grid reliability and resiliency, and reducing carbon emissions.[50]

A few states permit out-of-state renewable generation but have an express limitation on how much may be used to meet RPS requirements, such as North Carolina, which caps unbundled RECs from out-of-state new renewable energy facilities at 25% of the RPS percentage (i.e., 2.5% out of 10% of retail sales for 2019).[51] California made major changes to its program in 2011 by creating three portfolio content categories for satisfying RPS requirements. Category one, which includes in-state renewable generation and its functional equivalents, must account for at least 75% of a retail seller's portfolio.[52] Categories two and three generally include all out-of-state generation, with the third category, capped at 10% beginning in 2017, encompassing all unbundled or tradable RECs.[53] Ohio initially required

37. *See* Ariz. Admin. Code §14-2-1806(D)-(F) (2007); Del. Code Ann. tit. 26, §356(a)-(c) (West 2010); Me. Rev. Stat. Ann. tit. 35-A, §§3603(4)(B), 3605 (2009); Mo. Ann. Stat. §393.1030(1) (West 2018); Nev. Rev. Stat. Ann. §704.7822 (West 2013); Or. Rev. Stat. Ann. §757.375(2) (West 2016).
38. Del. Code Ann. tit. 26, §356(a)(1) (West 2010).
39. *Id.* §356(b).
40. *See* Ariz. Admin. Code §14-2-1807 (2007); Del. Code Ann. tit. 26, §356(d), (e) (West 2010); Mich. Comp. Laws Ann. §460.1039(2)(d)-(e) (West 2017); Mont. Code Ann. §69-3-2005(3)(a) (West 2009).
41. Del. Code Ann. tit. 26, §356(d), (e) (West 2010); Mich. Comp. Laws Ann. §460.1039(2)(d)-(e) (West 2017).
42. Mont. Code Ann. §69-3-2005(3)(a) (West 2009).
43. North Carolina Clean Energy Technology Center, States With In-State Resource RPS Requirements 4 (2014), http://ncsolarcen-prod.s3.amazonaws.com/wp-content/uploads/2015/01/2014-Daniel-In-State-RPS-Requirements.pdf. Hawaii is unique because it is not interconnected with a larger interstate transmission network, and the state legislature designed its 100% RPS with the goal of reducing imports of higher-cost fossil fuels and oil-based fuels in mind. State of Hawaii Public Utilities Commission, Report to the 2019 Legislature on Hawaii's Renewable Portfolio Standards 9 (2018), https://puc.hawaii.gov/wp-content/uploads/2018/12/RPS-2018-Legislative-Report_FINAL.pdf.
44. Act of June 6, 1983, ch. 182, §4, 1983 Iowa Acts 389, 390 (codified at Iowa Code §476.43); Act of Apr. 11, 2003, ch. 29, §2, 2003 Iowa Acts 34, 35 (amending Iowa Code §476.33). The service areas of Iowa's two IOUs, Interstate Power and Light Company and MidAmerican Energy Company, also include a substantial part of Wisconsin and small areas of Illinois, Nebraska, and South Dakota. *See* ArcGIS, *Alliant Energy Service Area*, https://www.arcgis.com/home/webmap/viewer.html?useExisting=1&layers=0cee84e19e0841bfae1a40a336b8d82e (last visited Sept. 8, 2021); *MEC Service Area Map With All Towns Service*, MidAmerican Energy Co., https://www.midamericanenergy.com/media/pdf/mec-detailedservicearea-towns.pdf (last visited Oct. 1, 2021).
45. Mich. Comp. Laws Ann. §460.1029(1) (West 2017).
46. Act of Sept. 12, 2002, ch. 516, §3, 2002 Cal. Stat. 2942, 2944 (codified at Cal. Pub. Util. Code §399.12(a)(1)); Cal. Pub. Res. Code §25741(a)(1)-(2) (West, Westlaw through 2005 portion of the 2005-2006 Reg. Sess. and Nov. 2005 election).
47. Act of Sept. 26, 2006, ch. 464, §3, 2006 Cal. Stat. 3298, 3299-3302 (amending Cal. Pub. Res. Code §25741). Generators located outside California but within the WECC territory would qualify only if the generator's output was "used to serve end-use retail customers located within the state." *Id.* at 3300.
48. Act of Aug. 28, 2007, P.A. 95-481, art. 1, §1-75, 2007 Ill. Laws 6821, 6846 (codified at 20 Ill. Comp. Stat. Ann. 3855/1-75(c)(3)).
49. *Id.* This form of the statute was only effective until June 1, 2011, at which point preference was to be given equally to generation located in Illinois and adjoining states. *Id.*
50. 20 Ill. Comp. Stat. Ann. 3855/1-75(c)(1)(I) (West 2020); Act of Dec. 7, 2016, P.A. 99-906, §5, 2016 Ill. Laws 4581, 4645-46 (repealing 20 Ill. Comp. Stat. Ann. 3855/1-75(c)(3)).
51. Ferrey, *supra* note 13, at 136; N.C. Gen. Stat. Ann. §62-133.8(b)(2)(e) (West 2017).
52. Act of Apr. 12, 2011, 1st Ex. Sess., ch. 1, §22, 2011 Cal. Stat. 5775, 5794-95 (codified at Cal. Pub. Util. Code §399.16(c)); *see* California Public Utilities Commission, California Renewables Portfolio Standard: Annual Report 50-51 (2018), https://www.cpuc.ca.gov/industries-and-topics/electrical-energy/energy-reports-and-whitepapers/rps-reports-and-data [hereinafter California 2018 Annual Report].
53. Cal. Pub. Util. Code §399.16(c)(1) (West 2020); Latham & Watkins, The California Public Utilities Commission Approves New Categories for Renewable Energy Procurement 1 (2012), https://www.

one-half of its requirements to be met through in-state generation, with the remainder met through resources deliverable into the state, though this restriction was removed in 2014.[54]

Alternatively, states may allow out-of-state renewable generation to count against the overall target percentage but prohibit its compliance with carve-outs for certain renewable resources. In 2010, Massachusetts created a solar carve-out limited to qualified in-state, interconnected solar facilities.[55] The state has since ended new applicants into this program and replaced it with a new carve-out for larger solar generation facilities without a requirement that they be based in state.[56] Pennsylvania, which requires a portion of its 18% requirement to be met through solar PV, amended its statute in 2017 to provide that the solar carve-out may only be satisfied by facilities located in state or within the service area of a state utility.[57]

In order to boost the reliability of electricity systems, provide an alternative path for reducing emissions and shifting to renewables, lower electricity costs, and get around the problems that come with transmitting electricity across great distances, states have found various ways to promote "distributed generation" (DG) through their RPS programs.[58] DG is the small-scale generation of electricity distributed for use at or near the point of generation, bypassing the need for transmission.[59] This is also referred to as "behind-the-meter generation." In the past few years, DG has shifted from diesel generators to solar PV, which is estimated to provide more than two-thirds of electricity from DG by 2025.[60] The cost of small-scale solar has declined in the past decade, states and utilities have developed net metering programs and other policies designed to promote solar and manage demand, and the federal Investment Tax Credit has provided a robust incentive for investment in rooftop solar PV and community-based systems.[61]

States have aimed to promote DG in their RPS programs through carve-outs and credit multipliers, some of which require that the system be located on the customer's premises or in state. At least seven states have carve-outs for DG or distributed solar.[62] Ten states have a DG provision with a geographical restriction.[63] However, the uniquely local nature of DG comes with an inherent geographical limitation.

A state may be express in its requirements, such as Rhode Island, which only counts RECs generated from off-grid or customer-sited resources located in state.[64] The requirement may also operate indirectly through the definition of "customer." Nevada allows a 240% credit for customer-sited solar PV that generates at least 50% of the energy consumed on the premises of a retail customer, which the statute defines as a "customer that purchases electricity for consumption" in Nevada.[65] Similarly, Connecticut effectively limits compliance to DG located in state by only counting credits generated from resources connected to the distribution system or located in the service territory of the state's two utilities, Eversource and United Illuminating.[66] Since off-grid resources in another state could never satisfy this definition, Connecticut is functionally imposing an in-state requirement on DG.

Two-thirds of RPS programs contain an in-region generation restriction, such that RECs may only be counted toward the RPS requirements if they are generated by facilities in a specified geographic region or regional transmission organization (RTO)/independent system operator (ISO), even though they may be out of state.[67] For example, Connecticut limits REC eligibility to electricity

lw.com/thoughtLeadership/California-approves-new-categories-for-renewable-energy; *see* California 2018 Annual Report, *supra* note 52.

54. Act of May 1, 2008, Am. Sub. S.B. 221, §1, 2008 Ohio Laws 792, 835 (codified at Ohio Rev. Code Ann. §4928.64(B)(3)); Act of June 13, 2014, Sub. S.B. 310, §1, 2014 Ohio Laws 1, 19-20 (amending Ohio Rev. Code Ann. §4928.64(B)(3)).
55. 225 Mass. Code Regs. 14.05(4)(a) (2011); DSIRE, *Massachusetts: Renewable Portfolio Standard*, https://programs.dsireusa.org/system/program/detail/479 (last updated July 9, 2018). These regulations were challenged as facially discriminatory under the DCC by TransCanada Power Marketing in 2010, and Massachusetts regulators agreed to amend the regulations to allow solar contracts entered into prior to the promulgation of the regulations to count toward the solar requirement. Complaint, TransCanada Power Mktg., Ltd. v. Bowles, No. 40070-FDS (D. Mass. Apr. 16, 2010) [hereinafter TransCanada Complaint]; Partial Settlement Agreement, TransCanada Power Mktg., Ltd. v. Bowles, No. 40070-FDS (D. Mass. May 2010) [hereinafter TransCanada Settlement Agreement]; *see infra* Part III.
56. DSIRE, *supra* note 55.
57. Act of Oct. 30, 2017, ch. 40, §11.1, https://www.legis.state.pa.us/cfdocs/Legis/LI/uconsCheck.cfm?txtType=HTM&yr=2017&sessInd=0&smthLwInd=0&act=40# (codified at 71 Pa. Stat. and Cons. Stat. Ann. §714(1) (West 2017)).
58. *See generally* Samantha Donalds, Clean Energy States Alliance, Distributed Generation in State Renewable Portfolio Standards (2017), https://cdn.cesa.org/wp-content/uploads/DG-RPS.pdf.
59. *Id.* at 3.
60. Jeff St. John, *5 Major Trends Driving the $110B US Distributed Energy Resources Market Through 2025*, Greentech Media (June 22, 2020), https://www.greentechmedia.com/articles/read/5-takeaways-on-the-future-of-the-u.s-distributed-energy-resources-market.
61. *See* Karlynn Cory, U.S. Department of Energy Office of Indian Energy Policy and Programs, 2020 Tribal Energy Webinar, Behind-the-Meter Projects: Overview 6-15 (Aug. 26, 2020), https://www.energy.gov/sites/default/files/2020/08/f77/1_Cory-NREL.pdf (discussing the variations on net metering arrangements and showing that the cost of residential solar PV had fallen by about 24% from 2014 to 2019); *State Net Metering Policies*, Nat'l Conf. St. Legislatures (Nov. 20, 2017), https://www.ncsl.org/research/energy/net-metering-policy-overview-and-state-legislative-updates.aspx (providing an overview of state net metering programs and noting that net metering policies can dovetail with state RPS programs); *see generally* 26 U.S.C. §§25D (residential properties), 48 (commercial properties); Solar Energy Industries Association, Solar Investment Tax Credit (ITC) (2021), https://www.seia.org/sites/default/files/2021-01/SEIA-ITC-Fact-sheet-2021-Jan.pdf.
62. Donalds, *supra* note 58, at 8-9.
63. *See* Appendix Table A1.
64. 39 R.I. Gen. Laws Ann. §39-26-4(d) (West 2016).
65. Nev. Rev. Stat. Ann. §§704.7818 (West 2019), 704.7822 (West 2013).
66. Connecticut Green Bank, Request for Proposals for Solar Home Renewable Energy Credit (SHREC) Monetization 17 (2017), https://ctgreenbank.com/wp-content/uploads/2017/12/SHREC-RFP-Final.pdf; United Illuminating, Question and Answer Document Associated With the Low and Zero Emissions Renewable Energy Credit Program of the Connecticut Light and Power Company (2016), https://www.uinet.com/wps/wcm/connect/www.uinet.com-7188/2df74953-1053-46b4-a52b-b8468e43f58d/LREC-ZREC%2BQ%26A%2BUpdated%2B1.20.17.pdf?MOD=AJPERES&CACHEID=ROOTWORKSPACE.Z18_J092I2G0N01BF0A7QAR8BK20A3-2df74953-1053-46b4-a52b-b8468e43f58d-mEIn9Lw.
67. Twenty-one states have an in-region requirement as of 2021. *See* Appendix Table A1.

generated in ISO New England (ISO-NE), which includes Connecticut, Maine, Massachusetts, New Hampshire, Rhode Island, and Vermont, or in the adjacent control area that can import into ISO-NE, which includes New York, New Brunswick, Nova Scotia, Prince Edward Island, and Quebec.[68] These two areas combined make up the region in which the New England Power Pool Generation Information System (NEPOOL GIS) issues and tracks RECs to ensure that credits are retired once sold and not double-counted.[69]

Several other states follow this requirement of being capable of delivering electricity into the state or the broader region. Three of the RPS states have no in-state or in-region preferences at all.[70]

II. Development of DCC Doctrine

In the absence of a national RPS program, states have taken it upon themselves to pursue emissions reduction and renewable development, and the substantial variation from state to state has predictably resulted in a patchwork of unique RPS policies, though with some common elements. Of the many variants of RPS program features, provisions that demonstrate a preference for in-state or in-region generation—whether through credit multipliers, preferences, or express requirements—pose unique legal questions that courts have begun to grapple with, particularly over the past 10 years, even though questions about how the states are limited by the U.S. Congress' power to regulate interstate commerce are not new.

Article I of the Constitution gives Congress the power "to regulate Commerce . . . among the several States,"[71] and this text was included in the final document primarily to remedy flaws in the Articles of Confederation.[72] A "leading defect" of the Articles that the Clause sought to address was the absence of any national power to regulate commerce and the disharmony among states "pursu[ing] [their] own real or supposed local interests . . . in order to satisfy public clamor, or to alleviate private distress."[73]

The likelihood that states would pass regulation distorting interstate markets or capitalizing on their abundance of natural resources in rivalry with each other gave rise to concern that such regulations, "if not restrained by a national control, would be multiplied and extended till they became not less serious sources of animosity and discord, than injurious impediments to the intercourse between the different parts of the confederacy."[74] The Commerce Clause, therefore, permits "[a]n unrestrained intercourse between the States . . . advanc[ing] the trade of each, by an interchange of their respective productions,"[75] checking internal impulses to burden the free flow of commerce and vesting in the federal government the power to facilitate uniform, national commercial markets.[76]

This historical background provides context for the Supreme Court's interpretation that the Commerce Clause prohibits states from placing any direct burden on interstate commerce.[77] This is not an absolute restriction, however, as states may pass laws that indirectly affect interstate commerce and do not "discriminate against interstate commerce or operate to disrupt its required uniformity."[78] This "inference"[79] from the Commerce Clause is referred to as the dormant Commerce Clause.

The Court's DCC jurisprudence has its roots as far back as *Gibbons v. Ogden*, in which Chief Justice John Marshall stated that when a state seeks to regulate interstate commerce, "it is exercising the very power that is granted to Congress, and is doing the very thing which Congress is authorized to do."[80] A power expressly granted to Congress, as was the Commerce Power, was exclusively for Congress, and was not to be exercised concurrently with the states.[81] For Chief Justice Marshall, a state impinged on Congress' Commerce Power not necessarily because it pursued economic protectionism, but when it enacted commercial regulation rather than police regulation through which it could permissibly regulate public health and safety.[82]

Federalism, rather than protectionism, concerns underlay the early DCC cases. The Court held in *Public Utilities Commission of Rhode Island v. Attleboro Steam & Electric Co.* that the interstate wholesale sale of electricity by Narangansett Company (a wholesale supplier located in Rhode Island) to Attleboro Company (a distributor in Massachusetts) could not be regulated by a state public utilities commission (PUC), since such regulation would place a direct

68. Conn. Gen. Stat. Ann. §16-245A(b)(1)(A) (West 2019); DSIRE, *Connecticut: Renewables Portfolio Standard*, https://programs.dsireusa.org/system/program/detail/195 (last visited Sept. 8, 2021).
69. *See* NEPOOL GIS, *Home Page*, https://www.nepoolgis.com/ (last visited Sept. 8, 2021).
70. Hawaii, Minnesota, and Wisconsin have no express geographic limitations as of 2021, though Hawaii's disallowance of RECs for compliance has the effect of requiring in-state generation. *See* Appendix Table A1.
71. U.S. Const. art. I, §8, cl. 3.
72. Donald J. Kochan, *The Meaning of Federalism in a System of Interstate Commerce: Free Trade Among the Several States*, 95 Notre Dame L. Rev. Reflection 166, 172 (2020).
73. Joseph Story, A Familiar Exposition of the Constitution of the United States §163, at 140 (Regnery Gateway, Inc. 1986) (1859).
74. The Federalist No. 22, at 137 (Alexander Hamilton) (Jacob E. Cooke ed., 1961).
75. The Federalist No. 11, at 71 (Alexander Hamilton).
76. Kochan, *supra* note 72, at 172-76; *see also id*. at 166-67:
> [A]dvocating in favor of 'states' rights' . . . would allow states to act in a manner that is quite contrary to perhaps the most important aspect of American federalism embodied in the Constitution—the constitutional facilitation of a national free trade zone known as the United States wherein each independent unit is disabled from erecting barriers to trade. . . .

77. *See* Pennsylvania Gas Co. v. Public Serv. Comm'n, Second Dist., of State of N.Y., 252 U.S. 23, 29 (1920) ("The general principle is well established and often asserted in the decisions of this court that the state may not directly regulate or burden interstate commerce. That subject, so far as legislative regulation is concerned, has been committed by the Constitution to the control of the federal Congress.").
78. Huron Portland Cement Co. v. City of Detroit, 326 U.S. 440, 448 (1960).
79. Entergy Nuclear Vt. Yankee, LLC v. Shumlin, 733 F.3d 393, 429, 43 ELR 20201 (2d Cir. 2013).
80. 22 U.S. (9 Wheat.) 1, 199-200 (1824).
81. *Id.* at 209 ("[T]he word 'to regulate' implies in its nature, full power over the thing to be regulated, it excludes, necessarily, the action of all others that would perform the same operation on the same thing.").
82. Norman R. Williams, *The Dormant Commerce Clause: Why* Gibbons v. Ogden *Should Be Restored to the Canon*, 49 St. Louis U. L.J. 817, 823-24 (2005).

burden on interstate commerce where Congress has chosen to leave it unregulated.[83] The Court ruled that neither state could regulate wholesale electricity sales, only Congress, since such sales are of national interest rather than a purely local matter, and shall only be subject to uniform federal regulation if Congress so chooses.[84] This presented an easy case, since interstate commerce was directly regulated or burdened by the Rhode Island PUC's attempt to regulate electricity being transmitted across state borders.

As *Attleboro* demonstrates, early cases balanced the nature and extent of the burden from the state action on interstate commerce, as well as the local versus national interest. One of these cases is *South Carolina State Highway Department v. Barnwell Bros.*, which involved a challenge to a South Carolina law prohibiting the use on state highways of trucks that were more than 90 inches wide or that had a gross weight over 20,000 pounds.[85] About 85%-90% of the nation's trucks exceeded these limits.[86]

Despite this significant effect on interstate commerce, the Court applied a very deferential standard of review and found that highway regulation was "so peculiarly of local concern" as to permit state regulation that applies to interstate and intrastate highway transportation alike.[87] Then-Justice Harlan Stone pointed out that regulations having the purpose or effect of gaining "for those within the state an advantage at the expense of those without, or [burdening] those out of the state without any corresponding advantage to those within" are impermissible even in the absence of federal regulation, while any otherwise legitimate exercise of state power that happens to place an "incidental burden on interstate commerce" does not violate the DCC.[88]

A similar analysis was used to invalidate an Arizona law prohibiting railroad trains of more than 14 passenger cars or 70 freight cars from operating within the state.[89] Then-Chief Justice Stone in *Southern Pacific Co. v. Arizona* found that the state's purported interest in reducing railway accidents and casualties by limiting the number of cars would have a negligible effect on railroad safety.[90] Such limited impact is outweighed by the disruption to the significant national interest in uniformity of interstate railroad regulation.[91] In contrast, Justice William Douglas in dissent would have afforded the state regulation a presumption of validity as a safety regulation within an area of traditionally local authority, and he argued that courts should only intervene where legislation has discriminated against interstate commerce or has been preempted by federal law.[92]

A. *State Regulations That Are Clearly Protectionist or Discriminatory*

While the Court would continue to flesh out a test for dealing with state laws that incidentally burdened interstate commerce, the idea that a clearly protectionist state action impinges on the DCC became more quickly enshrined into law. In 1949, the Court held that New York's denial of a license for H.P. Hood & Sons, Inc., a Massachusetts milk distributor, to open a new plant in Greenwich, New York, violated the DCC.[93] The license was denied on the grounds that allowing Hood to operate a new plant would reduce the volume of milk available to existing New York distributors, increase the cost of handling milk in those plants, and "tend to a destructive competition in a market already adequately served."[94]

The Court found this action prohibited by the DCC, as New York was not merely exercising its police power "to shelter its people from menaces to their health or safety and from fraud, even when those dangers emanate from interstate commerce," but "retard[ing], burden[ing], or constrict[ing] the flow of such commerce for their economic advantage."[95] State regulation that would "neutralize the economic consequences of free trade among the states" and "establis[h] an economic barrier against competition with the products of another state or the labor of its residents" is therefore invalid.[96]

The view that the state police power did not extend to insulating local economic interests from competition ultimately won out over Justice Felix Frankfurter's dissenting opinion, in which he argued that the protection of health, safety, and welfare and protection against "destructive competition" differ in degree, rather than in kind.[97] Rather, the majority concluded that the DCC sought to ensure a uniform, national marketplace by prohibiting states from erecting barriers to free trade, echoing the sentiments of the drafters of the Commerce Clause.[98]

State regulation that serves only protectionist purposes or is discriminatory in effect or purpose is per se invalid unless it can pass strict scrutiny—that the regulation serves a legitimate, non-protectionist purpose and that there is no less discriminatory means available.[99] The North Carolina law at issue in *Hunt v. Washington State Apple Advertising Commission*, which required all closed containers of apples imported into the state to be labeled according to federal grading systems, fell into this category.[100] North Carolina apple producers, unlike their Washington counterparts, had already labeled their goods according to the

83. 273 U.S. 83, 89-90 (1927).
84. *Id.* at 90.
85. 303 U.S. 177, 180 (1938).
86. *Id.* at 182.
87. *Id.* at 187-89.
88. *Id.* at 184 n.2, 191.
89. Southern Pac. Co. v. Arizona ex rel. Sullivan, 325 U.S. 761, 763, 783-84 (1945).
90. *Id.* at 775-79.
91. *Id.* at 781-82.
92. *Id.* at 795-96 (Douglas, J., dissenting).
93. H.P. Hood & Sons, Inc. v. Du Mond, 336 U.S. 525 (1949).
94. *Id.* at 528-29.
95. *Id.* at 533.
96. *Id.* at 532 (citing Baldwin v. G.A.F. Seelig, Inc., 294 U.S. 511, 526-27 (1935)).
97. *Id.* at 570-72 (Frankfurter, J., dissenting).
98. *Id.* at 539 ("Our [economic] system, fostered by the Commerce Clause, is that every farmer and every craftsman shall be encouraged to produce by the certainty that he will have free access to every market in the Nation.").
99. Hunt v. Washington State Apple Adver. Comm'n, 432 U.S. 333, 353 (1977).
100. *Id.* at 335, 350.

U.S. Department of Agriculture grade prior to passage of the law, and so the law had the effect of protecting the local apple industry from Washington apple producers—raising the cost of doing business for Washington apple growers with no equivalent burden on North Carolina growers.[101]

The Court noted that the record also indicated a discriminatory and protectionist purpose contrary to the stated purpose of "protecting consumers from deception and fraud in the marketplace," but the disparate effect was sufficient to subject the law to strict scrutiny.[102] In an 8-0 decision, the Court could not find any relationship between the stated consumer protection purpose and the means employed, and pointed to several alternatives that North Carolina could have pursued in evaluating the quality of state grading systems.[103] Since some out-of-state apple producers, like the North Carolina producers, also previously used the federal grading system, not all of those out of state were burdened, but the fact that all of those burdened—those who did not use the federal grading system—were outside the state was enough to constitute discriminatory effect.[104]

Laws related to conservation of land or natural resources have been held to be off-limits to state regulation for their discriminatory purpose or effects. In 1978, the Court invalidated a New Jersey law that banned the importation of solid and liquid waste for treatment and disposal in the state.[105] The statute itself explained that its purpose was to protect the environment and prevent the further loss of available landfill sites in the state, yet the Court found that the practical effect of the law was to discriminate against interstate commerce.[106] The Court noted that the DCC prevents states from giving their own residents "a preferred right of access over consumers in other States to natural resources located within its borders."[107]

Similarly, in *New England Power Co. v. New Hampshire*, the Court held that New Hampshire PUC's prohibition of New England Power from selling its hydroelectric energy to out-of-state entities is a protectionist law prohibited by the DCC.[108] Aside from being discriminatory in purpose,[109] the Court explained that the burden of conserving a natural resource cannot fall on out-of-state commercial interests and consumers. In subsequent cases, laws restricting out-of-state waste management and disposal were also found to be discriminatory and thus per se invalid, and they failed strict scrutiny because of the availability of nondiscriminatory alternatives.[110]

The same year as those *Chemical Waste Management* and *Fort Gratiot* decisions, an Oklahoma law requiring coal-fired power plants to use at least 10% coal extracted in state was held invalid under the DCC.[111] The law was challenged by the state of Wyoming, which had lost more than one million dollars in revenue because four Oklahoma utilities reduced their extraction of coal in Wyoming to comply with the Oklahoma law.[112] The Court found the Oklahoma law to discriminate on its face and in practical effect by reserving a portion of its coal market for coal mined in state, to the exclusion of out-of-state coal, which could only be described as protectionist.[113] Oklahoma sought to justify the statute by arguing that it did not place an "overall burden" on out-of-state coal producers and only set aside a "small portion" of the in-state coal market.[114] The Court was not persuaded by this argument, and using similar logic as the *Hunt* Court, explained that the DCC can still be violated even when a discriminatory regulation does not burden all out-of-state interests nor benefit all in-state interests.[115]

New England Power Co. stands for the principle that states cannot reserve in-state resources to benefit their own residents, and *Wyoming v. Oklahoma* shows the Court's distaste of the defense that a law was motivated not by a desire to harm out-of-state actors, but only to benefit in-state industries.[116] The only chance of survival for such regulations is if they can satisfy strict scrutiny—that is, if there are no less discriminatory means available to effectuate the goal.

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101. *Id.* at 350-52.
102. *Id.* at 352-53.
103. *Id.* at 353-54.
104. Michael E. Smith, *State Discriminations Against Interstate Commerce*, 74 Cal. L. Rev. 1203, 1218 (1986) (citing Exxon Corp. v. Governor of Maryland, 437 U.S. 117, 146-47 (1978) (Blackmun, J., concurring and dissenting) (referring to *Hunt*, 432 U.S. at 349)).
105. City of Philadelphia v. New Jersey, 437 U.S. 617, 625, 628, 8 ELR 20540 (1978).
106. *Id.* at 625-27.
107. *Id.* at 627.
108. 455 U.S. 331, 339 (1982).
109. *Id.*:

> The Commission has made clear that its order is designed to gain an economic advantage for New Hampshire citizens at the expense of New England Power's customers in neighboring states. Moreover, it cannot be disputed that the Commission's "exportation ban" places direct and substantial burdens on transactions in interstate commerce.

Prof. Michael Smith argues that the Court is less likely to deem a state action discriminatory when it discriminates only in effect but not on its face or in purpose. Smith, *supra* note 104, at 1239-45. He also discusses the unexpected difficulty in differentiating between regulations that discriminate on their face, in purpose, or in effect, and that regulations are likely to belong to more than one of those categories. *Id.* A law found to discriminate on its face or in purpose "is almost certain to be discriminatory in effect." *Id.* at 1244. On the other hand, a regulation that discriminates in effect does not necessarily mean it was the subjective intentions of the lawmakers to give people in the state an economic advantage over people outside the state, nor does it necessarily mean the law is facially discriminatory. *Id.* at 1241-42, 1244. *See also* Harvey Reiter, *Removing Unconstitutional Barriers to Out-of-State and Foreign Competition From State Renewable Standards: Why the Dormant Commerce Clause Provides Important Protection for Consumers and Environmentalists*, 36 Energy L.J. 45, 50 (2015).
110. *See* Chemical Waste Mgmt., Inc. v. Hunt, 504 U.S. 334, 22 ELR 20909 (1992) (invalidating an Alabama law that imposed an additional fee on hazardous waste generated out of state and disposed of in state); Fort Gratiot Sanitary Landfill, Inc. v. Michigan Dep't of Natural Res., 504 U.S. 353, 22 ELR 20904 (1992) (invalidating a Michigan law under which a county denied a landfill owner's application for authority to accept out-of-state waste at its landfill); Oregon Waste Sys., Inc. v. Department of Env't Quality of State of Or., 511 U.S. 93, 24 ELR 20674 (1994) (invalidating an Oregon law that levies a surcharge on in-state disposal of out-of-state solid waste).
111. Wyoming v. Oklahoma, 502 U.S. 437 (1992).
112. *Id.* at 444-45.
113. *Id.* at 455.
114. *Id.*
115. *Id.* at 456 (citing New Energy Co. of Ind. v. Limbach, 486 U.S. 269, 276-77 (1988)).
116. *See* Reiter, *supra* note 109, at 51.

As I discuss later, features of RPS programs that are plausibly in pursuit of a protectionist goal, such as creating green jobs in the state, reducing electricity costs for residents, or reducing air and solid waste pollution in the state, may be unable to satisfy strict scrutiny. However, there may be practical, non-protectionist purposes that pass this test, particularly with respect to the ability to transmit electricity to a different region and the need for grid reliability. In the next section, I discuss how courts handle policies that are not discriminatory, but still present DCC issues.

B. *Nondiscriminatory Regulations With Incidental Effects on Interstate Commerce*

Most challenged state regulation tends to fall under the previous category, containing outright discrimination against interstate commerce, because state lawmakers can most easily sell to their constituents policies that promise to generate economic, environmental, and other local benefits.[117] The Court has applied a more deferential balancing test to facially neutral state regulations—those that "regulate evenhandedly to effectuate a legitimate local public interest, and [whose] effects on interstate commerce are only incidental"—that asks whether the burden on interstate commerce is "clearly excessive" compared to the local interest involved.[118]

In addressing an as-applied challenge to an Arizona law that requires all cantaloupes grown in state and offered for sale to be shipped in containers approved by the state, the Court in *Pike v. Bruce Church, Inc.* cited *Southern Pacific Co.* in announcing its balancing test.[119] The weighing of local versus national interests resembled the Court's analysis in *Southern Pacific* and *Barnwell*, despite the opposite outcomes in those cases. Arizona had established standards for shipment of fruits and vegetables to prevent growers from shipping "inferior or deceptively packaged produce" and to protect the reputation of local growers, which the Court recognized as a legitimate state interest.[120] Despite finding the law facially valid, the Court found the law as applied to petitioner, who was transporting uncrated cantaloupes from Arizona to California, to impermissibly burden interstate commerce by effectively forcing them to build packing facilities in Arizona at a cost of about $200,000.[121] The state's purported consumer protection interest, though generally valid, did not outweigh the cost to the company of compliance.[122]

While *Pike* continues to be the applicable test for facially neutral state laws, the Court took a different route in evaluating the constitutionality of an Ohio tax scheme whereby sales and use taxes were imposed on natural gas sales from all sellers except regulated public utilities.[123] The question there was whether the tax laws discriminated in the first place. Speaking for the Court in *General Motors Corp. v. Tracy*, Justice David Souter rejected a claim by General Motors, which bought nearly all of its natural gas from non-tax-exempt out-of-state companies, that the tax exemption was discriminatory on its face and thus violated the DCC.[124]

Justice Souter first provides a historical account of regulation of the natural gas industry, particularly in Ohio, where natural gas utilities have long been treated differently from independent marketers of natural gas.[125] Because Ohio has imposed significant obligations on its natural gas utilities, such as just and reasonable rates and guaranteed service even after nonpayment during the winter, their supply of natural gas is "bundled" with the services and protections required by state law, and is thus a distinct product from the unregulated, and therefore "unbundled," gas supplied by independent marketers.[126] Justice Souter then inquires into whether the difference in products indicates that natural gas utilities and independent marketers serve different markets.[127]

Quoting Justice Robert Jackson in *Hood* and Justice Antonin Scalia's dissent in *Wyoming*, Justice Souter adopted a seemingly pro-market view that finds a role for courts in ensuring competition between states and preserving states as "laboratories of democracy," competing with each other for citizens and economic capital.[128] He wrote:

> [I]n the absence of actual or prospective competition between the supposedly favored and disfavored entities in a single market there can be no local preference, whether by express discrimination against interstate commerce or undue burden upon it, to which the dormant Commerce Clause may apply. The dormant Commerce Clause protects markets and participants in markets, not taxpayers as such.[129]

Presumably, Justice Souter's argument was premised more on the idea of economically distinct markets, rather than the broader notion of competition and free access to markets, since he ultimately found that natural gas utilities served a "captive market" of residential consumers who want bundled natural gas and did not have the ability to purchase gas from independent marketers.[130] This market is distinct from the "non-captive" market who do not need the services and protections that come with gas from the

117. *Id.* at 49.
118. Pike v. Bruce Church, Inc., 397 U.S. 137, 142 (1970).
119. *Id.* at 138-39, 142.
120. *Id.* at 142-43.
121. *Id.* at 145.
122. *Id.* at 145-46.
123. General Motors Corp. v. Tracy, 519 U.S. 278, 282 (1997).
124. *Id.* at 285-86, 310.
125. *Id.* at 288-98; *see* Chad A. Landmon, *Creation of a Less Perfect Union: The Implications of* General Motors Corp. v. Tracy *for Commerce Clause Analysis of State Taxation*, 30 Conn. L. Rev. 1121, 1127-30 (1998).
126. *Tracy*, 519 U.S. at 295-98; *see* Landmon, *supra* note 125, at 1129.
127. *Tracy*, 519 U.S. at 299.
128. *Id.* at 299-300; *see* Alexander B. Klass & Jim Rossi, *Revitalizing Dormant Commerce Clause Review for Interstate Coordination*, 100 Minn. L. Rev. 129, 169-70 (2015).
129. *Tracy*, 519 U.S. at 299-300.
130. *Id.* at 301-02; *see* Landmon, *supra* note 125, at 1134-35; Klass & Rossi, *supra* note 128.

regulated public utilities and can obtain gas from independent marketers.[131] Eliminating the sales tax differential would not benefit competition between regulated public utilities and independent marketers in the "captive market," but Souter acknowledged they may be competing in the "non-captive" market.[132] Given that natural gas markets have been traditionally state-regulated, he concludes that "controlling significance" should be placed on the captive market of public utilities, finding that they are not "similarly situated" for purposes of finding facial discrimination and upholding the Ohio law under the DCC.[133]

For our purposes, *Tracy* is significant because Justice Souter's highly complex examination of whether the different companies are similarly situated—as compared to the Court's previous approaches to evaluating discrimination—provides the test applied by the U.S. Court of Appeals for the Second Circuit in the most recent major case to evaluate the constitutionality of RPS programs, as discussed in the next section.

III. RPS Policies Under the DCC Framework

Since most states have only begun to implement RPS programs within the past 20 years, the Supreme Court has yet to weigh in on potentially discriminatory provisions, and lower courts had not had an opportunity until 2013 to address the legality of RPS policies. As the DCC jurisprudence has demonstrated, provisions of RPS programs that are protectionist, favoring in-state interests and burdening out-of-state entities, or even less obviously so by treating in-region activities different than out-of-region activities, raise important constitutional questions. How courts address these questions turns on the specifics of the provision at issue and how it interacts with the complicated workings of the electric grid and wholesale and retail markets.

An early attack on RPS programs was waged in the District Court for Massachusetts in 2010. TransCanada was a power marketing company challenging two pieces of the Green Communities Act, which had been passed by the state in 2008.[134] The company claimed that the legislation and subsequent implementation facially discriminated against out-of-state renewable energy producers by (1) requiring its electric utilities to enter into long-term contracts with renewable generation facilities located in Massachusetts, and (2) establishing a solar carve-out within its RPS program that only allowed compliance through on-site solar generation located in Massachusetts.[135] It alleged that the procurement requirement denied it an "important business opportunity" by preventing it from acquiring long-term renewable contracts to supply renewable energy from its facilities, particularly a wind project located in Maine.[136] The in-state solar requirement, it argued, would cause solar REC prices to be "extremely expensive," which would adversely affect out-of-state renewable suppliers like itself.[137] TransCanada also asserted that the high REC prices would increase costs for Massachusetts utilities and result in higher electricity rates for customers than if out-of-state sellers were allowed to participate.[138]

The case was settled out of court that year, and Massachusetts agreed to amend its regulations to grandfather TransCanada's existing facilities into the new long-term contract rules.[139] While the court had no occasion to rule on the DCC claims, Massachusetts' swift settlement suggested that the notion that these provisions are facially discriminatory might have some teeth. A similar settlement agreement was reached in the case of Delaware's in-state requirement for fuel cell projects and manufacturers.[140] Delaware agreed to cease applying the in-state manufacturing and siting provisions to fuel cells,[141] though the geographic restrictions remain on the books.[142]

Though not addressing challenges to RPSs nor claims that a state policy violates the DCC, Judge Richard Posner's oft-cited opinion in *Illinois Commerce Commission v. Federal Energy Regulatory Commission* (*ICC II*) set the tone for how subsequent courts would approach these issues.[143] Midcontinent Independent System Operator (MISO), the organization operating the transmission system and regional energy market of the Midwest, sought to build transmission lines to connect western wind farms to help utilities in its region's states meet their renewable requirements.[144] It sought to finance the construction of the lines by allocating the cost among all utilities connected to MISO's grid proportional to their share of total wholesale consumption of electricity.[145] The Federal Energy Regulatory Commission (FERC) approved these projects and MISO's proposed tariff, and a coalition of objectors from Michigan and Illinois, including those states' utility commissions, challenged FERC's approval.[146]

The Michigan cohort argued, inter alia, that since Michigan's RPS program only allows renewable energy generated in state to count toward meeting the (at the time) 10% requirement, Michigan utilities would bear a disproportionate share of the costs of the transmission projects.[147] Judge Posner opined in dicta that this argument "trips over an insurmountable constitutional objection. Michigan cannot, without violating the commerce clause of Article I of the Constitution, discriminate against

131. *Tracy*, 519 U.S. at 301-02.
132. *Id.* at 302-04.
133. *Id.* at 303-10; *see* Landmon, *supra* note 125, at 1135.
134. TransCanada Complaint, *supra* note 55.
135. *Id.* at 6, 11.
136. *Id.* at 8.
137. *Id.* at 13-14.
138. *Id.*
139. TransCanada Settlement Agreement, *supra* note 55.
140. *See* Settlement Agreement, Nichols v. Markell, No. 1:12-cv-00777 (D. Del. Oct. 19, 2015) [hereinafter Nichols Settlement Agreement]; *see generally* Complaint at 8-9, *Nichols*, No. 1:12-cv-00777 (D. Del. June 20, 2012).
141. Nichols Settlement Agreement, *supra* note 140, at 2.
142. *See* Del. Code Ann. tit. 26, §352(16)-(17) (West 2018).
143. 721 F.3d 764, 43 ELR 20124 (7th Cir. 2013).
144. *Id.* at 771.
145. *Id.* at 772.
146. *Id.* at 773.
147. *Id.* at 775 (citing Mich. Comp. Laws §460.1029(1) (West 2017)).

out-of-state renewable energy."[148] He pointed to *Wyoming v. Oklahoma* and *Oregon Waste Systems* in support of finding in-state RPS requirements to be clearly discriminatory under the DCC.[149]

In addition to claims of facial discrimination, another strategy under the DCC that out-of-state energy providers have taken is to challenge state energy programs for impermissibly regulating the conduct of out-of-state actors, in violation of the extraterritoriality doctrine of the DCC. Under extraterritoriality, policies that restrict conduct outside the state are per se unconstitutional. The Supreme Court has used this doctrine to invalidate a New York regulation that prohibited liquor producers from selling to New York wholesalers at a price higher than the producer's lowest price to any U.S. buyer because it had the "practical effect" of regulating prices in other states.[150] It has also overturned a very similar Connecticut law affecting beer distributors.[151]

Generally, though, "the Supreme Court has rarely held that statutes violate the extraterritoriality doctrine," and declined to review a U.S. Court of Appeals for the Ninth Circuit decision upholding California's fuel standards that use a "lifecycle analysis" and measure tailpipe emissions based on all stages of production, not just final fuel consumption.[152] The Ninth Circuit found that the requirements affected only in-state transactions, and did not control out-of-state activity simply because they disproportionately burdened fuel producers that used carbon-intensive ethanol from the Midwest.[153]

In the first case to address the constitutionality of an RPS program, the U.S. Court of Appeals for the Tenth Circuit upheld Colorado's RPS program against claims that it violated extraterritoriality. At the time, Colorado offered a 125% credit for in-state renewable generation and a 150% credit for "community-based projects" located in Colorado.[154] The program contained a cost recovery incentive that permitted utilities to develop and own a greater share of eligible resources if they were able to show that constructing such resources "would provide significant economic development, employment, energy security, or other benefits to the state of Colorado."[155] The state had also established a carve-out for DG that could be satisfied by customer-sited resources or wholesale DG located in Colorado.[156]

Plaintiffs filed suit in 2011 challenging as facially discriminatory not only these geographic preferences, but a host of other geographically neutral features of the program, such as a credit multiplier for solar, the use of tradable RECs, and the RPS requirements themselves.[157] They claimed, inter alia, that the in-state preferences discriminated against interstate commerce and the state's tradable REC program had the practical effect of reaching commerce occurring outside Colorado.[158]

After the district court held that plaintiffs had standing, the Colorado Legislature amended the statute in 2013 to remove all in-state preferences.[159] The district court eventually rejected the plaintiffs' remaining claims that the RPS, now lacking any express requirements of in-state generation, discriminated against interstate commerce and regulated wholly extraterritorial commerce, and also found the non-geographic elements of the program to satisfy the *Pike* balancing test.[160]

On appeal, plaintiffs only pursued the extraterritoriality claims despite the lack of geographic restrictions, arguing that the RPS continued to regulate out-of-state commerce by forcing out-of-state renewable energy generators to "do business according to Colorado's terms," which reduced demand for interstate electricity and harmed the interstate market for coal.[161] Judge Neil Gorsuch, writing for a three-judge panel on the Tenth Circuit, upheld the statute because the program did not attempt to set prices or discriminate against out-of-state generators, but rather regulated the quality of electricity sold to in-state residents.[162] He also noted with confusion that plaintiffs only appealed the lower court's decision on the extraterritoriality argument and not its rejection of arguments under *Pike* balancing or facial discrimination, so those arguments are not addressed in the *Epel* decision.[163]

In contrast, the U.S. Court of Appeals for the Eighth Circuit took a broader view of extraterritoriality in *North Dakota v. Heydinger*, which involved a challenge not to a state RPS program, but rather to a restriction on the importation or consumption of out-of-state fossil fuels that would contribute to in-state power-sector emissions.[164] Because out-of-state generators connected to the MISO grid could not control whether the electricity they gener-

148. *Id.* at 776. The Michigan Public Service Commission stood by the in-state preference and further required that Michigan utilities purchase in-state energy capacity by 2022. Steven Ferrey, *ZEC Oscillations in the Commerce Clause*, 19 Vt. J. Env't L. 365, 384 (2018).
149. *Illinois Com. Comm'n*, 721 F.3d at 776.
150. Brown-Forman Distillers Corp. v. New York State Liquor Auth., 476 U.S. 573, 582-83 (1986).
151. *See* Healy v. Beer Inst., Inc., 491 U.S. 324 (1989).
152. Rocky Mountain Farmers Union v. Corey, 730 F.3d 1070, 43 ELR 20216 (9th Cir. 2013), *cert. denied*, 573 U.S. 946 (2014).
153. *Id.* at 1101-04.
154. Colo. Rev. Stat. Ann. §40-2-124(1)(c)(III), (VI) (Westlaw through 1st Reg. Sess. of the 86th Gen. Assemb.).
155. *Id.* §40-2-124(1)(f)(1).
156. *Id.* §40-2-124(1)(a)(II), (a)(V)-(VI), (c)(I)(C)-(E), (c)(II)(A).
157. Complaint for Injunctive and Declaratory Relief at 16-21, American Tradition Inst. v. Colorado, 876 F. Supp. 2d 1222 (D. Colo. 2012) (No. 11-CV-00859).
158. *Id.*
159. Appellants' Opening Brief at 5-6, Energy & Env't Legal Inst. v. Epel, 793 F.3d 1169, 45 ELR 20134 (10th Cir. 2015) (No. 14-1216). Specifically, the legislature amended the 125% credit multiplier for in-state generation, a 125% credit multiplier for in-state community-based projects, a requirement that a certain percentage of RPS quotas come from in-state distributed generation, and an order to the state PUC to issue policies relating to cost recovery that incentivize investment in in-state renewable resources. Act of June 5, 2013, ch. 414, §1, 2013 Colo. Sess. Laws 2452, 2454-55 (amending Colo. Rev. Stat. Ann. §40-2-124 (West 2019)).
160. Energy & Env't Legal Inst. v. Epel, 43 F. Supp. 3d 1171, 1178-84 (D. Colo. 2014).
161. Appellants' Opening Brief, *supra* note 159, at 17-24.
162. *Epel*, 793 F.3d at 1173-75.
163. *Id.* at 1172.
164. 825 F.3d 912, 913 (8th Cir. 2016).

ate will flow to Minnesota customers, the statute had the effect of regulating the conduct of out-of-state generators by forcing them to either disconnect from the regional grid or seek approval from the Minnesota PUC before entering into transactions with *any* utilities, not just Minnesota utilities.[165] This amounted to a regulation of wholly out-of-state conduct in violation of the extraterritoriality arm of the DCC.

The decision in *Heydinger* likely does not sound the death knell for geographic restrictions in RPS programs for two reasons. First, such a broad application of the extraterritoriality prong of the DCC as in *Heydinger* would have so far-reaching an impact that it would threaten a host of state regulations—clean energy programs as well as health and consumer protection laws. Judge Gorsuch noted as much in *Epel*: "[I]f any state regulation that 'control[s] . . . conduct' out of state is per se unconstitutional, wouldn't we have to strike down state health and safety regulations that require out-of-state manufacturers to alter their designs or labels?"[166] Lower courts have narrowly limited extraterritoriality to policies that set prices relative to those outside of the regulating jurisdiction or otherwise control conduct or transactions occurring wholly outside the state.[167]

Second, the extraterritoriality doctrine, like the national-versus-local-interests or direct-versus-indirect-regulation analysis, has largely been abandoned by the Court in favor of the discrimination approach discussed above.[168] Judge Gorsuch's confusion as to why plaintiffs declined to pursue their facial discrimination and *Pike* claims in the appeals court makes sense, considering that is currently the primary approach to evaluating DCC questions, rather than the extraterritoriality approach. Thus, there is little reason to believe that extraterritoriality provides an effective vehicle for entities seeking to overturn such provisions.

Claims of facial discrimination thus remain the most promising path forward for DCC challenges of RPS geographic restrictions. The court for the Northern District of Illinois had an opportunity to rule on a zero emission credit (ZEC) program in Illinois passed after Exelon Corporation announced plans to close two nuclear facilities following major financial losses in recent years, which would result in a loss of about 4,200 jobs and $1.2 billion in economic activity.[169]

The state designed the program to grant ZECs to any facility interconnected with MISO or PJM Interconnection that could generate about 16% of the amount of electricity delivered by each electric utility during 2014, and all utilities would be required to purchase ZECs from the winning zero emission facilities for 10 years.[170] Zero emission facilities would have to go through a procurement process, which had a number of submission requirements, to receive ZECs.[171] The program was challenged by customers of Illinois utilities, the Electric Power Supply Association, and independent power producers that provide wholesale electricity to Illinois utilities on the grounds that, inter alia, it violated the DCC.[172]

The court took a rather deferential approach to the DCC analysis in this case. It first rejected the claim of discrimination on its face because out-of-state facilities could submit bids and, in the absence of evidence that "agencies will deliberately flout the ZEC bid-selection process," the procurement process would be carried out in a neutral, nondiscriminatory manner.[173] The court then declined to find a discriminatory purpose.

Plaintiffs pointed to statements by the governor that the bill would protect Illinois taxpayers and preserve jobs at the two failing nuclear plants and an earlier version of the law as evidence that any stated environmental goals were pretextual.[174] The court instead accepted the state's proffered explanation that the law was intended to protect public health and the environment by promoting electricity generation by zero emission facilities, rejecting any claims of political favoritism or intent to discriminate against interstate commerce.[175] In holding that the law satisfied the *Pike* test, the court noted that the state created the ZEC market, and the legitimate state interests in protecting the environment, participating in or creating a market, and promoting zero emission generation all supported a finding that any incidental effect on interstate commerce was minimal.[176]

165. *Id*. at 921-22.
166. *Epel*, 793 F.3d at 1175; *see also* Energy & Env't Legal Inst. v. Epel, 43 F. Supp. 3d 1171, 1180 (D. Colo. 2014) (arguing that the fact that the statute influences how out-of-state companies do business or incentivizes certain behavior is not sufficient to violate extraterritoriality).
167. Brannon P. Denning, *Extraterritoriality and the Dormant Commerce Clause: A Doctrinal Post-Mortem*, 73 La. L. Rev. 979, 992 (2013).
168. *See id*. at 996; Sam Kalen & Steven Weissman, *The Electric Grid Confronts the Dormant Commerce Clause*, 45 Ecology L. Currents 132, 147 (2018) (calling extraterritoriality concerns "anachronistic").
169. Village of Old Mill Creek v. Star, No. 17 CV 1163 and No. 17 CV 1164, 2017 WL 3008289, at *3 (N.D. Ill. July 14, 2017).
170. *Id.*
171. *Id.* at *4.
172. *Id.* at **1, 5.
173. *Id.* at *15.
174. *Id.* at *16.
175. *Id.*
176. *Id.* at **16-17. The court briefly alluded to the state as a market participant, though this was not central to its holding that there was an insufficient burden on interstate commerce. *Id.* at *16 ("The commerce clause is not concerned with the burdens created when a state participates in a market and exercises the right to favor its own citizens over others."). The "market participant exception" to the DCC holds that a state does not violate the DCC by seeking to provide local benefits when it is a buyer or seller in the relevant market.

Prof. Brannon Denning suggests the Supreme Court might be receptive to the idea that states are market participants because RECs are state creations, and that the market for RECs would not exist if not for state involvement. Brannon P. Denning, *Environmental Federalism and State Renewable Portfolio Standards*, 64 Case W. Rsrv. L. Rev. 1519, 1540 (2014). He points to dicta in two prior Court cases in support of this point, but this tack has not been embraced by any courts that have had the opportunity to consider it. *See* United Haulers Ass'n Inc. v. Oneida-Herkimer Solid Waste Mgmt. Auth., 550 U.S. 330, 343, 37 ELR 20097 (2007) ("Laws favoring local government . . . may be directed toward any number of legitimate goals unrelated to protectionism."); McBurney v. Young, 569 U.S. 221, 235-36 (2013) ("Virginia's [Freedom of Information Act] FOIA law neither 'regulates' nor 'burdens' interstate commerce; rather, it merely provides a service to local citizens that would not otherwise be available at all. . . . [I]t is a market for a product that the Commonwealth has created and of which the Commonwealth is the sole manufacturer."); Coalition for Competitive Elec. Inc. v. Zibelman, 906 F.3d 41 (2d Cir. 2018) (declining to adopt the district court's view that even if plaintiffs had standing, the DCC claim would be barred by the market participant exception since New York was not regulating the market, but rather participating in the market and favoring its own citizens).

To date, the most comprehensive and relevant court of appeals decision was by the Second Circuit in *Allco Finance Ltd. v. Klee*.[177] "Disappointed bidder"[178] Allco challenged the Connecticut Department of Energy and Environmental Protection's (DEEP's) selection of two competing solar projects to execute power purchase agreements with Connecticut utilities as contrary to the Public Utility Regulatory Policies Act (PURPA) and preempted by the Federal Power Act (FPA).[179] The case also addressed the constitutionality of the state's RPS program under the DCC.

Connecticut prohibited RECs generated at facilities that could not transmit energy into the ISO-NE grid from satisfying the state's RPS requirements, and Allco claimed this feature violated the DCC.[180] Allco owned two solar power facilities, one in Georgia and one in New York.[181] It alleged that Connecticut's program (1) discriminated against the Georgia facility because RECs generated from renewable sources at that facility could not count toward RPS requirements and (2) discriminated against the New York facility, located in an adjacent control area (i.e., in NEPOOL GIS, but not in ISO-NE), whose RECs could satisfy RPS requirements, but which was subject to a fee to transmit into the ISO-NE grid pursuant to a NEPOOL GIS rule.[182] Judge Guido Calabresi first held that DEEP's direction to utilities to enter into bilateral agreements with the two selected solar projects was not preempted by FPA and did not conflict with PURPA.[183]

He then moved onto the DCC claims, and begins by citing a prior Second Circuit decision that described RECs as "inventions of state property law whereby the renewable energy attributes are 'unbundled' from the energy itself and sold separately."[184] Analyzing the claim of discrimination against the Georgia facility under the *Tracy* framework,[185] he found that, like the unbundled and bundled natural gas products in *Tracy*, Connecticut had created two classes of RECs: those generated by the Georgia facility or any other facility outside the NEPOOL GIS area that did not satisfy RPS requirements, and those generated by facilities in that area that could count toward the requirement.[186] In *Tracy*, the Court had found that the "captive market" was only served by the regulated public utilities, whereas the non-captive market could be served by either.

Similarly, Judge Calabresi explained that Connecticut consumers did not have access to energy from the Georgia facility since it could not transmit its electricity into ISO-NE, so they could not be served by the market for Georgia RECs.[187] It followed that eliminating the disparate treatment of Georgia RECs would not promote competition, since Connecticut had direct access only to electricity on the ISO-NE grid, and indirect access to electricity in adjacent control areas.[188] Practical considerations such as transmission constraints guided the court's willingness to accept the geographical lines drawn by Connecticut.

Given that the two classes of RECs are separate products, the court inquired into whether the Georgia facility and facilities within the NEPOOL GIS area were similarly situated as competitors in a separate market. Judge Calabresi found that there was a national market for RECs in which both classes of REC generators would be participating, where competition might be advanced if the Connecticut program's differential treatment of these classes were eliminated.[189] Thus, the court found itself in the same position as in *Tracy*—one market served by only one class of suppliers, and another market where both classes of suppliers compete. In this situation as in *Tracy*, the court gave "controlling significance" to the market for RECs produced by generators that could connect to the ISO-NE.[190]

Judge Calabresi credited Connecticut's interest "in protecting the market for RECs produced within the ISO-NE or in adjacent areas. . . . [and] promoting increased production of renewable power generation in the region, thereby protecting its citizens' health, safety, and reliable access to power."[191] As a result, generators in the NEPOOL GIS region should not be considered "similarly situated" to the Georgia facility, and, therefore, the Connecticut program did not facially discriminate against such out-of-region facilities.[192] The finding that the in-region restriction was not facially discriminatory focused on the fact that Connecticut did not choose arbitrary regional boundaries, but adopted the boundaries created by FERC-supervised ISO-NE and NEPOOL GIS for the purpose of promoting grid reliability for its residents.[193]

Without going into detail, the court very easily found that the RPS program satisfied the *Pike* balancing test, noting that the burden imposed by the RPS program was not "clearly excessive in relation to the putative local benefits."[194] Presumably, the foregoing analysis that geographic lines were drawn to account for transmission constraints and the need for system reliability was dispositive in applying the *Pike* test, for those considerations clearly outweighed any indirect effect on interstate commerce. The court also quickly disposed of the claim of discrimination against the New York facility in the adjacent control area, by regarding the fees for transmitting into ISO-NE from New York as no more than "road tolls, which regularly pass constitutional muster."[195]

Taken together, these cases have begun to provide a framework for predicting how courts may rule on various

177. 861 F.3d 82 (2d Cir. 2017).
178. *Id.* at 82.
179. *Id.* at 89-90.
180. *Id.* at 92-93.
181. *Id.* at 93-94.
182. *Id.*
183. *Id.* at 97-102.
184. Wheelabrator Lisbon, Inc. v. Connecticut Dep't of Pub. Util. Control, 531 F.3d 183, 186 (2d Cir. 2008) (quoted by *Allco*, 861 F.3d at 103).
185. *See supra* Section II.B.
186. *Allco*, 861 F.3d at 93.
187. *Id.* at 105.
188. *Id.* at 106.
189. *Id.*
190. *Id.*
191. *Id.*
192. *Id.* at 107.
193. *See id.*
194. *Id.* at 107-08 (quoting Pike v. Bruce Church, Inc., 397 U.S. 137, 142 (1970)).
195. *Id.* at 108.

RPS provisions. A provision that preferences or restricts eligibility of different types, technologies, or dates of operation of renewable resources is likely to be found facially neutral because it does not expressly discriminate against interstate commerce. Illinois does not allow geothermal or new hydropower to count toward RPS requirements.[196] This restriction applies equally to in-state and out-of-state resources. Because there is no discrimination based on geographic origin, such regulations are facially neutral and do not create immediate DCC issues.[197] In addition, there are legitimate reasons for excluding certain resources because of environmental effects and availability.[198] These attributes tend to treat out-of-state and in-state resources equally.

Three other facially neutral policies could meaningfully impact the flow of renewable electricity over state lines. The first is whether the state allows compliance by purchasing RECs at all. For example, Iowa does not allow RECs to be used for compliance,[199] and a few states did not recognize RECs when they first established their programs.[200] Nearly all states currently allow compliance by purchasing RECs, so the second question is whether unbundled RECs are permitted.

If a state prohibits REC trading entirely or allows only bundled RECs, then the RPS mandate is simply a mandate that a utility generate renewable energy on its own or purchase its share of required power directly. This has an incidental effect on interstate commerce by regulating the nature of the transactions between utilities and renewable generators with whom they may contract. Prohibiting unbundled RECs limits utilities to transacting with facilities that can deliver power into their system, which happens to exclude facilities located outside their region.

Third are carve-outs or credit multipliers for DG that lack an express geographic restriction, such as Washington's 200% credit multiplier for DG with a capacity of 5 MW or less.[201] When it comes to applying the *Pike* balancing framework to these nondiscriminatory policies, the courts are much more receptive to localized benefits such as air and solid waste pollution reduction, conservation of energy and natural resources, resource diversification, utility regulation, system reliability, and the need for additional transmission construction, despite a minor burden on interstate commerce.[202]

On the other hand, Judge Posner's statement that a complete prohibition on out-of-state renewable energy from satisfying RPS requirements would violate the DCC[203] lines up with nearly a century of Supreme Court precedents that hold clearly discriminatory regulations per se invalid. Such a restriction, or its functional equivalent (i.e., only allowing out-of-state power that is within utilities' service area), would almost definitely fail under strict scrutiny. Caps on out-of-state generation, as in North Carolina and California—though short of blanket prohibition—as well as credit multipliers for facilities sited in state or based on in-state labor and manufacturing would likely fail for the same reason. One might imagine that the percentage attached to a credit multiplier (a 110% credit compared to a 300% credit) could affect whether a court views it as discriminatory and, if so, whether it passes strict scrutiny.

It might also be argued that the aim of reducing air and solid waste pollution by replacing coal with renewables can provide environmental and health benefits to a state's residents, but the fact that emissions reductions occur worldwide and not just within the geographic boundaries of a state might not sufficiently justify geographically discriminatory provisions. Similarly, incentives that relate to in-state work force and manufacturing and are aimed at promoting the local economy and creating green jobs are likely to be deemed by courts to be protectionist. With the range of other incentives and programs that states have simultaneously pursued—energy efficiency, net metering, tax incentives, feed-in tariffs, and loan programs—a state would be hard-pressed to argue that there were no less discriminatory approach to achieve those goals. A policy with these stated goals that is found by a court to be discriminatory, therefore, will likely fail the strict scrutiny test and be held unconstitutional.

Yet, there are some practical, non-protectionist aims that might be accomplished most efficiently through in-state renewable development and could plausibly satisfy strict scrutiny. The massive outages experienced by three million residents of Texas in winter 2021 provide a useful example. Utilities and grid operators imposed rolling blackouts in response to heavy demand as residents turned on their heaters to escape the freezing temperatures, while natural gas lines and wind turbines failed during the extreme conditions.[204] Some claimed that the crisis dem-

196. 20 Ill. Comp. Stat. Ann. 3855/1-10 (West 2017) (definition of "Renewable energy resources").

197. *See* Carolyn Elefant & Edward A. Holt, Clean Energy States Alliance, The Commerce Clause and Implications for State Renewable Portfolio Standard Programs 10-11 (2011), https://www.cesa.org/assets/Uploads/CEG-Commerce-Clause-paper-031111-Final.pdf.

198. *See id*. at 14-15.

199. *See* Iowa Code §476.44A (West 2008) (allowing the Iowa Utilities Board to establish a tradable credit system, though currently RECs may not be used for compliance since Iowa's RPS is capacity-based, not energy-based, and Iowa's two IOUs must own or purchase their share of the required power).

200. For example, Maine and Minnesota did not initially allow REC trading. *See* Me. Rev. Stat. Ann. tit. 35-A, §3210 (West, Westlaw through 2005 2d Special Sess. of the 122d Leg.); Minn. Stat. §216B.1691 (West, Westlaw through 2001 Reg. and 1st Special Sess. of the 82d Leg.).

201. Wash. Rev. Code Ann. §19.285.040(2)(b) (West 2019).

202. *See*, *e.g.*, Minnesota v. Clover Leaf Creamery Co., 449 U.S. 456, 472-73, 11 ELR 20070 (1981) (upholding a Minnesota law banning retail sale of milk in certain plastic containers); LSP Transmission Holdings, LLC v. Sieben, 954 F.3d 1018, 1030-31, 50 ELR 20071 (8th Cir. 2020) (upholding a Minnesota law providing utilities who own transmission lines a right of first refusal to construct transmission lines to their existing facilities); Norfolk S. Corp. v. Oberly, 822 F.2d 388, 405-07, 17 ELR 20941 (3d Cir. 1987) (upholding a Delaware law prohibiting bulk product transfer facilities from operating in the coastal zone); *see also* Elefant & Holt, *supra* note 197, at 15. As the Eighth Circuit has noted, "the Supreme Court has rarely invoked *Pike* balancing to invalidate state regulation under the Commerce Clause." Southern Union Co. v. Missouri Pub. Serv. Comm'n, 289 F.3d 503, 509 (8th Cir. 2002).

203. Illinois Com. Comm'n v. Federal Energy Regul. Auth., 721 F.3d 764, 776, 43 ELR 20124 (7th Cir. 2013); *see supra* notes 143-49 and accompanying text.

204. David Koenig & Michael Liedtke, *EXPLAINER: Why the Power Grid Failed in Texas and Beyond*, AP News (Feb. 17, 2021), https://apnews.com/article/why-texas-power-grid-failed-2eaa659d2ac29ff87eb9220875f23b34.

onstrated the need for a steady supply of fossil fuels in the electricity mix, and blamed frozen wind turbines for the blackouts.[205] Defenders of renewables argued that not only were wind turbines not the cause of the outages,[206] but years of neglect of the state's power infrastructure, utilities' refusal to maintain adequate generating capacity during the winter, and spikes in wholesale electricity costs all pointed to the dire need for improving grid reliability.[207] Unprecedented heat waves in the Pacific Northwest during summer 2021 have raised similar concerns about grid reliability due to extreme weather.[208]

Renewables—and particularly DG—can play a key role in bolstering grid reliability. Microgrids and other distributed energy networks provide backup power, reduce the possibility of systemwide outages during peak load, and allow system operators flexibility in responding to emergencies in which high demand places stress on power grids.[209] Millions of Texans might have been kept out of the cold if there were greater deployment of DG throughout the state.[210]

Thus, preferences or credit multipliers for construction of smart microgrids in communities throughout the state or in-state, customer-sited DG like rooftop solar PV[211] are inherently discriminatory, but despite the fact that they discriminate against interstate commerce, they serve a practical, technological purpose that may be more likely to pass strict scrutiny. Because DG provides an important alternative for maintaining grid reliability and avoiding long-distance transmission, RPS provisions that promote DG with geographic restrictions deserve particular attention, and I consider them in a separate category from all other in-state preferences in Part IV.

As for in-region rather than in-state preferences, *Allco* suggests that there is more flexibility when the region in question is chosen for entirely pragmatic reasons—Connecticut limited eligible RECs to the region where facilities can actually transmit energy into the state and where RECs can all be tracked by NEPOOL GIS. Regional distinctions based on transmission constraints or grid reliability may therefore more likely be found to be facially neutral instead of discriminatory. Allco argued that there is a national market for RECs, but there is no single organization tracking all REC trading within the United States, so there are actually very compelling reasons for finding that limiting REC eligibility to a given region is not discriminatory at all.

An in-region requirement is less burdensome on interstate commerce than an in-state requirement and is not as narrowly aimed at providing in-state benefits, since benefits will still accrue to surrounding states that are exporting RECs, though the boundaries of the region in question could be constitutionally significant. *Allco* suggests that there is a legitimate state interest in drawing in-region requirements based on the practical consideration of a facility's ability to interconnect to or transmit electricity onto the state's grid.[212] For these reasons, in-region preferences are less likely to violate the DCC than in-state preferences, especially if based on practical or technological justifications.

The most constitutionally suspect RPS features are those that involve in-state preferences or requirements, with in-region requirements more likely to be permissible under the DCC, and other facially neutral policies having such a minor effect on interstate commerce that they are also likely constitutional. In the next two sections, I explore the role that constitutional constraints had in the development of RPS programs across the states, and how these constraints affected the efficacy and cost-effectiveness of RPS programs.

IV. The Role of Constitutional Constraints in Legislative Policymaking

To examine judicial opinions on RPS constitutionality without also probing the effect of these decisions on the legislative process would only amount to half the analysis. When legal questions such as RPS constitutionality have not been fully settled by the courts, conclusions as to the relationship between the law and empirical findings are less compelling.

Do legislatures take into consideration constitutional limitations, as interpreted by the various state and federal courts, or the threat of a constitutional challenge when drafting and debating a given proposal? If so, do they craft policy to stay within the realm of acceptable legislation, do they assume the risk that the legislation will be challenged

205. Dionne Searcey, *No, Wind Farms Aren't the Main Cause of the Texas Blackouts*, N.Y. Times (May 3, 2021), https://www.nytimes.com/2021/02/17/climate/texas-blackouts-disinformation.html.

206. Wind makes up 7%-10% of the electricity supply in Texas during the winter. *Id.*; Will Englund, *The Texas Grid Got Crushed Because Its Operators Didn't See the Need to Prepare for Cold Weather*, Wash. Post (Feb. 16, 2021), https://www.washingtonpost.com/business/2021/02/16/ercot-texas-electric-grid-failure/.

207. Englund, *supra* note 206; Koenig & Liedtke, *supra* note 204; Searcey, *supra* note 205.

208. *See, e.g.*, James Conca, *Amid Insane Heat Wave, Can the Pacific Northwest Power Grid Handle the Stress?*, Forbes (July 7, 2021, 8:00 A.M.), https://www.forbes.com/sites/jamesconca/2021/07/07/heat-wildfires-and-power-grid-challenges--even-the-pacific-northwest-begins-to-worry/.

209. GridWise Alliance, Improving Electric Grid Reliability and Resilience: Lessons Learned From Superstorm Sandy and Other Extreme Events 16 (2013), https://www.energy.gov/sites/prod/files/2015/03/f20/GridWise%20Improving%20Electric%20Grid%20Reliability%20and%20Resilience%20Report%20June%202013.pdf.

210. *See* Michelle Isenhouer Hanlin, *Could Distributed Energy Systems Have Prevented the Texas Blackouts?*, Smart Energy Int'l (Mar. 22, 2021), https://www.smart-energy.com/industry-sectors/distributed-generation/could-distributed-energy-systems-have-prevented-the-texas-blackouts/ (noting that one company had 130 microgrids supplying energy to stores and assisted living facilities during the blackouts); Michael D. Mehta, *Texas Electricity Grid Failure Shows How Microgrids Offer Hope for a Better Future*, Conversation (Feb. 23, 2021, 3:19 P.M.), https://theconversation.com/texas-electricity-grid-failure-shows-how-microgrids-offer-hope-for-a-better-future-155708.

211. As of 2020, 10 states have a geographical preference or credit multiplier for DG, *see infra* Appendix Table A1, most of which have been enacted in the past 10 years alongside advancements in DG technology and energy storage as well as rapid growth in rooftop solar, smart thermostats and water heaters, and other customer-sited systems. *See generally* St. John, *supra* note 60.

212. *See* Elefant & Holt, *supra* note 197, at 15.

and overturned, or do they deliberately flout judicial decisions knowing full well that the legislation will likely be found to be unconstitutional? On the other hand, we often take for granted that courts are the final arbiters of constitutional and statutory interpretation, despite theories of governance that find varying levels of involvement by legislatures in pronouncing constitutional meaning.

This discussion bridges the lessons of DCC jurisprudence with empirical research on RPS programs by asking whether the DCC is actually shaping policymaking decisions, and if so, what theories help explain how state legislatures act in anticipation of and in response to court rulings. I conclude this section by looking at trends in state adoption of geographic restrictions in RPS programs over the past few decades, using time series data that I compiled from statutes and regulations of all mandatory RPS programs in the United States. While the data do not support any single theory by which constitutional constraints factor into RPS program design, there is evidence that legislators do take constitutional considerations into account, either by adapting their programs to stave off constitutional challenges, or by adopting weaker geographic restrictions that accomplish short-term goals but pose smaller risks of unconstitutionality.

The idea of constitutionalism involves a system of government bound and constrained by a constitution and, in the case of a constitutional democracy, duly elected representatives constituting a legislature are tasked with enacting the will of the people, subject to constitutional limitations.[213] This necessarily pits against each other notions of legislative supremacy and judicial supremacy, which differ as to whether legislators' or judges' constitutional interpretations are more privileged.[214] The question of whether judicial supremacy, legislative supremacy, or neither is preferable centers on beliefs about which political actors are most equipped to resolve constitutional questions, and how much deference they should grant to the interpretations of other actors.[215]

Many commentators would posit that the United States most closely embodies a system of judicial supremacy or strong judicial review, whereby courts, especially the Supreme Court, are reserved the final say in constitutional meaning, and the other branches (as well as state governments with respect to the federal judiciary) must respect judicial determinations of constitutionality.[216] To some extent, many extrajudicial actors and institutions play a role in gleaning constitutional meaning, such as private citizens, the press, academics, and arguably a legislature whenever it adopts legislation.[217] A theory of judicial supremacy holds that the determinations of the judiciary ultimately reign superior to extrajudicial views—a legislature or any other actor may present a perspective on constitutional interpretation, but the courts shall make the final decision, and all other branches and actors shall adhere to that ruling.[218]

Critics of judicial supremacy argue that legislatures or executives should have primary authority in interpreting the Constitution, or that such authority need not even be vested in a single body, but rather equally and independently among two or more branches or departments.[219] Under a variant of the theory of departmentalism, each body makes its own interpretations of the Constitution as related to business within that chamber independent of decisions from other bodies, such that "each branch is bound by the Constitution (or its own vision of the Constitution) but not by another branch's interpretation of the Constitution."[220] A primary justification for de-privileging judicial review is that courts are anti-democratic and counter-majoritarian, and the people are vested with ultimate authority of constitutional interpretation.[221] Supporters of popular constitutionalism may view legislatures as more capable of synchronizing constitutional values with predominant popular opinion, and therefore more qualified to interpret the Constitution.[222]

While Congress has ample public record of debate, roll calls, committee reports, minutes, and files, there is often no clear statement of the constitutional basis for a piece of legislation.[223] Congress' large chambers may preclude in-depth debate on complicated topics such as DCC jurisprudence, and members often pay little more attention to each bill than their final roll call votes.[224] The inquiry is even harder on the state level, where legislatures and committees have significantly fewer resources, time, and staff to engage in protracted debate over the constitutionality of every issue.[225]

For this reason, we can only speculate about whether and how early RPS drafters approached the question of constitutionality as they navigated in largely uncharted territory, with courts having yet to weigh in. It is plausible that they were simply unaware of or did not understand the possible constitutional objections to geographic preferences, which Prof. Keith Whittington refers to as "constitutional forgetfulness."[226] Both of these are valid

213. Alon Harel & Adam Shinar, *Between Judicial and Legislative Supremacy: A Cautious Defense of Constrained Judicial Review*, 10 Int'l J. Const. L. 950, 953 (2012).
214. *Id.*
215. *See* Keith E. Whittington, *Extrajudicial Constitutional Interpretation: Three Objections and Responses*, 80 N.C. L. Rev. 773, 780 (2002).
216. *Id.* at 775-77.
217. *Id.* at 781.
218. *Id.* at 782-83.
219. *Id.*
220. Harel & Shinar, *supra* note 213, at 957.
221. *Id.* at 955.
222. *Id.* at 955-56.
223. Mark V. Tushnet, *Evaluating Congressional Constitutional Interpretation: Some Criteria and Two Informal Case Studies*, 50 Duke L.J. 1395, 1398-99 (2001).
224. Abner J. Mikva, *How Well Does Congress Support and Defend the Constitution?*, 61 N.C. L. Rev. 587, 609-10 (1983).
225. *See generally* Peverill Squire, *Measuring State Legislative Professionalism: The Squire Index Revisited*, 7 St. Pol. & Pol'y Q. 211 (2007) (measuring "professionalism" of state legislatures against Congress using data on salary, benefits, time demands, staff, and resources).
226. Keith E. Whittington, *Constitutional Constraints in Politics*, *in* The Supreme Court and the Idea of Constitutionalism 221, 225-26 (Steven Kautz et al. eds., Univ. of Pennsylvania Press 2009); *see also* Mikva, *supra* note 224:
> Driven by a need to get a law on the books, Congress is not primarily concerned with the law's details. Constitutional issues are subsidiary to the desire to crack down on crime or bring administrative

hypotheses, since DCC doctrine is not as pronounced in public discourse (or even formal legal training, for that matter) as the legal questions dealt with in cases on civil rights or abortion, for example.[227]

The more likely explanation is that policymakers, utilities, developers, and other stakeholders were fully aware of the potential challenges, but enacted the programs premised on their own conclusions that in-state or in-region preferences were neither discriminatory nor overly burdensome on interstate commerce. Conversely, the decision to omit geographic restrictions, which may have occurred so that residents could benefit from low-cost renewables imported from out of state, could have also been based on an expectation that they would be challenged were they included.

In both cases, the legislature could be considered as proceeding under what Prof. Mark Tushnet terms "anticipatory obedience" by "predict[ing] what a court would say about a proposal's constitutionality were the measure to be enacted and adapt[ing] the proposal to ensure that it will survive judicial scrutiny."[228] Thus, states may look to previous rulings as well as expectations about future rulings to craft policies that meet the requirements of the existing legal framework. This makes sense if state leaders wish to avoid looking inept, engaging the state in protracted legal battles, or creating uncertainty among utilities, ratepayers, investors, and energy markets.

In the case of RPS programs, states might have expected provisions basing resource eligibility on in-state location to be constitutionally questionable in the early years. But after the *TransCanada* settlement (2010) and Judge Posner's widely known criticism of in-state restrictions in *ICC II* (2013), states were on notice that federal courts may overturn such provisions, since they are aimed at economic protectionism and avoiding leakage of environmental and economic benefits to other states. *Allco* (2017) signaled that in-region requirements are acceptable, in large part because they are based on practical reasons such as reliability and transmission constraints. After *Allco*, in-state requirements and preferences continue to remain highly suspect, but they may satisfy strict scrutiny if tied to those same practical, technological considerations (e.g., a credit multiplier for in-state DG).

If the DCC is truly a limiting force that shapes policymaking, to the extent state legislators and regulators act according to an anticipatory obedience theory, we should see a relative preference for in-region restrictions in the early years as compared to in-state restrictions, and then a move from in-state to in-region restrictions after 2010 as states abandon in-state restrictions. Among in-state restrictions, we should see a greater proportion in the form of preferences and multipliers that favor in-state facilities, as compared to strict requirements that a resource be located in state to be eligible at all. We should also see a strong shift away from broad in-state restrictions toward those that apply only to DG.

Sometimes legislators may instead prefer to establish programs that they are very well aware may exceed constitutional limits, in order to claim a political victory upon passage of a "splashy" program and place the blame for failing to meaningfully address climate change on an activist court that overturns it.[229] In such a scenario, policymakers "fail[ ] to comply with constitutional constraints" despite being "both aware of the constraints and still in principle committed to them," which Professor Whittington terms "constitutional neglect."[230] They disregard known constitutionality risks, and "are too readily seduced into straying from the straight constitutional path when it serves their immediate electoral or policy needs."[231]

Professor Tushnet likewise labels this phenomenon "anticipatory disobedience."[232] The prospect of courts excising defective statutes through judicial review may give politicians an incentive "to engage in grandstanding by enacting statutes that [they] can be confident will be held unconstitutional."[233] If this theory holds true, then changes to the legal climate around RPS programs should have little to no bearing on how states craft their policies.

Although we do not have direct evidence of the decisionmaking process leading to each legislative and regulatory decision, we can look at how state RPS programs have changed over time and, in particular, whether we see any noticeable trends following important legal moments in which the contours of RPS constitutionality began to develop. Analysis of how state statutes and regulations have evolved over time suggests that both the anticipatory obedience and disobedience theories are in play here.

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agencies under control, for example. In addition, the constitutional principles involved in a bill, unlike its merits, are generally abstract, unpopular, and fail to capture the imagination of either the media or the public.

227. *See* Whittington, *supra* note 226, at 226:

> The constitutional implications of a law restricting access to abortions in 2006 or of a law limiting the number of hours an employee can work in 1930 are obvious. The constitutional implications of a statutory provision requiring local sheriffs to provide backgrounds checks on those seeking to purchase a firearm or imposing a federal tax on marine insurance, however, are not so obvious.
>
> It is my opinion that the constitutional questions regarding a policy like RPSs are esoteric and unlikely to be fully appreciated at first glance, particularly by one who has not studied constitutional law. Forty percent of state legislators have graduate or professional degrees, but only 14% are lawyers. Karl Kurtz, *Who We Elect*, St. Legislatures, Dec. 2015, at 20, 22, 25. Generally, the lowest-paying legislatures have the smallest share of lawyers, such as New Hampshire, where 13 out of 424 legislators are lawyers. Jen Fifield, *State Legislatures Have Fewer Farmers, Lawyers; But Higher Education Level*, Pew Trusts (Dec. 10, 2015), https://www.pewtrusts.org/en/research-and-analysis/blogs/stateline/2015/12/10/state-legislatures-have-fewer-farmers-lawyers-but-higher-education-level. However, even lawyers may not necessarily be equipped to pass on open constitutional issues. *See* Mikva, *supra* note 224, at 609:
>
> > While it is true . . . that a majority of the members of Congress are lawyers, they have not kept up-to-date on recent legal developments. In fact, most Supreme Court opinions never come to the attention of Congress. Unlike judges, the Representatives and Senators are almost totally dependent on the recommendations of others in making constitutional judgments.

228. Tushnet, *supra* note 223, at 1400.

229. *Id.*

230. Whittington, *supra* note 226, at 288.

231. *Id.*

232. Tushnet, *supra* note 223, at 1401.

233. *Id.* at 1400.

Table 1. Types of Geographic Restrictions Included

Type	Examples
In-region restrictions	Ohio: Qualifying renewable energy resources must either be located in state, or deliverable into the state.
In-state restrictions	California: Requires a percentage of requirements to come from in-state or functional equivalent, starting at 50% in 2010 and rising to 75% in 2017 and thereafter.
In-state DG requirements	Rhode Island: NEPOOL GIS RECs from off-grid and customer-sited generation facilities only eligible if located in Rhode Island.
In-state DG/non-DG credit multipliers	Missouri: 125% credit for in-state generation. Delaware: 110% credit for in-state solar or wind that is at least 50% manufactured in Delaware, or at least 75% Delaware work force.
Other in-state preferences and incentives	Montana: Contracts signed for projects located in Montana must require all contractors to give preference to the employment of bona fide Montana residents who have substantially equal qualifications to those of nonresidents.

I reviewed every change to state RPS programs in statute and regulation since the programs began in search of provisions implicated by the DCC—namely, requirements, preferences, or limitations that favor in-state or in-region resources, as shown in Table 1. In-state provisions include requirements of in-state generation, credit multipliers, and preferences for in-state work force or manufacturing. In-region provisions are all a variant of an in-region generation requirement.

Figure 1 (on page 10966) graphs these trends since the inception of the first RPS in Iowa in 1983. The solid line shows the number of states with in-region requirements, and the dashed line shows states with in-state requirements or preferences.[234] Since a handful of these requirements only pertained to small solar PV and DG, I also included the dotted line, which charts only in-state requirements relevant to utility-scale renewables. The numbers for in-state, non-DG provisions are perhaps the more relevant data for the purposes of this discussion.

The first observation is the overall growing support for geographic restrictions when most RPS programs were established in the 2000s,[235] with perhaps a slightly higher popularity of in-region requirements relative to in-state requirements. There is a noticeable gap between in-region and in-state requirements that do not involve DG (i.e., the restriction applies to large-scale facilities as well as small-scale systems): 18 states had in-region requirements by 2011, and only 13 states had an in-state non-DG restriction. A number of factors could have been at play in the preference for in-region over in-state requirements, such as environmental cooperation with other states in the region or a belief that cheaper renewable electricity could be obtained in surrounding states. At the same time, the legal climate was relatively uncertain during that period, and perhaps many RPS states suspected that strict geographic limits were unconstitutional and tended away from them.

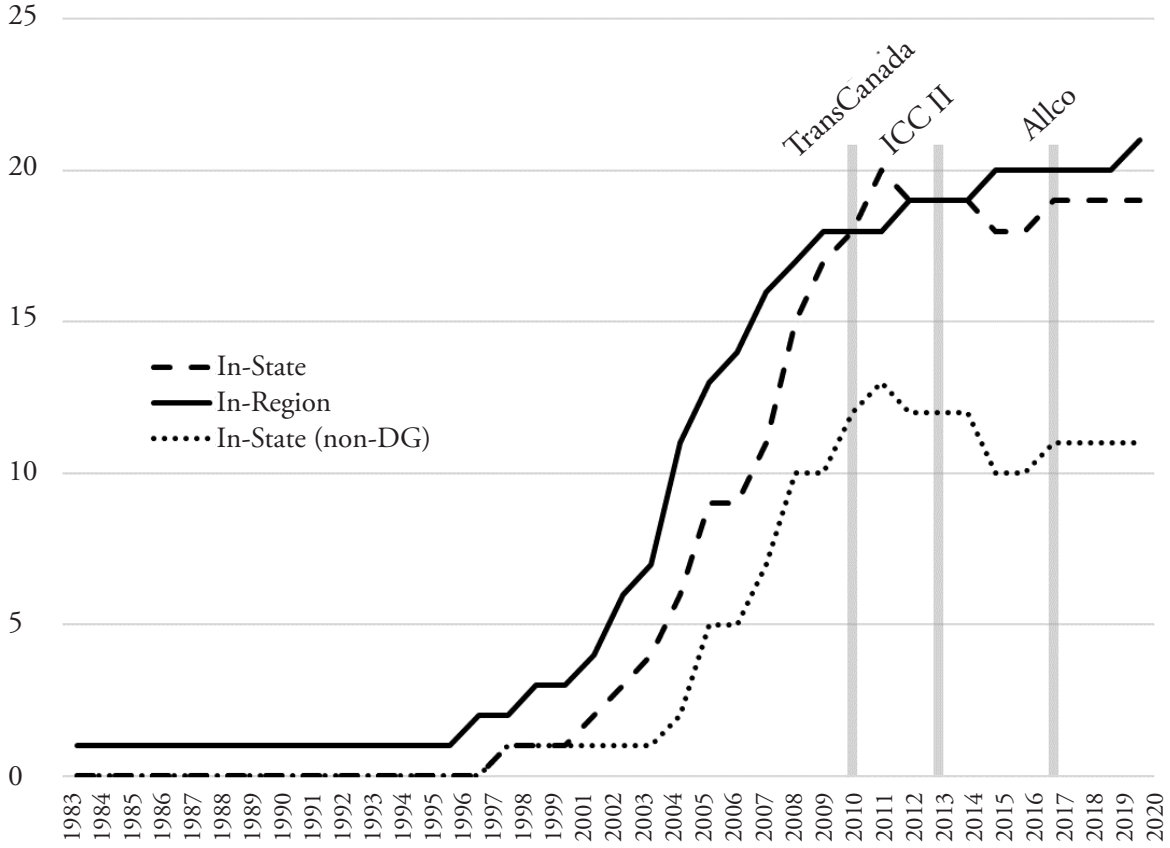
The *TransCanada* challenge to Massachusetts' in-state solar requirement and quick settlement in 2010 marked the first signal to states that they should be wary of DCC claims, and armed fossil fuel generators or out-of-state companies with strategies for challenging RPS programs. We cannot necessarily conclude that this settlement or any other legal moment caused any subsequent changes to state RPS programs, and the small sample size of states makes it hard to rule out random error in any particular trend. Nonetheless, there is a bit of a divergence that begins in

234. Numbers may not necessarily sum to the total number of states at the time with an RPS program. If a state had both an in-region generation requirement and some form of in-state preference, it is included in both series. For example, since 2007, Delaware has offered both a credit multiplier for solar or wind systems installed in state and manufactured primarily in Delaware or primarily with Delaware work force, Del. Code Ann. tit. 26, §356(d)-(e) (2010), while also requiring generally that resources must be located in or imported into the PJM region to be eligible for compliance with its RPS, *id*. §352(6) (2018).

Further, I have provided figures for total in-state requirements and in-state, non-DG requirements. As discussed throughout this Article, in-state requirements relating to DG can often be justified for reasons related to transmission constraints and grid resiliency, though they do also have ancillary benefits for the local economy and environment, whereas in-state preferences that apply broadly or to in-state work force or manufacturing are unlikely to be premised on practical considerations and more likely to advance objectives related to economic protectionism.

235. This tracks with the state data collected by Sanya Carley et al., *Empirical Evaluation of the Stringency and Design of Renewable Portfolio Standards*, 3 Nature Energy 754, 756 (2018), which shows the trends in the adoption and amendment of RPS provisions over time. Legislative changes, including the adoption of geographical restrictions, were most frequent in 2007 and 2008, and in fact, geographical provisions were the second most common legislative change made during that time. *Id*.

Figure 1. Time Series of Geographic Restrictions in State RPS Programs



2011 between the solid and dotted lines, a year after the *TransCanada* DCC claims were dismissed. Illinois was the first state to act, by changing its in-state generation requirement to also allow renewables from facilities in adjacent states.[236]

Plaintiffs challenging Colorado's RPS filed suit in 2011, and in response to the district court's grant of standing with respect to the DCC claims, Colorado removed the in-state requirements in 2013.[237] Previously, the program had provided additional 25% credits for in-state generation and in-state community-based projects, required a percentage of RPS requirements to come from DG, with wholesale DG systems located in Colorado, and ordered the state PUC to issue cost recovery policies to incentivize investment in renewable resources in Colorado.[238]

Then in 2014, one year after Judge Posner opined in dicta that provisions prohibiting compliance through out-of-state renewable resources violated the DCC, Massachusetts stopped accepting applications for the solar carve-out that prompted the *TransCanada* suit,[239] thereby removing its only remaining part of the program that preferenced in-state solar systems, and Ohio removed its requirement that 6.25% of retail electricity come from in-state renewables and provided only that it be deliverable into the state.[240] Quite possibly, these states adapted their programs in response to an active or potential constitutional challenge, pursuant to the anticipatory obedience theory.

Of course, the risk that state-based restrictions would be held unconstitutional did not discourage a few states from enacting such laws. In 2011, California actually added an in-state carve-out, mandating that utilities obtain 50% of their renewables from in state or within the service area of a state utility, rising to 75% for 2017 and after.[241] Several years later, Pennsylvania created an identical eligibility requirement for its solar PV carve-out.[242] Vermont established its renewable energy standard in 2015, generally permitting the use of renewable electricity from plants interconnected

236. Act of Oct. 31, 2011, P.A. 97-616, §5, 2011 Ill. Laws 11556, 11568-69 (amending 20 Ill. Comp. Stat. Ann. 3855/1-75(c)(3) (West 2020)).

237. Appellants' Opening Brief, *supra* note 159, at 4-5; Act of June 5, 2013, ch. 414, §1, 2013 Colo. Sess. Laws 2452, 2454-55 (amending Colo. Rev. Stat. Ann. §40-2-124 (West 2019)).

238. Colo. Rev. Stat. Ann. §40-2-124(1)(a)(VI), (1)(c)(I)(C)-(E), (1)(c)(III), (1)(c)(VI), (1)(f) (West, Westlaw current through 1st Reg. Sess. of 68th Gen. Assemb.).

239. Commonwealth of Massachusetts, *Program Summaries*, https://www.mass.gov/service-details/program-summaries (last visited Sept. 8, 2021).

240. Act of June 13, 2014, Sub. S.B. 310, §1, 2014 Ohio Laws 1, 19-20 (amending Ohio Rev. Code Ann. §4928.64(B)(3)).

241. Act of Apr. 12, 2011, 1st Ex. Sess., ch. 1, §22, 2011 Cal. Stat. 5775, 5794-95 (codified at Cal. Pub. Util. Code §399.16(c) (West 2020)).

242. Act of Oct. 30, 2017, ch. 40, §11.1, https://www.legis.state.pa.us/cfdocs/Legis/LI/uconsCheck.cfm?txtType=HTM&yr=2017&sessInd=0&smthLwInd=0&act=40# (codified at 71 Pa. Stat. and Cons. Stat. Ann. §714(1) (West 2017)).

to New England but only counting DG from facilities in Vermont.[243] As recently as 2020, Virginia created an RPS with an in-region requirement, but required all Phase II utilities (of which there is only one IOU that serves 2.6 million customers in Virginia and North Carolina) to obtain eligible resources in state beginning in 2025.[244]

Several other states left intact their state-based policies after 2010 and 2013 that remain on the books. Michigan has retained its requirement that a renewable energy source be located in state or within the service territory of a provider,[245] and North Carolina caps the percentage of requirements that can be met with out-of-state unbundled RECs at 25%.[246] Delaware and Michigan have not altered their credit multipliers for new facilities with in-state manufacturing or work force.[247] And Missouri still provides an additional 25% credit for in-state generation.[248]

Nevada, New Hampshire, Oregon, Rhode Island, and a few others continue to limit eligibility for DG to systems located in state or to provide credit multipliers for in-state customer-sited systems.[249] These states were perhaps more inclined to promote in-state development than the threat of a DCC challenge has constrained them. This would suggest that no single theory captures how states have acted in the RPS space and that constitutional neglect or anticipatory disobedience theories are applicable with regard to these states, though the states whose restrictions only impacted DG may have done so because they believed discriminatory provisions limited to DG would pass strict scrutiny, particularly in the wake of *Allco*.

The following analysis argues that constitutional constraints limiting the use of geographic restrictions compel policymakers to adopt more cost-effective programs. This conclusion is true if states are aware of how the DCC relates to RPS programs and adapt their programs accordingly. The patterns discussed above support the notion that constitutional considerations play a role in the legislative process or decision to amend a program, and that policymakers are cautious about having a program held unconstitutional. Alternatively, it could be the case that the causal link is reversed, and policymakers make drafting decisions in an effort to declare what they think to be consistent with the DCC, rather than taking cues from courts and anticipating how they will pass on RPS provisions.

Both are likely true with regard to DG, where in-state restrictions on customer-sited and off-grid generation are currently the most common form of in-state restriction. The popularity of state-based DG requirements may indicate that states do not believe these provisions violate the DCC because they are justifiable more on pragmatic grounds than a desire to concentrate economic and environmental benefits in state. The *Allco* court found a geographic distinction not to be discriminatory in part because of its relation to transmission constraints and the need for system reliability, but did not directly rule on an in-state or DG provision.[250]

In light of this decision, states may be taking cues from the U.S. Court of Appeals for the Seventh Circuit, while also pronouncing their own constitutional meaning by asserting that in-state DG provisions fall in a similar camp as in-region requirements and thus are not facially discriminatory because of the valid state interests in promoting DG. In any case, there is evidence of a link between constitutional considerations and geographic restrictions, implying that for many states, the DCC does affect the subset of provisions they are willing to adopt.

V. Effectiveness and Cost-Effectiveness of RPS Programs and the Effects of Constitutional Constraints

Several rationales have been offered by RPS proponents to secure passage by state legislatures. A leading goal of encouraging renewable development through RPSs is to provide environmental benefits such as clean air and water through reductions in air pollution. Reducing such pollution in turn mitigates numerous adverse health effects, including respiratory symptoms, heart attacks, and aggravated asthma.[251] RPSs have also been adopted to stabilize electricity prices and improve reliability as utilities diversify their energy streams.[252] Greater renewable development

243. Act of June 11, 2015, No. 56, §3, 2015 Vt. Acts & Resolves 695, 701 (amending Vt. Stat. Ann. tit. 30, §8005(2)(B) (West 2017)). This provision falls under the functional-equivalent category by limiting eligible DG to systems "directly connected to the subtransmission or distribution system of a Vermont retail electricity provider" or "directly connected to the transmission system of an electric company required to submit a Transmission System Plan," which effectively amounts to an in-state requirement. *Id*.; *see also* Anne Margolis, Vermont Public Service Department, Presentation to Distributed Generation Forecast Working Group, Vermont Distributed Generation: 2021-2030 Expectations 3 (Dec. 7, 2020), https://www.iso-ne.com/static-assets/documents/2020/12/dgfwg_vt2020.pdf.

244. Act of Apr. 11, 2020, ch. 1194, §1, https://lis.virginia.gov/cgi-bin/legp604.exe?201+ful+CHAP1194+pdf (codified at Va. Code Ann. §56-585.5(C) (West 2020)); Dominion Energy, Embracing Change: 2019 Summary Annual Report 22 (2019), https://s2.q4cdn.com/510812146/files/doc_financials/2019/ar/DE_2019SAR_Final_032320.pdf.

245. Mich. Comp. Laws Ann. §460.1039(2)(d)-(e) (West 2017).

246. N.C. Gen. Stat. Ann. §62-133.8(b)(2)(e) (West 2019).

247. Del. Code Ann. tit. 26, §356(d)-(e) (West 2010); Mich. Comp. Laws Ann. §460.1039(2)(d)-(e) (West 2017).

248. Mo. Rev. Stat. §393.1030(1) (West 2018).

249. Nev. Rev. Stat. Ann. §§704.7818(e), 704.7822 (West 2013) (limiting the 240% credit multiplier for customer-sited solar PV to "retail customers," or those who consume retail electricity in Nevada); N.H. Code Admin. R. Ann. Puc 2505.01(f) (2020) (limiting REC eligibility to customer-sited sources located in New Hampshire); Or. Rev. Stat. Ann. §757.375 (West 2016) (providing a 200% credit multiplier for solar PV with a nameplate capacity of between 500 kW and 5 MW located in Oregon); 39 R.I. Gen. Laws Ann. §39-26-4(d) (West 2016) (allows RECs to be issued for electricity generated by eligible off-grid and customer-sited systems located in Rhode Island).

250. *See supra* notes 189-93 and accompanying text.

251. *See* U.S. Environmental Protection Agency, *Progress Cleaning the Air and Improving People's Health*, https://www.epa.gov/clean-air-act-overview/progress-cleaning-air-and-improving-peoples-health (last updated Aug. 12, 2021) (discussing how reductions in major pollutants, such as particles, ozone, lead, carbon monoxide, nitrogen dioxide, and sulfur dioxide, have produced substantial health benefits since the Clean Air Act was passed in 1970); News Release, Berkeley Lab, New Research Quantifies Health Benefits of Reducing Greenhouse Gas Emissions (Nov. 18, 2014), https://newscenter.lbl.gov/2014/11/18/new-research-quantifies-health-benefits-of-reducing-greenhouse-gas-emissions/.

252. Davies, *supra* note 12.

can promote energy independence and reduce reliance on electricity transmitted over longer distances and energy imported from outside the United States.[253]

Finally, proponents trumpet the local economic benefits and green jobs that encouraging renewable development, particularly in state and in region, can provide through technology and construction.[254] While reducing carbon emissions and shifting to a more sustainable power system might seem like important, worthwhile goals, they are long-term and not as politically attractive as, say, the increased economic activity and job creation that might produce benefits in the short term. On the other hand, allowing use of the lowest-cost renewable, whether in state or not, keeps electricity prices lower and is also an attractive result. Legislators must balance these considerations.

Evidence is generally mixed as to whether states have had success in meeting these goals. All states are making progress in renewable deployment, and there is evidence that RPSs have at least played some role in those states that have such a program. Total non-hydro renewable generation in the United States has increased by 371 terawatt hours (TWh) since 2000, and 45% of that growth was required by RPS policies.[255] This is not to say that the full 45% of the renewable growth was the result of RPS requirements, since various other state incentives may come into play, such as voluntary green power markets, voluntary utility procurement, and net metering programs, as well as other external factors, such as substantial additions to wind capacity because it is lower-cost than other renewables.[256]

The role of RPSs in generating demand for new renewable construction may be declining: about one-half of renewable energy capacity additions since 2000 have been to comply with RPS requirements, but in 2018, only about 30% of renewable development was attributable to RPSs.[257] Some studies have likewise found that RPSs have had a positive relationship with in-state renewable development.[258] Others found that RPS policies are associated with less renewable development compared to non-RPS states, or that there was no significant relationship.[259] Differences in methodology and the difficulty of accounting for variations in RPS design explain some of the disparities in these results. There have been similarly mixed findings with respect to the effect of RPS policies on electricity prices,[260] carbon emissions,[261] and economic development.[262]

253. *Id.*
254. *Id.*
255. Barbose, *supra* note 10, at 16; *see also* John Bistline et al., *The Economic Geography of Variable Renewable Energy and Impacts of Trade Formulations for Renewable Mandates*, 106 Renewable & Sustainable Energy Rev. 79, 84 (2019) (estimating that a hypothetical 50% national renewable generation mandate would displace fossil fuel generation by decreasing natural gas generation between 49% and 65% and coal generation between 24% and 33%).
256. Barbose, *supra* note 10, at 16.
257. *Id.* at 17.
258. Haitao Yin & Nicholas Powers, *Do State Renewable Portfolio Standards Promote In-State Renewable Generation?*, 38 Energy Pol'y 1140 (2010) (finding a statistically significant increase in in-state renewable electricity development when variations in RPS programs are considered); Miriam Fischlein & Timothy M. Smith, *Revisiting Renewable Portfolio Standard Effectiveness: Policy Design and Outcome Specification Matter*, 46 Pol'y Sci. 277, 302 (2013) (finding that RPS stringency is positively related to utility-level renewable energy sales); Nikolay Anguelov & William F. Dooley, *Renewable Portfolio Standards and Policy Stringency: Assessment of Implementation and Outcomes*, 36 Rev. Pol'y Rsch. 195, 207-08 (2018) (finding that states with "weak" RPS policies (medium stringency) have the highest increases in total renewable energy consumed and the share of total energy consumption from renewables); Ryan Wiser et al., Lawrence Berkeley National Laboratory & National Renewable Energy Laboratory, A Retrospective Analysis of the Benefits and Impacts of U.S. Renewable Portfolio Standards 11-12 (2016), https://www.nrel.gov/docs/fy16osti/65005.pdf (finding an average of almost 5,600 MW per year of RPS-related renewable capacity additions in 2013-2014, almost one-half of which was utility-scale PV); Fredric C. Menz & Stephan Vachon, *The Effectiveness of Different Policy Regimes for Promoting Wind Power: Experiences From the States*, 34 Energy Pol'y 1786, 1793 (2006) (finding that the presence of an RPS policy had a significant positive association on wind capacity and wind development over the period 1998-2003).
259. Sanya Carley, *State Renewable Energy Electricity Policies: An Empirical Evaluation*, 37 Energy Pol'y 3071, 3078 (2009) (finding that states with RPS policies do not have statistically higher rates of renewable share deployment than non-RPS states); Magall A. Delmas & Maria J. Montes-Sancho, *U.S. State Policies for Renewable Energy: Context and Effectiveness*, 39 Energy Pol'y 2273, 2281 (2011) (finding that RPSs have a significant negative impact on renewable capacity when the context of policy adoption is factored in); Gireesh Shrimali et al., *Have State Renewable Portfolio Standards Really Worked? Synthesizing Past Policy Assessments to Build an Integrated Econometric Analysis of RPS Effectiveness in the U.S.* 3 (U.S. Association for Energy Economics, Working Paper No. 12-099, 2012) (finding that RPS stringency is negatively correlated with renewable capacity share, though this becomes not statistically significant when Maine is dropped from the sample); Gregory B. Upton Jr. & Brian F. Snyder, *Funding Renewable Energy: An Analysis of Renewable Portfolio Standards*, 66 Energy Econ. 205, 211-12 (2017) (finding that RPS states have experienced less growth in renewable generation than non-RPS states, though these findings were not statistically significant).
260. Wiser et al., *supra* note 258, at 42-43, 48-49 (finding wholesale electricity price reductions in 2013 of about 0.0 to 1.2¢/kWh of new renewable energy used to meet RPS compliance and natural gas price reductions in 2013 of about 1.3 to 3.7¢/kWh); Upton & Snyder, *supra* note 259, at 211-12 (finding that RPSs are associated with a 0.86¢ to 0.91¢ increase in electricity prices in RPS states relative to non-RPS states, with more stringent RPS policies leading to greater price increases); Karen Palmer & Dallas Burtraw, *Cost-Effectiveness of Renewable Electricity Policies*, 27 Energy Econ. 873, 881-84 (2005) (finding that electricity prices increase with RPS target percentage).
261. Wiser et al., *supra* note 258, at 17 (finding that new renewable energy used to meet RPS requirements in 2013 reduced life-cycle GHG emissions by about 59 MMT in the locations with the most stringent RPS programs and where coal plants are more likely to be displaced); Luke J.L. Eastin, *An Assessment of the Effectiveness of Renewable Portfolio Standards in the United States*, 27 Electricity J. 126, 130-31 (2014) (finding that RPSs are negatively associated with carbon emissions); Upton & Snyder, *supra* note 259, at 211-12 (finding that carbon emissions decreased in RPS states relative to non-RPS states, but from reduced electricity demand rather than renewable energy generation, though this was not statistically significant when synthetic control states were used); Bistline et al., *supra* note 255, at 87 (estimating a reduction in carbon emissions of between 11.3 billion and 13.6 billion MT from a hypothetical 50% national renewable generation mandate).
262. Wiser et al., *supra* note 258, at 36 (finding that RPS-related capacity additions in 2013-2014 led to almost 200,000 U.S.-based gross jobs in 2013 with an average annual salary of $60,000 and more than $20 billion in gross domestic product, primarily through construction activity and solar PV installations); Richard Boampong et al., The Effect of Renewable Portfolio Standards on State-Level Employment: An Ex Post Analysis 10-12 (Florida Energy Systems Consortium, Project No. 0077818, 2016), https://pdfs.semanticscholar.org/9379/dde7253fdc0bac64af37d63af3019d8bde54.pdf (finding no statistically significant effects of RPS policies on state-level employment and suggesting that any "increase in green jobs is presumably matched by a decrease in jobs in other sectors so that there is no net employment effect"); Sophia N. Zupanc, *The Relationship Between State Economic Growth and Renewable Portfolio Standards in the United States*, 26 Issues Pol. Econ. 180, 185 (2017) (finding that RPS stringency has a significant positive impact on per capita gross state product growth); Kimi Narita, *State Renewable Portfolio Standards Create Jobs and Promote*

While these studies speak to the effectiveness or efficacy of RPSs in meeting their purported objectives, we are also concerned with the efficiency of RPSs and the many variants thereof. State RPSs are generally considered to be less than optimally efficient for two reasons: (1) the leakage of environmental and economic benefits into neighboring states, and (2) the presence of in-state generation preferences or restrictions, which prevents compliance from occurring in the manner that is least costly.[263] Interestingly, the most common response to the former is the latter.

In this context, we return to the role of the DCC in shaping RPS outcomes. As discussed in Part IV, constitutional considerations appear to play a role in the development of RPS policies, though some state policymakers remain unconcerned with constitutional constraints. To the extent that states are guided by such limitations, the DCC narrows the universe of permissible policy features.

Three types of provisions are called into question by the DCC: (1) provisions that limit out-of-state renewable generation for compliance with RPS requirements; (2) provisions that limit compliance through out-of-region renewable generation; and (3) credit multipliers or other preferences for in-state or in-region renewable generation, labor, or manufacturing. By affecting decisions about how utilities will choose to comply with an RPS, these provisions all distort the market for renewables and RECs.

Free trade of RECs, in theory, should allow the forces of supply and demand to allocate resources in the most efficient manner. After all, the beauty of the REC system as a compliance mechanism for RPSs is that the firms that would find it most costly to comply by generating renewable electricity on their own or building a new facility can purchase RECs from firms that can produce renewable energy more cheaply. Similarly, where various regions have a comparative advantage in certain types of renewable generation (e.g., solar power in the West and Southwest, wind power in central and west central United States, tidal/offshore wind on the coasts, geothermal in the West and Hawaii), free trade of RECs incentivizes developers to build where it is more cost efficient to do so, as well as utilities to meet RPS targets by purchasing RECs from those locations where renewable electricity is the cheapest.[264]

The provisions described above, therefore, have erected barriers to a fluid, uniform market in renewable development and REC trading. Since no two states have the same RPS program, these markets have become exceptionally fragmented. Many RPS features contribute to this patchwork of regulation, including variation in what counts as "renewable" and whether existing renewable capacity counts, and geographic restrictions and credit multipliers worsen the problem of not having a single "fungible 'renewable energy product'" from state to state.[265] For the market to be more liquid, transparent, and uniform, there needs to be greater convergence of RPS policies across the states, so that investors may have a degree of certainty in their investments and have confidence in the market in which they are participating.[266] The DCC, therefore, operates to improve uniformity across states and to create a more trusted and stable interstate market by virtually eliminating three types of provisions from state playbooks that contribute to this market fragmentation.

Another perspective on these features is how they affect the extent to which RPS policies actually meet their target percentages. Prof. Lincoln Davies uses the term "salience distortion" in this sense to describe how an RPS program may appear to be aggressive—through ambitious percentage requirements or quick time frames—but that these aspirations are diluted by provisions that make it easier for a utility to meet its obligation.[267] Credit multipliers are a prime example. They provide a range of incentives to utilities by making it easier to meet requirements, at the same time weakening the stated renewable goal and distorting utilities' decisions of what type of renewable technology to use, where to build facilities, or where to source their renewable electricity.

For example, Delaware had a goal in 2018-2019 of 17.5% eligible renewable sources, with a carve-out of 1.75% for solar PV.[268] Delaware also offers a 10% additional credit for solar or wind installations that used in-state manufacturing and a 10% additional credit for installations constructed 75% with in-state labor.[269] In that year, Delmarva—the only electric distribution company regulated by Delaware Public Service Commission—was required to have 670,488 RECs to comply with the 17.5% requirement (excluding the solar carve-out) and met this obligation by purchasing only 647,800 RECs since a percentage of those credits were eligible for one or both of the 10% additional credits.[270] This means that Delmarva was able to satisfy the RPS requirements, but 22,688 fewer MWh of renewable electricity were generated on account of the credit multipliers.

Generally, any mechanism that reduces the scope of an RPS should have a negative impact on renewable energy deployment. Multipliers lower the overall amount of renewable energy needed to satisfy program requirements. One study has confirmed that RPS stringency[271] is posi-

Clean Energy, NRDC (Mar. 14, 2013), https://www.nrdc.org/resources/state-renewable-portfolio-standards-create-jobs-and-promote-clean-energy.

263. Yin & Powers, *supra* note 258, at 1141; Davies, *supra* note 12, at 1381. Most research, therefore, has focused on effectiveness of RPSs, with only casual discussion of efficiency, because of the general belief that RPSs are less efficient than other market-based policies such as cap and trade and carbon tax.

264. *See* Reiter, *supra* note 109, at 59-63.

265. Davies, *supra* note 12, at 1366.

266. *Id.*

267. *Id.* at 1361.

268. Del. Code Ann. tit. 26, §354, sched. I (2011).

269. *Id.* §356(d)-(e).

270. Delmarva Power & Light Company, 2018-2019 Annual Renewable Portfolio Compliance Report (2019), https://depsc.delaware.gov/wp-content/uploads/sites/54/2019/09/2018-2019-Annual-Renewable-Portfolio-Compliance-Report-002_Part1.pdf.

271. Stringency is generally referred to as the portion of a state's electricity load or retail electricity market that is covered by an RPS program. *See*, *e.g.*, Carley et al., *supra* note 235, at 762. RPSs with more aspirational goals over a shorter period of time, fewer credit multipliers, and greater restrictions on geographic location or date of operation—any factors that make it harder to satisfy RPS obligations—are often considered more stringent.

tively related to in-state renewable deployment and that credit multipliers in particular have a negative effect on in-state renewable sales.[272] RPS stringency also leads to higher electricity prices, which is consistent with the expectation that the absence of credit multipliers raises the cost of compliance for utilities and that such costs will be passed on to consumers.[273]

Studies have not separated out different types of credit multipliers, however, and multipliers related, say, to a particular technology or date of operation should have the strongest negative association with policy response, while multipliers with in-state preference might offset any efficacy losses or even result in a positive effect on state renewable deployment. On the other hand, credit multipliers with in-state preferences may shift renewable deployment from locations where it is relatively lower cost to manufacture, construct, or install technology to higher-cost locations, and these greater fixed costs may be passed on to consumers, negating any savings from the reduced compliance costs or even raising retail rates.[274] To the extent that the DCC limits states' ability to express preferences for in-state activity through credit multipliers, the DCC manages to increase RPS stringency, reducing market distortions that affect where renewables are constructed and sourced from, though potentially increasing electricity prices and having a small negative effect on in-state renewable development.

Credit multipliers that preference in-state renewable generation presuppose the ability to engage in interstate REC markets, but many states have placed explicit restrictions on where utilities can obtain the renewable energy to meet their obligations, and free trade of RECs is not always permitted. As mentioned in Part I, states have employed several different methods of restricting REC trading. A state can have an outright ban on out-of-state renewables, which requires utilities to satisfy their full obligations by using or building their own renewable facilities in state, by purchasing renewable electricity from other in-state generators, typically with an allowance for electricity generated within the territory of the utilities' service area.

Alternatively, a state may require that a set percentage of the target be through in-state renewables, with the option to import the balance from out of state. Restrictions can also be on an in-region rather than in-state basis. However objectionable credit multipliers that preference in-state generation, labor, and manufacturing may be with respect to the DCC, restricting REC trading based on origin is even more suspect.[275] It also renders RPS programs less cost effective and efficient than free trade of RECs.

As with credit multipliers, a primary purpose of restricting out-of-state REC trading is to prevent leakage of the benefits of renewable energy. Indeed, states that either prohibit or discourage out-of-state RECs have greater in-state renewable development and share of renewable sales than less restrictive states.[276] Flexibility in REC trading affords greater discretion in complying with RPS requirements, and utilities are likely to import renewable energy from out of state when doing so is cheaper, thus reducing in-state deployment.

The outlook is different when viewing RPS programs on a national level. John Bistline et al. conclude that national solar and wind generation is roughly equal whether REC trading across regions of the United States is restricted or not.[277] They also find that carbon emissions reductions are greater when regional REC trading is prohibited (a 22.2% decrease without REC trading compared to 18.4% decrease with REC trading).[278]

However, the cost of compliance differs substantially between these scenarios. In their model of a 50% national renewable generation mandate, they estimate that marginal compliance costs to utilities when regional REC trading is allowed are a net present value of $68.1 billion, whereas that figure is $148.3 billion when limited to in-region RECs.[279] Thus, the no-trade formulation is less cost effective at incentivizing renewable deployment nationally because it generated the same increase in renewables at a higher cost to utilities.

Similarly, restricting REC trading based on geographic origin increases compliance costs of about $6.02 per metric ton of carbon dioxide emissions reductions compared to a marginal cost of about $10.90 per metric ton of reductions. Although emissions reductions are greater without regional REC trading, they come at a greater cost. This cost is even higher in a world where REC trading is not only prohibited across regions, but among states within a region: the authors estimate policy costs of $217.7 billion when utilities are required to meet their renewable requirements in state.[280]

An economically efficient allocation of renewable capacity additions should result when the marginal costs of renewable generation have been equalized over all regions.[281] Several factors play into the relative cost of investing in renewables in a particular state or region, including renewable potential and renewable penetration. Wind potential is highest in the West and Southwest, and solar potential is highest in the Midwest and Great Plains region, and in

272. Fischlein & Smith, *supra* note 258, at 302-03; Carley et al., *supra* note 235, at 758-59 (finding that RPS stringency is associated with an increase in the share of a state's electricity generation from renewables as well as total capacity from renewables).

273. Upton & Snyder, *supra* note 259, at 213-14. The study also found that RPS stringency has a significant negative association with electricity demand, but the authors predict that the decrease in electricity demand is due to the increase in electricity price. *Id.* at 215.

274. *Cf.* Reiter, *supra* note 109, at 62:

> A numerical multiplier—essentially a tax on the out-of-state producer—still enables the producer to compete for market share, although it must shave its profit margins to do so. . . . Competition will nonetheless be restricted because some lower priced competitors, hampered by the tax, will be forced out of the market. To the extent that some remain in the market, however, the in-state producers will not capture all of the benefit.

275. *Id.* ("[Q]uotas and outright bans on the use of out-of-state or foreign renewable resources are far worse for consumers than multipliers.").

276. Yin & Powers, *supra* note 258, at 1148; Shrimali et al., *supra* note 259, at 27-28; Fischlein & Smith, *supra* note 258, at 303.

277. Bistline et al., *supra* note 255, at 84-85.

278. *Id.* at 87.

279. *Id.*

280. *Id.* at 86.

281. *Id.* at 81.

those areas, such development is relatively cheaper. With greater renewable development, however, comes diminishing returns, and renewable installations have higher marginal costs as an area becomes more saturated and the marginal value of each new facility decreases.[282]

A free REC trading system allows wind-rich states such as Iowa and Kansas or solar-rich states such as Arizona and New Mexico to capitalize on their endowment of renewable resources and export RECs to states where marginal costs of renewables are higher, such as Georgia, New York, and North Carolina, in order to comply with RPS requirements.[283] Removing restrictions on REC trading across state and regional borders will result in more efficient outcomes, as REC markets become more fluid and less fragmented and the prices of RECs converge.[284] These barriers to free trade also stand in the way of innovation or dynamic efficiency by disincentivizing technological developments that could lower the cost of renewable generation and storage, which should make it easier to achieve state RPS goals or allow states to set higher target percentages.[285]

The RPS features that tend to restrict REC trading are most in danger of violating the DCC. At the same time, they render RPS policies less cost effective by generating outcomes at a higher cost to utilities—and, in turn, ratepayers—than if free REC trading were permitted. As a result, the DCC, in limiting the legal policy options available to legislators, improves the cost-effectiveness and efficiency of RPS policies by creating more uniform markets, encouraging free trade of RECs, and directing resources to lower-cost renewable development opportunities.

VI. Conclusion

"For many years—perhaps since *Gibbons* . . . the Supreme Court has read the [Commerce] [C]lause as embodying a sort of judicial free trade policy."[286] RPSs, the programs that more than half the states have established to help shift from fossil fuels to alternative energy sources, reduce harmful carbon emissions, and incentivize the development and construction of renewable resources, provide a useful lens for analyzing how the Commerce Clause of the Constitution interacts with public policy. RPS programs have been shown to have a positive impact on renewable development and carbon emissions nationwide, though several states' attempts to favor in-state renewable resources or restrict the use of out-of-state resources in satisfying RPS demands threatens to undermine the success of these programs.

By limiting states' ability to promote their own local interests and deliver local economic and environmental benefits, the DCC, a corollary to the Commerce Clause, supports the creation of more uniform policy across states and, with it, the removal of barriers to free trade and free flow of resources across state lines. A review of the emerging economic literature shows that geographic restrictions and preferences reduce the cost-effectiveness of RPS programs by diverting investment from its lower-cost alternatives and increasing the costs to utilities—and, in turn, to customers—to procure renewable resources and pursue the goals set by the state for renewable generation.

This discussion can provide some important insight not only into the efficiency trade offs and legal considerations involved in trying to channel economic and other benefits of an RPS program toward residents of a state, but also whether a national standard, such as the one proposed by President Biden, is preferable to the current patchwork of distinctive state programs. Should the Administration's proposal fail to come to fruition, this Article argues that the DCC helps shape the array of state RPSs into a more efficient and cost-effective set of policies with the potential to work toward the same clean electricity goals the Administration has laid out. States may continue functioning as laboratories of democracy within the constraints of the Constitution, and this may be well-aligned with the environmental, energy, and economic objectives that are at the heart of RPS programs.

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282. *Id.*
283. *See* Reiter, *supra* note 109, at 60-61.
284. *See* Davies, *supra* note 12, at 1379-81 ("[L]imiting where RECs can be used risks gutting the mechanism's very purpose: to harness the market to make RPSs more efficient, not less."); Upton & Snyder, *supra* note 259, at 214 ("[F]unding enough in-state renewables to meet the entirety of an RPS requirement might lead to further increases in electricity rates, as lower cost generation potential might be available across state lines."). Professor Davies describes a state's REC trading environment as "market definition"—the extent to which a state RPS defines the renewable market by allowing REC trade, limiting compliance based on geographic origin, and allowing certain renewables to count toward RPS obligations. Davies, *supra* note 12, at 1361. He finds that California, South Dakota, and Virginia have the most broadly defined renewables markets, while Iowa and New York have the most limited markets. *Id.* at 1402.
285. Reiter, *supra* note 109, at 63.
286. Energy & Env't Legal Inst. v. Epel, 793 F.3d 1169, 1171, 45 ELR 20134 (10th Cir. 2015).

Appendix Table A1. List of All Geographic Restrictions by State and Type

State	Description	Type	Years
Arizona	150% credit multiplier for solar plants installed in AZ on or before December 31, 2005	In-state non-DG multiplier	1998 -
	Up to 150% credit multiplier for solar plants w/ manufacturing and installation content coming from AZ	In-state non-DG multiplier	1998 - 2006
	150% credit multiplier for solar DG, including grid-connected and off-grid, installed on customer premises in AZ or located in AZ and included in another LSE program, installed on or before December 31, 2005	In-state DG multiplier	1998 -
	Partial credit against portfolio requirement for owning or making a significant investment in solar electric manufacturing plant located in AZ, up to max of 50% of requirement in 2001, 20% by 2003	In-state preference	1998 - 2006
	Landfill, gas, wind, biomass must be located in AZ to be eligible	In-state non-DG requirement	1998 - 2006
	Up to 150% credit multiplier for solar, landfill, gas, wind, or biomass installed in AZ on or before December 31, 2005	In-state non-DG requirement	2006 -
	Partial credit against portfolio requirement for providing incentives to a manufacturer of solar electric products to locate a manufacturing facility in AZ	In-state preference	2006 -
California	Resources other than geothermal or hydropower must come from facilities located in CA or near the border of the state with the first point of connection to the WECC transmission system located within CA	In-region requirement	2002 - 2006
	Resources must come from facilities located in CA or near the border of the state with the first point of connection to the transmission network within CA and electricity produced by the facility is delivered to an in-state location; or it has its first point of interconnection outside the state and is connected to transmission network within WECC and delivered to an in-state location	In-region requirement	2006 -
	Created three portfolio content categories: in 2020, 75% of requirements must be Category 1 bundled RECs from facilities with first point of interconnection within a California Balancing Authority (CBA) or facilities that schedule into a CBA on an hourly or sub-hourly basis; 15% from Category 2 RECs generated from out-of-state renewable facilities; 10% from Category 3 unbundled RECs	In-state non-DG requirement; in-region requirement	2011 -
Colorado	125% credit multiplier for in-state generation	In-state non-DG multiplier	2005 - 2013
	150% credit multiplier for community-based projects located in CO	In-state DG multiplier	2007 - 2013
	Preference for cost-recovery of utility-owned generation facilities by qualifying retail utilities that show their proposal will provide significant economic benefits to CO	In-state preference	2007 - 2019
	Added a DG carveout, with in-state requirement for wholesale DG	In-state DG requirement	2010 - 2013

State	Description	Type	Years
Connecticut	Electric suppliers may satisfy requirements by purchasing resources within the jurisdiction of the regional ISO or within the jurisdiction of NY, PA, NJ, MD, and DE, or by participating in a renewable energy trading program within those jurisdictions	In-region requirement	2003 - 2006
	Electric suppliers may satisfy the requirements by purchasing RECs issued by NEPOOL GIS, the generation facility must be located in the jurisdiction of the regional ISO, or the energy must be imported into the control area of the regional ISO	In-region requirement	2006 -
	ZRECs/LRECs/SHRECs cannot be generated from out-of-state DG because they must be connected to the grid of the two states' utilities/in their service territories	In-state DG requirement	2011 -
District of Columbia	RECs must be located in the PJM Interconnection region or in a state adjacent to it, or outside that area, but in a control area adjacent to the region and delivered into the region	In-region requirement	2005 -
	An electricity supplier shall meet the solar requirement by obtaining the equivalent amount of RECs from solar energy systems located within DC or interconnected to the distribution grid serving DC	In-state non-DG requirement	2010 -
Delaware	Eligible energy resources are those located within or imported into the PJM region, the area coordinated by the PJM Interconnection	In-region requirement	2005 -
	Energy from DG eligible resources may also be used, provided they are physically located in DE	In-state DG requirement	2005 -
	150% credit multiplier for wind sited in DE on or before December 31, 2012	In-state non-DG multiplier	2005 -
	300% credit multiplier for customer-sited solar PV physically located in DE	In-state DG multiplier	2007 -
	350% credit multiplier for offshore wind sited off DE coast on or before May 31, 2017	In-state non-DG multiplier	2008 -
	110% credit multiplier for in-state solar or wind that is at least 50% manufactured in DE or at least 75% DE workforce	In-state non-DG multiplier	2010 -
	Qualified fuel cell providers projects may count for compliance, must be manufactured in DE, located in DE, and operated by a qualified provider	In-state DG requirement	2011 - 2015
Illinois	Resources must be generated from facilities located in-state, provided that cost-effective renewables are available from those facilities; otherwise, they shall be procured in states adjoining IL or elsewhere	In-state non-DG requirement	2007 - 2011
	Cost-effective renewables located in IL and in states that adjoin IL may be counted; if cost-effective resources are not available there, they shall be purchased elsewhere	In-region requirement	2011 - 2017
	In-state resources shall count, but Illinois Power Agency may qualify RECs from facilities located in states adjoining IL if it determines that the operation of such facility will help promote the state's interest in health, safety, and welfare based on public interest criteria	In-region requirement	2017 -

State	Description	Type	Years
Iowa	Utilities must own alternative energy production facilities, or enter into long-term contracts to purchase or wheel electricity from such facilities located in their service area	In-region requirement	1983-
Maine	Eligible renewable resources must be able to be physically delivered to the control region in which NEPOOL has authority	In-region requirement	1997 -
	150% credit multiplier for commuity-based renewable projects, must be connected to the electric grid of ME	In-state DG multiplier	2009 -
Maryland	RECs must be from a renewable source in the PJM region or an adjacent state (until 2011, also allowed sources outside that area but in a control area adjacent to the PJM region, if the electricity is delivered into the PJM region)	In-region requirement	2004 -
	Tier 1 solar must be connected with the electric distribution grid serving MD, with some exceptions	In-region requirement	2007 -
	Offshore wind projects must be located on the outer continental shelf of the Atlantic, a certain distance from MD coast, and interconnect to the PJM Interconnection grid at a point located on the Delmarva Peninsula	In-region requirement	2013 -
Massachusetts	Off-grid generation must be located in MA	In-state DG requirement	2002 - 2010
	Generation units located outside of ISO-NE may qualify provided they meet certain requirements, including that electricity must have been delivered in to the ISO-NE control area	In-region requirement	2002 - 2008
	Generation sources physically located in or relocated to a control area adjacent to the ISO-NE control area must be delivered into and used by consumers in the ISO-NE control area	In-region requirement	2008 -
	Solar carve-out with solar PV resources located in MA	In-state non-DG requirement	2010 - 2014
Michigan	Renewable sources must be either located outside of MI in the retail customer service territory of any provider that is not an AES, or located in MI	In-state requirement	2008 -
	110% credit multiplier for facilities constructed using equipment manufacture in MI or using MI workforce	In-state non-DG multiplier	2008 -
Missouri	125% credit multiplier for in-state generation	In-state non-DG multiplier	2008 -
Montana	Contracts signed for projects located in MT must require all contractors to give preference to employment of MT residents if they have substantially equal qualifications to those of nonresidents	In-state preference	2005 -
Nevada	240% credit multiplier for customer-sited solar PV that generates at least 50% of the energy consumed on the premises and installed on the premises of a retail customer (defined as customer who consumed electricity in NV)	In-state DG multiplier	2003 -
	Eligible renewable energy systems use the electricity that it generates, or transmits and distributes the electricity it generates to a provider of electric service for delivery into and use in NV	In-region requirement	2009 -

State	Description	Type	Years
New Hampshire	RECs must come from within NE control area unless the source is in an adjacent control area and is actually delivered into the NE control area for consumption by NE customers	In-region requirement	2007 -
	Customer-sited generation must be located in NH	In-state DG requirement	2008 -
New Jersey	Electricity from renewable resources must flow into the PJM or NY ISO control areas	In-region requirement	2001 - 2004
	Small on-site wind and solar must be located in NJ to be used for compliance	In-state DG requirement	2001 - 2004
	Resources shall be generated within or delivered into the PJM region; energy generated outside PJM region shall be considered delivered into the PJM region if added to the region through dynamic scheduling of the output to load inside the PJM region, and if at a facility built on or after January 1, 2003	In-region requirement	2004 -
	On-site solar must be produced by a generating facility interconnected with a distribution system that supplies NJ	In-state DG requirement	2005 -
New Mexico	Other factors being equal, preference shall be given to renewable energy generated in NM	In-state preference	2004 -
	RECs shall require that renewable energy be contracted for delivery in NM unless the commission determines there is a regional REC trading system; until then, any utility may seek approval for RECs that represent energy generated by a renewable resource within a regional market in any region where the public utility is located	In-region requirement	2004 -
North Carolina	Out-of-state unbundled RECs capped at 25% of requirements, except for a utility with less than 150,000 NC retail customers as of 2006	In-state non-DG requirement	2007 -
Ohio	25% of retail electricity has to come from alternative energy, with at least 12.5% coming from renewables; at least half of the renewables must come from in-state and the remainder must be deliverable into the state	In-state non-DG requirement; in-region requirement	2008 - 2014
	Qualifying renewable energy resources must either be located in state or deliverable into the state	In-region requirement	2014 -
Oregon	RECs may be used if the generation facility is located within the WECC; unbundled RECs capped at 20% of the requirements of the large utility RPS	In-region requirement	2007 -
	Electricity produced from a small-scale solar PV system operated by a consumer that is physically located in OR may be used for RPS compliance by a utility	In-state DG requirement	2009 -
	200% credit multiplier for small-scale solar PV located in OR	In-state DG multiplier	2009 -

State	Description	Type	Years
Pennsylvania	Energy derived only from alternative energy sources inside PA or within the service territory of any RTO that manages the transmission system in any part of PA shall be eligible	In-region requirement	2004 - 2007
	Alternative energy systems in PJM control area may be used for compliance; systems outside PA but within MISO may only be used in the areas of PA that overlap MISO's service territory (this limits out-of-state MISO resources to use either by PA Power Company or any EGSs operating in its service territory)	In-region requirement	2007 -
	To count towards solar PV requirements, a solar PV system must deliver electricity to a retail customer of a utility or to the system of a company operating in PA, be directly connected to the electric system of an electric cooperative or municipal electric system operating in PA, or connect directly to the transmission system at a location that is within the service territory of an electric distribution company operating in PA	In-state non-DG requirement	2017 -
Rhode Island	Only NEPOOL GIS RECs can be used for compliance; can be located outside NEPOOL control area only in an adjacent control area if the energy produced is actually delivered into NEPOOL for consumption by NE customers	In-region requirement	2004 -
	NEPOOL GIS RECs from off-grid and customer-sited generation facilities only eligible if located in RI	In-state DG requirement	2004 -
Texas	For a facility to be eligible to produce RECs, the output of the facility must be readily capable of being physically metered and verified in TX; energy from a renewable facility that is delivered into a transmission system where it is commingled (before being metered) with electricity with non-renewable resources cannot be verified as delivered to a TX customer	In-region requirement	1999 -
Vermont	Retail providers must own sufficient energy produced by renewable energy plants or sufficient tradeable RECs from plans whose energy is capable of delivery in NE	In-region requirement	2015 -
	Limits DG eligibility to systems connected to the sub-transmission or distribution system of a VT retail electricity provider or other electric company required to submit a Transmission System Plan and is part of that plan to address transmission system reliability deficiency	In-state DG requirement	2015 -
Virginia	Must be derived from solar or wind located in VA, off the coast or in federal waters, and interconnected directly into VA or phsyically located in PJM region	In-region requirement	2020 -
	Beginning with 2025, at least 75% of all RECs used by a Phase II utility shall come from RPS-eligible resources located in VA	In-state non-DG requirement	2020 -
Washington	Eligible renewable resources are derived from a facility located in the Pacific Northwest or delivered into Washington on a real-time basis without shaping, storage, or integration services	In-region requirement	2006 -