

RENEWABLE PORTFOLIO STANDARDS: ASSESSING STATE FEATURES IN BUILDING A NATIONAL PROGRAM

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I.	The Background of Renewable Portfolio Standards.....	134
	A. State RPS Constructions	136
	B. Relevant Actors	137
	C. Common Terminology	138
II.	State RPSs Examined through Common Metrics	139
	A. Metric 1: Compliance, Effective Dates, and Percentages	140
	i. Compliance	140
	ii. Effective Dates and Percentages.....	143
	B. Metric 2: Enforcement	144
	C. Metric 3: Renewable Energy.....	147
	i. Energy Types	147
	ii. Energy Preferences	149
	E. Metric 4: Energy Requirements and REC Systems.....	153
	i. Renewable Energy Credits.....	154
	F. Metric 5: Facility Siting.....	158
	i. Disparate Benefits.....	159
	ii. Local Response.....	161
	iii. Transmission Capacity	162
	iv. Disparate Environmental Harm	162
	G. Metric 6: The RPS and State RPS Policies	163
III.	Recommendations.....	164
	Recommendation 1: Create long-distance targeted completion dates with yearly goals.....	164
	Recommendation 2: Construct effective dates and percentages that account for the realities of resources and capacities in the U.S.....	165

Recommendation 3: Design effective, RPS-specific enforcement policies	165
Recommendation 4: Admit renewable energy technologies that reflect the majority of state RPS eligible technology listings	166
Recommendation 5: Allow organic energy preferences and limit legislatively created energy preferences	167
Recommendation 6: Create a national REC market with credits tradable throughout the nation	168
Recommendation 7: Allow REC banking.....	169
Recommendation 8: Develop transmission capacities in high resource areas.....	169
Recommendation 9: Permit state RPSs to continue with the national RPS acting as a floor.....	170
Recommendation 10: Draft the policy with clear, concise language, containing unambiguous rules and straightforward penalties.....	170
Conclusion	171

I. The Background of Renewable Portfolio Standards

A Renewable Portfolio Standard (RPS) is, at a fundamental level, a legislatively implemented mechanism meant to increase the amount of renewable energy used in a particular state.¹ An RPS policy works to accomplish this goal by mandating a certain amount or percentage of renewable electricity a state must generate in a given time frame, most often in relation to the state's overall electricity generation.² Currently, twenty-eight states (as well as

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¹ U.S. ENVTL. PROT. AGENCY, RENEWABLE PORTFOLIO STANDARDS FACTS SHEET (Apr. 2009), *available at* http://www.epa.gov/chp/state-policy/renewable_fs.html.

² *Id.*

the District of Columbia) have RPSs in place; additionally, five states have enacted non-binding RPSs.³

Beyond the above RPS fundamentals, it is important to note the two following truisms regarding this policy: first, all RPSs share common themes, and second, every RPS is unique.⁴ Every RPS, for example, contains a renewable energy percentage or amount goal.⁵ The percentage or amount goal, however, varies from state to state.⁶ The Hawaii RPS mandates a twenty percent goal, for example, whereas the New Jersey RPS mandates a 22.5 percent goal.⁷ As such, although these RPSs share this common theme, they differ in respect to how they are legislated and understood.⁸

This paper's central inquiry examines these differences with respect to common RPS themes. By assessing these common themes throughout state RPSs, this paper examines how a national RPS might be constructed. In turn, recommendations for building a national RPS are suggested after examining how state RPSs differ between these common metrics. Part II of the work considers state RPSs through the following metrics⁹: (1) compliance, effective dates, and percentages; (2) enforcement; (3) renewable energy; (4) energy requirements and REC systems; (5) facility siting; and (6) RPS interaction with other policies. Part III works to utilize the information found in Part II to create several policy recommendations in building a national RPS. These

³ *Id.*

⁴ *See id.*

⁵ *Id.*

⁶ *Id.*

⁷ This percentage goal refers to the amount of renewable energy that must be generated in relation to total energy generated in a state. Hawaii, therefore, must generate, as per the state's RPS policy, 20% of its electricity from renewable resources. *Id.*

⁸ *See id.*

⁹ These metrics are based upon common themes seen in all RPSs.

recommendations are based upon the common metrics examined in Part II of this paper.

Before turning to this examination, however, further background is necessary to better understand both RPS policy and current construction. The following sections work to accomplish this by providing information on (A) current and possible alternative RPS constructions, (B) relevant actors, and (C) common terminology.

A. State RPS Constructions

All RPSs currently only exist at a state level.¹⁰ Congress has, in the past, proposed legislation that would have created a national RPS.¹¹ The rationale behind such action centers on the environmental gains of increased collective action. With power plants emitting roughly forty percent of all U.S. carbon dioxide emissions, as well as nitrous oxide, sulfur dioxide, and mercury, decreasing such emissions in this particular field could result in sizeable overall reductions.¹² Moreover, state RPS policies, although beneficial, do not have the same potential as a national RPS, because “[e]ven if all state RPS policies currently in place were to be fully implemented, the amount of renewable energy generation predicted by 2030 would be only 4.6 percent of national energy generation.”¹³ In contrast, the last national RPS proposed a fifteen percent energy generation goal by 2020—significantly

¹⁰ U.S. ENVTL. PROT. AGENCY, *supra* note 1.

¹¹ Robin J. Lunt, *Recharging U.S. Energy Policy: Advocating for A National Renewable Portfolio Standard*, 25 UCLA J. ENVTL. L. & POL’Y 371, 386 (2007)..

¹² Shelley Welton, Note, *From the States Up: Building a National Renewable Energy Policy*, 17 N.Y.U. ENVTL. L.J. 987, 987 (2008).

¹³ *Id.* at 993.

higher than what state RPS policies are projected to achieve by this date.¹⁴

B. Relevant Actors

Every RPS begins as a policy legislated by the enacting state.¹⁵ The state legislature, at this level, makes a myriad of choices, which will be dealt with later in this paper.¹⁶ The RPS policy itself designates a particular state agency to execute the RPS.¹⁷ The agency chosen varies from state to state. For example, in Iowa, the Iowa Utilities Board administers the RPS; whereas in Oregon, the Oregon Energy Office is the executing agency.¹⁸ These agencies are responsible both for administering the RPS and for providing information concerning the policies' details and structure to other relevant actors.¹⁹

The RPS, legislated by the state and administered by a particular agency, most directly impacts one group of actors—retail electricity suppliers.²⁰ This group provides electricity to consumers, covering particular geographic areas (constrained by the necessarily limited ability to transmit electricity from generators to customers).²¹ RPSs impose particular requirements upon these retail electricity suppliers by mandating that such suppliers generate a certain percentage or amount of their

¹⁴ 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, 54 (2008).

¹⁵ *Id.*

¹⁶ *Id.*

¹⁷ U.S. DEP'T OF ENERGY, STATES WITH RENEWABLE PORTFOLIO STANDARDS (May 2009), available at http://apps1.eere.energy.gov/states/maps/renewable_portfolio_states.cfm.

¹⁸ *Id.*

¹⁹ *Id.*

²⁰ Mark Gielecki, Christopher Namovicz, Robert Smith, & Ryan Wisner, *Renewable Portfolio Standards: A Factual Introduction to Experience from the United States*, 20 ELEC. J., no. 4 (May 2007).

²¹ *Id.* at n. 9.

electricity from renewable resources.²² Therefore, if an RPS provides a twenty percent goal, every retail electricity supplier must ensure that, of the electricity that they supply, twenty percent comes from renewable energy. If retail electricity suppliers do not meet their requirements, the state agency responsible for executing the RPS can fine or penalize the supplier; these penalties vary in both type and effect from state to state.²³ The ways in which suppliers can fulfill this percentage vary from state to state, and will be discussed in greater detail later.²⁴

C. Common Terminology

Because RPSs deal with a particular type of energy (that is, renewable energy), it is helpful to understand terminology common to all energy in general. First, energy is most often measured in kilowatts (kW) or kilowatt-hours (kWh).²⁵ As a point of reference, one kilowatt is equal to one thousand watts, with 750 watts roughly equivalent to one horsepower.²⁶ Renewable energy can be understood in these absolute units (for example, a state must generate forty thousand kW ever year) or as a percentage (a state must generate twenty percent of total energy from renewable resources).²⁷ The underlying energy means energy generated—that is, the energy that a particular retail electricity supplier is able to generate in a given time frame.²⁸

²² *Id.*

²³ CHRISTINE BEAULIEU, PPC SUMMARY OF STATE RENEWABLE PORTFOLIO STANDARDS (RPS) (July 2007), available at <http://www.ppcpx.org/documents/PPCRPSSummaries07.doc>.

²⁴ *Id.*

²⁵ Gielecki, *supra* note 20, at 3.

²⁶ U.S. ENERGY INFO. ADMIN., *Measuring Electricity* (Jan. 26, 2010), http://tonto.eia.doe.gov/energyexplained/index.cfm?page=electricity_measuring.

²⁷ Gielecki, *supra* note 20, at 3.

²⁸ *See id.* at 3-4.

Electricity is generated through a process that “converts mechanical energy into electrical energy.”²⁹ After a particular power plant or facility generates this energy, the energy then moves, “by transmission lines . . . [a] network of nearly 160,000 miles of high voltage transmission lines . . . known as the ‘grid’.”³⁰

II. State RPSs Examined through Common Metrics

Part II of this paper examines state RPSs through six common metrics. The first metric, ‘compliance, effective dates, and percentages,’ works to examine how different states build the most basic foundation of their RPS policy. The first section within this metric, compliance, examines the extent to which states meet self-imposed RPS goals. How fully states comply with these goals is used both to examine other metrics within this paper and to provide a starting point to better distinguish state RPSs. This metric next examines RPS effective dates. Effective dates refer to a particular RPS’s end goal date and yearly goal dates. This section examines the ways in which these effective dates vary between state RPSs, and the impact this variation has upon the policy itself. Lastly, this metric studies RPS percentages. These percentages, like effective dates, exist as both an end goal percentage and yearly goal percentage.

The second metric examines ‘enforcement.’ The choices that a state has in enforcement policies, as well as how these choices can impact the effectiveness of such enforcement, drives the analysis within this section.

“Renewable energy,” the third metric studied, refers to the types of renewable energy technologies a state RPS can accept or

²⁹ U.S. ENERGY INFO. ADMIN., *How Electricity Is Generated* (May 25, 2010), http://tonto.eia.doe.gov/energyexplained/index.cfm?page=electricity_generating.

³⁰ U.S. ENERGY INFO. ADMIN., *How Electricity Is Delivered to Consumers* (Jan. 26, 2010), http://tonto.eia.doe.gov/energyexplained/index.cfm?page=electricity_delivery.

deny. Each state is unique in respect to the renewable energies the RPS policy considers as eligible. This section focuses upon what drives these choices, as well as how these choices impact the RPS as a whole.

The fourth metric, ‘energy requirements and REC systems,’ studies the varying ways in which a state can allow energy providers to meet RPS energy requirements. How these choices might play out at a national level also drives this section.

The fifth metric, ‘facility citing,’ examines how the location of renewable energy generating facilities impacts state RPS policies. This metric then applies the variations seen between states in how these facilities function to a national RPS framework. The last metric studies the interaction between RPSs and other policies. The relationships and conflicts between RPSs and such policies provide a broader context for not only current state RPSs, but a hypothetical national RPS as well.

This paper uses these six metrics for two reasons. First, these metrics measure elements found in every state RPS. This commonality provides a basis for analysis, which in turn is the central focus of this paper’s inquiry. Second, these six metrics cumulatively measure the foundation of an RPS policy. As such, how a state chooses to implement each of these underlying elements effects not only the metric itself, but also the RPS policy in its entirety.

A. Metric 1: Compliance, Effective Dates, and Percentages

i. Compliance

Compliance is perhaps the most important metric in examining state RPSs. Differentiating between which states have thus far been successful and unsuccessful in meeting self-created goals provides a starting baseline for determining what other metrics might impact the end result. To this end, data currently

exist on eleven state RPSs: Arizona, California, Connecticut, Iowa, Massachusetts, Maine, Minnesota, New Jersey, Nevada, Texas, and Wisconsin.³¹ This information, provided below, is an averaged application of renewable electricity used towards RPS targets from 2004 to 2006.³² Renewable electricity used towards RPS targets compares a state's RPS targeted goal with the state's realized success in a given year.³³ For example, if a state had a ten percent goal in 2004 (i.e., ten percent of all electricity comes from renewable sources), a fifty percent figure would mean that the state only realized half of its goal (in this example, that would mean only five percent of all electricity came from renewable sources). These data thus act to illustrate the degree to which these 11 states comply with their RPS policies.

State RPS Compliance

State	Percentage of renewable electricity used towards RPS targets
Arizona	27%
California	99%
Connecticut	98%
Iowa	100%
Massachusetts	68%
Maine	100%

³¹ RYAN WISER & GALEN BARBOSE, LAWRENCE BERKELEY NAT'L LAB., RENEWABLES PORTFOLIO STANDARDS IN THE UNITED STATES: A STATUS REPORT WITH DATA THROUGH 2007 22 (Apr. 2008), available at <http://eetd.lbl.gov/ea/ems/reports/lbnl-154e.pdf>.

³² *Id.*

³³ *Id.*

Minnesota	77% ³⁴
New Jersey	100%
Nevada	55%
Texas	99%
Wisconsin	100%

These states can be grouped into three categories, depending upon mean and standard deviation.³⁵ All states at the mean (eighty-three percent) or above are classified, for the purposes of this paper, as “full compliance” states. These states are California, Connecticut, Iowa, Maine, New Jersey, Texas, and Wisconsin. Next, states that exist between the mean (eighty-three percent) and one standard deviation down from the mean (fifty-nine percent) are classified as “mid compliance” states. Massachusetts and Minnesota meet this classification. Lastly, states that exist beyond one standard deviation from the mean (below fifty-nine percent) are classified as “lack of compliance” states. Nevada and Arizona meet this classification.

The above data provides a baseline to examine the metrics throughout this paper; however, compliance is not the only factor important in judging the ultimate success or failure of the following metrics in state RPS policies. Rather, compliance acts as an important factor to be considered in the interaction with the data in its entirety.

³⁴ This data point is made up of only two years: 2004 and 2005. Data for 2006 did not exist.

³⁵ These categories have been established to aid in comparing state compliance to other metrics found later in this paper.

ii. Effective Dates and Percentages

Every state enacts its RPS with a targeted completion date, ranging from 2013 (New York) to 2025 (Illinois, Minnesota, New Hampshire, Oregon).³⁶ A target renewable energy percentage, ranging from eight percent (Pennsylvania) to forty percent (Maine) accompanies these dates.³⁷ In two instances (Iowa and Texas) the renewable energy target is not a percentage, but rather a megawatt amount (MW).³⁸ In most cases, states divide these overall goals into yearly goals, with gradual increases provided each year to reach the final target goal.³⁹ Providing attainable targets is a crucial factor in creating a national RPS. Creating a severe RPS percentage within a limited amount of time not only creates a burden on electricity providers, but also on transmission systems.⁴⁰ For example, in Texas, “[t]he unexpectedly rapid development of wind energy in remote sections of Western Texas placed significant demands on the relatively modest transmission systems that deliver electricity to areas of high demand.”⁴¹ The legislature, in creating reasonable targets, both overall and yearly, must thus consider not only the renewable energy creation, but delivery system as well.⁴² Alternatively, policies that mandate over-aggressive percentages and yearly requirements can overburden producers, which in turn make compliance unfeasible.⁴³

Understanding and considering the above factors is thus crucial in reaching a balance in creating a national RPS. If the policy is legislated with low yearly targets, then the underlying

³⁶ U.S. DEP’T OF ENERGY, *States with Renewable Portfolio Standards* (June 16, 2009), http://apps1.eere.energy.gov/states/maps/renewable_portfolio_states.cfm.

³⁷ *Id.*

³⁸ *Id.*

³⁹ Lunt, *supra* note 11, at 381.

⁴⁰ Barry Rabe, *Race to the Top: The Expanding Role of U.S. State Renewable Portfolio Standards*, 7 SUSTAINABLE DEV. L. & POL’Y 10, 11-12 (2007).

⁴¹ *Id.*

⁴² *See id.*

⁴³ Gielecki, *supra* note 20, at 8.

goal - to increase renewable energy usage in a given area - is not fully reached. Conversely, a policy mandating unattainable yearly targets creates an untenable situation, with the underlying RPS goal set impossibly high. Therefore, reaching a balance between these two extremes is an important consideration in creating any RPS policy. However, the calculus is far more difficult than a backwards-looking analysis (which in turn would be applied to future projections). Because an RPS policy creates a fundamental incentive shift, yearly renewable energy targets that might be currently (or previously) impossible are not necessarily unattainable in the future. Policymakers must consider the impact of the RPS itself in determining how best to attain the underlying RPS goal.

In addition to accounting for all RPS inputs, consistency in RPS date and percentage mandates is an important consideration. Texas again serves as an example because “[t]he increasing RPS requirements, stretching far into the future, creates reliable renewable energy mandates that give retailers confidence to sign long-term contracts with renewable energy generators, which in turn allows the renewable energy generators to access capital and low interest loans, perpetuating investment in renewable energy.”⁴⁴

B. Metric 2: Enforcement

Effective penalties against noncompliance provide both market consistency and a method to ensure state RPS observance.⁴⁵ Noncompliance policies governing state RPS’s commonly come directly within the RPS legislation itself or rely upon a previous body of laws.⁴⁶ Generally, the latter option is disfavored by policy experts, due to possible inadequacies in such laws, lack of

⁴⁴ Lunt, *supra* note 11, at 389.

⁴⁵ SCOTT HEMPLING & NANCY RADER, THE RENEWABLES PORTFOLIO STANDARD: A PRACTICAL GUIDE 72 (Feb. 2001), *available at* <http://www.naruc.affiniscape.com/associations/1773/files/rps.pdf>.

⁴⁶ *Id.* at 9.

specificity, and the relative newness of RPSs themselves.⁴⁷ Arizona, a state falling in the previously-mentioned “lack of compliance” range of RPS compliance, serves as an example of this issue.⁴⁸ Arizona, with no penalty for noncompliance within the actual RPS legislation, relies upon previously-provided state powers to levy fines against utility companies.⁴⁹ However, this penalty has proven ineffective – a lack of specific enforcement provisions in the law has led to chronic under-compliance.⁵⁰

Penalties not only provide a method to promote compliance, they also act to create consistency for industries and investors in this market. Effective penalties “provide potential investors in renewable energy facilities with confidence that a market will exist for the product of their investment. Uncertain enforcement reduces that confidence, causing investors to demand higher returns on their investments that, in turn, increases the cost of renewable energy.”⁵¹

Penalties do not, however, solely determine a state RPS’s success or failure. Connecticut, falling in the first tier RPS compliance range, does not have a specific RPS penalty.⁵² Rather, Connecticut relies upon the same law used for all retailers to penalize RPS retailers.⁵³ This law provides for penalties based upon:

The number of past violations by the person charged; the “good faith effort” made to achieve compliance; “the proposed programs and procedures to ensure compliance in the future”; other factors “deemed appropriate and material to the particular circumstances of the violation”; and “the

⁴⁷ *Id.*

⁴⁸ BEAULIEU, *supra* note 23.

⁴⁹ *Id.*

⁵⁰ *Id.*

⁵¹ HEMPLING & RADER, *supra* note 46, at 72

⁵² *Id.* at 73.

⁵³ *Id.*

gravity of the violation.” (Connecticut Regulations, 1999a)⁵⁴

However, these factors are vague in relation to an RPS policy, with the potential for systemic abuse and misrepresentation. For instance, the following situation could result from this law: “(a) retailers fail to make a good faith effort to obtain renewables from developers; (b) the lack of good faith effort causes the developers’ investors to have insufficient confidence to invest in new facilities; (c) the retailers then claim that they cannot comply because no renewables are available.”⁵⁵

Conversely, one can argue in favor of RPS enforcement similar to Connecticut’s policy. For example, relying on a broader law, such as the one cited above, can provide greater discretion to those responsible for enforcing the policy, and can give flexibility to those who actually deal with enforcement problems first hand. Such flexibility is important in providing an effective response to an issue; however, available response options are only one element of a successful enforcement plan. Enforcement plans, as detailed below, should also reach goals dealing with consistency and advanced notice, which the Texas plan illustrates below.⁵⁶

Specific RPS noncompliance penalties more often provide consistent enforcement.⁵⁷ Texas, falling in the first tier RPS compliance range, serves as an example. With automatic, specific RPS noncompliance penalties, Texas provides consistency in dealing with noncompliance.⁵⁸ Texas Substantive Rule 1999 provides: “A party is responsible for conducting sufficient advance planning to acquire its allotment of [credits]. Failure of the spot or short-term market to supply a party with the allocated number of

⁵⁴ *Id.*

⁵⁵ *Id.*

⁵⁶ *See id.* at 73-74.

⁵⁷ *See id.*

⁵⁸ HEMPLING & RADER, *supra* note 46, at 74.

[credits] shall not constitute an event outside the competitive retailer's reasonable control.”⁵⁹ An effective and clear monetary penalty further supports this consistency.⁶⁰ Moreover, a single administrative entity, the Public Utility Commission of Texas (PUCT), administers the penalty, which is a \$50 fine for each megawatt-hour (MWh) of renewable energy not met by the particular energy provider.⁶¹ With both legislative authority given to PUCT as well as unambiguous penalties for noncompliance, the Texas RPS thus works in a fundamentally different way than the Connecticut RPS. The potential problems in Connecticut's enforcement strategy are consequently avoided with advanced planning specifically provided as a necessary element in RPS policy. Moreover, because the law is specifically tailored to the RPS, flexibility can be written into the law. As such, consistency and advanced planning can be provided without sacrificing flexibility or discretion.

C. Metric 3: Renewable Energy

i. Energy Types

Every state provides a list of technologies eligible for consideration under its RPS, with each state differing on what is, and what is not, an eligible renewable energy source with respect to the RPS.⁶² A national RPS would necessarily need a similar list, and as such, the question of what should and should not be included is significant.

In examining state RPS eligible technology lists, it is helpful to first look at the extremes—that is, what energy technologies are universally eligible, and what energy technologies

⁵⁹ *Id.*

⁶⁰ UNION OF CONCERNED SCIENTISTS, TEXAS RENEWABLE PORTFOLIO STANDARD SUMMARY 6 (Apr. 2008), *available at* http://www.ucsusa.org/assets/documents/clean_energy/texas.pdf.

⁶¹ *Id.*

⁶² U.S. ENVTL. PROT. AGENCY, *supra* note 1.

are only accepted by a minority of states. Universally eligible energy technologies include six sources: biofuel, biomass, hydropower, landfill gas, photovoltaic, and wind.⁶³ Moreover, four more energy technologies are eligible in seventy-five percent or more of states with RPS policies in place: geothermal, solar thermal electric, tidal, and wave.⁶⁴ At the other end of the spectrum, some states include technologies not commonly thought of as renewable resources.⁶⁵ Pennsylvania, for instance, includes coalmine methane⁶⁶ and clean coal as eligible RPS technologies, the latter leading some environmental groups to describe the RPS as “the dirtiest RPS in the nation.”⁶⁷ Pennsylvania is not alone, however, in allowing some less familiar technologies to meet RPS eligibility requirements—Maryland, for instance, includes poultry litter incineration.⁶⁸

RPS eligibility requirements act as an important threshold in any RPS – they offer a clear, legislatively-provided entry and barrier for technologies.⁶⁹ For state RPSs and a national RPS, creating eligible technology lists should be given significant consideration, with costs balanced against benefits in respect to three factors: environmental benefits, resource diversity, and technology promotion.⁷⁰

Regarding the first consideration, different renewable energies have different environmental benefits.⁷¹ For instance, “unique benefits are often associated with biomass energy because biomass feedstocks, if not used as fuel, might otherwise be

⁶³ *Id.*

⁶⁴ *Id.*

⁶⁵ Rabe, *supra* note 41, at 14.

⁶⁶ *Id.*; Welton, *supra* note 12, at 989.

⁶⁷ Rabe, *supra* note 41, at 14.

⁶⁸ Welton, *supra* note 12, at 989.

⁶⁹ HEMPLING & RADER, *supra* note 46 at 2-5.

⁷⁰ *Id.* at 15-16.

⁷¹ *Id.* at 15-17.

landfilled, burned in open fields, or left in the forest where they may contribute to forest fires.”⁷²

In creating resource diversity, a national RPS should aim to be as broad as possible. Doing so not only responds to the diversity of resources seen throughout the United States, but also carries environmental benefits, with a diversity of resources potentially allowing different unique benefits from diverse renewable energies.⁷³

Lastly, by creating a list of eligible technologies, a national RPS would necessarily promote some technologies and disallow others.⁷⁴ By allowing certain technologies, policymakers implicitly create an incentive for investment in those technological fields.⁷⁵ Consequently, eligible technologies should be those that policymakers feel provide “the most long-term promise.”⁷⁶

ii. Energy Preferences

State RPSs often further distinguish energy technology beyond eligible technology listings.⁷⁷ State energy preferences manifest in two ways: organically, due to a state’s position and resources, and legislatively, driven by policies incentivizing certain technologies.⁷⁸

Organic technology preferences, driven by market demand for the most cost-effective method to meet RPS policy requirements, are de facto preferences.⁷⁹ No mandate or policy exists favoring investment in such renewable technologies; rather,

⁷² *Id.* at 15.

⁷³ HEMPLING & RADER, *supra* note 46, at 16.

⁷⁴ *Id.* at 16-17.

⁷⁵ *Id.*

⁷⁶ *Id.* at 17.

⁷⁷ U.S. ENVTL. PROT. AGENCY, *supra* note 1; Rabe, *supra* note 41, at 11.

⁷⁸ U.S. ENVTL. PROT. AGENCY, *supra* note 1; Rabe, *supra* note 41, at 11.

⁷⁹ Rabe, *supra* note 41, at 11.

a state's particular position and resources create this incentive.⁸⁰ The Texas RPS, for example, does not legislatively favor any specific source, but has "had the effect of tapping into the state's massive wind capacity."⁸¹ Driven by market demand to meet the state's RPS at cost effective rates, Texas is expected to have 2600 MW of wind generation by 2011 - a non-mandated preference created by the state's particular location and resources.⁸²

Legislatively created technology preferences, unlike their organic technology counterparts, are not driven by market demand, but rather work to encourage certain renewable energy technologies.⁸³ Most often this preference takes the form of credit multipliers, which make the particular technology more cost effective (by making a particular renewable energy a multiple of its actual credit), or carve-outs, when a particular technology must make up of a certain percentage of the total RPS renewable energy percentage.⁸⁴ Delaware's RPS, for example, contains a provision providing a credit multiplier (3x) for solar or fuel cells installed before 2014.⁸⁵ Arizona's RPS creates a similar preference via a carve-out, requiring that sixty percent of all renewable energy must come from solar electric power from 2004 to 2012.⁸⁶

In deciding if legislatively created technology preferences would be beneficial in a national RPS, it is helpful to examine this

⁸⁰ *Id.*

⁸¹ *Id.*

⁸² *Id.*

⁸³ U.S. ENVTL. PROT. AGENCY, *supra* note 1.

⁸⁴ BEAULIEU, *supra* note 23.

⁸⁵ *Id.* at 13; EDWARD A. HOLT, CESA STATE RPS POLICY REPORT: INCREASING COORDINATION AND UNIFORMITY AMONG STATE RENEWABLE PORTFOLIO STANDARDS 20 (Dec. 2008), *available at* http://www.cleanenergystates.org/Publications/CESA_Holt-RPS_Policy_Report_Dec2008.pdf.

⁸⁶ BEAULIEU, *supra* note 23, at 3.

information against the data that exists for compliance (as discussed above). The following chart summarizes this data:⁸⁷

State compliance level compared with credit multipliers and carve-outs

Compliance Level	Credit Multiplier	Carve-out
Full Compliance (7)	0%	43%
Mid Compliance (2)	0%	50%
Lack of Compliance (2)	100%	100%

A negative correlation thus exists between compliance level and legislatively created energy preferences. That is, states that have been able to meet their targeted renewable energy goals are also the states in which there are relatively few legislatively created energy preferences. Conversely, states that have not met their targeted renewable energy goals are the same states in which legislatively created energy preferences more often exist. This information, however, should be understood in the context of three data limitations. First, the sample size is relatively small, with information only available for eleven states. Second, this information is based on legislative decisions, not energy supplier response. Although these limitations are less important with regard to carve-outs (existing as a mandate rather than an

⁸⁷ PEW CTR. ON GLOBAL CLIMATE CHANGE, RENEWABLE & ALTERNATIVE ENERGY PORTFOLIO STANDARDS (Dec. 2009), *available at* http://www.pewclimate.org/what_s_being_done/in_the_states/rps.cfm (follow “Comparison of Qualifying Resources for Individual States’ RPS and AEPS” hyperlink; then follow “Detailed Table of State Policies (including RPS/AEPS targets, carve-outs, tiers, classes, incentives, hydropower definitions, and relevant authorities)” hyperlink).

incentive), credit multipliers are not compulsory.⁸⁸ As such, if better alternative choices exist, this correlation may overstate the degree to which these two variables are related. Third, this information only provides a correlation, not a causal link. The fact that this trend exists does not definitely show that legislatively created energy preferences impede a state's ability to fulfill its RPS goal. For these reasons, although this correlation suggests that legislatively created technology preferences may impede compliance, it does not provide a determinative conclusion.

Because the above correlation is not determinative, it is helpful to have further reasoning to determine the likelihood of a possible relationship between compliance levels and legislatively created energy preferences. Specifically, arguments regarding the underlying RPS rationale are helpful:

Part of the initial attraction of the RPS concept was that while it did impose regulatory requirements specifying the amount of renewable energy that would be provided, it did not favor one source over another as long as it was deemed eligible. The growing tendency to accord specialized status to more expensive renewable sources removes the level playing field originally intended in most states and, in some instances, may require significant financial subsidies from state sources or rate payers and thereby raise the cost of the policies. Moreover, the shift towards differential treatment has moved some of the recent debate over renewable energy policy in state capitals towards a collision between competing special interests, each seeking preferential treatment.⁸⁹

In deciding whether to include legislatively created technology preferences in a national RPS, legislators would thus

⁸⁸ BEAULIEU, *supra* note 23.

⁸⁹ Rabe, *supra* note 41, at 15.

need to decide if these potential negatives would encumber the policy's effectiveness.

E. Metric 4: Energy Requirements and REC Systems

States can provide energy producers three ways to meet RPS renewable energy mandates.⁹⁰ First, producers can build renewable energy generation capability themselves.⁹¹ Producers would do this by building a renewable energy generation plant, with the plant creating the necessary amount of renewable energy to meet the RPS percentage mandate.⁹² A state could, secondly, provide producers with the ability to purchase renewable energy from another producer to meet the mandated RPS percentage.⁹³ A facility generating less renewable energy than mandated could thus buy renewable energy from a facility generating more renewable energy than mandated.⁹⁴ Lastly, a state can provide producers with the ability to purchase renewable energy credits, separated from the energy itself.⁹⁵ This option separates renewable energy into two parts: the energy itself, and the renewable value the energy has in fulfilling the RPS percentage mandate.⁹⁶ The energy itself is treated as any other type of energy would be, entering the state's grid, and consumed by the state's population.⁹⁷ The renewable value is treated separately as a credit, able to be applied to that producer's RPS percentage mandate, or, if the facility is generating more renewable energy than mandated, able to be sold in a credit market.⁹⁸

⁹⁰ Lunt, *supra* note 11, at 384.

⁹¹ *Id.*

⁹² *Id.*

⁹³ *Id.*

⁹⁴ *Id.*

⁹⁵ *Id.* at 384-385.

⁹⁶ *Id.*

⁹⁷ *Id.*

⁹⁸ *Id.*

i. Renewable Energy Credits

Trading renewable energy credits (REC), like those described in the third option above, is generally seen as the most efficient way for energy producers to meet RPS requirements.⁹⁹ It is, moreover, an option widely implemented—roughly eighty percent of states provide a market for RECs.¹⁰⁰ The efficiency created by this market system is sometimes crucial to the success of a state’s RPS.¹⁰¹ In Texas, for example, credit trading is seen as an essential part of the RPS program because the RECs allow producers to find the lowest cost available.¹⁰² In turn, “The purchase of a REC subsidizes the marginal cost of renewable electricity, allowing the renewable provider to sell the electricity into the grid at a price competitive with other sources of electricity.”¹⁰³

The ability to buy and sell RECs in Texas is moreover supported with an option to bank credits.¹⁰⁴ This option works to smooth market fluctuations, allowing producers to save RECs when market prices are too low.¹⁰⁵ This, in turn, creates a more stable REC supply and demand, ultimately increasing market consistency from year to year.¹⁰⁶ The ability to bank credits, allowing producers to save RECs for future years, is not unique to Texas; Pennsylvania allows bankable credits for up to two years and Wisconsin allows bankable credits without a year-limit.¹⁰⁷

⁹⁹ *Id.*

¹⁰⁰ BEAULIEU, *supra* note 23.

¹⁰¹ Lunt, *supra* note 11, at 390.

¹⁰² *Id.*

¹⁰³ *Id.*

¹⁰⁴ *Id.*

¹⁰⁵ HOLT, *supra* note 86, at 23.

¹⁰⁶ *Id.*

¹⁰⁷ Texas allows banking for three years; BEAULIEU, *supra* note 23, at 41, 44, 48.

A REC market provides several benefits to a RPS policy.¹⁰⁸ Foremost, as mentioned earlier, credit trading improves the policy's efficiency.¹⁰⁹ This efficiency occurs in two ways. Firstly, "the availability of tradable credits makes the lowest-cost renewable resources available to retailers who cannot use them to serve their own loads."¹¹⁰ Moreover, "the availability of credits shifts the focus of decision-making about which renewable energy plants to build to private investors who may have more interest and expertise than retailers."¹¹¹

In addition to improving efficiency, a credit trading system has other important advantages.¹¹² First, credit trading can provide cost transparency. By creating a marketplace, REC prices become indexed, allowing all entities involved in energy supply to better gauge renewable energy value.¹¹³ This in turn provides greater information and consistency to buyers and sellers.¹¹⁴ Moreover, RECs provide an easier way to assess compliance.¹¹⁵ Rather than, "tracing transactions in the power market," compliance can be determined by counting RECs.¹¹⁶ Lastly, RECs lower the entry barrier for smaller producers.¹¹⁷ Because the transaction cost for buying and selling RECs is less than the cost of individualized contracts, it is easier for smaller producers to build renewable energy facilities.¹¹⁸

Creating a national RPS with a credit system would likely create a far larger market. In contrast, state RPSs are local –

¹⁰⁸ HEMPLING & RADER, *supra* note 46, at 55-57.

¹⁰⁹ *Id.*

¹¹⁰ *Id.* at 57.

¹¹¹ *Id.*

¹¹² *Id.* at 55-57.

¹¹³ *Id.* at 57.

¹¹⁴ *Id.*

¹¹⁵ *Id.*

¹¹⁶ *Id.*

¹¹⁷ *Id.*

¹¹⁸ *Id.*

RECs cannot be traded from state to state.¹¹⁹ The largest obstacle in unifying state REC trading systems would be, in the national RPS, a standard REC.¹²⁰ States with REC markets qualify their RECs differently. Adopting any particular state's REC program would be necessarily to the exclusion of every other state REC program.¹²¹ If a national RPS was put in place with a unified market; however, the benefits at a state level would continue in a much larger market.¹²² This, in turn, would likely bolster the benefits of a REC market, due to the increased competition in a larger market.¹²³

In considering how a national REC market would, through increased competition, impact a national RPS, it is helpful to examine both the aforementioned benefits more closely, as well as what negatives such a system would create. First, because a unified market would create a larger system, cost differences across states would drive REC prices down.¹²⁴ By allowing buyers and sellers to transact across state boundaries, competition would increase and those working in the market, including buyers, sellers, utilities, and consumers, would see a reduced RPS compliance cost. A larger market, moreover, would create greater accountability and transparency.¹²⁵ The market, by providing full REC price disclosure, would lead to more accurate price indexing.¹²⁶ This in turn creates greater confidence in investment, which would bolster new renewable development projects.¹²⁷

The benefits a national REC market creates must be weighed against potential negative impacts also created by the

¹¹⁹ HOLT, *supra* note 86, at 21-22; Welton, *supra* note 12, at 993.

¹²⁰ Welton, *supra* note 12, at 993.

¹²¹ *Id.*

¹²² *Id.*; Fershee, *supra* note 14, at 51.

¹²³ HOLT, *supra* note 86, at 5.

¹²⁴ *Id.* at 9.

¹²⁵ *Id.*

¹²⁶ *Id.*

¹²⁷ *Id.*

system.¹²⁸ First, such a market would necessarily drive individuals to invest in the most cost effective areas of the country.¹²⁹ This issue, dealt with in more detail later in the paper, could stymie growth in particular states.¹³⁰ This in turn would reduce localized environmental benefits in some areas of the country.¹³¹ Secondly, a nationalized RPS would possibly limit experimentation and technological advance.¹³² By creating an incentive to invest in the most cost effective areas of the country, states with few renewable energy resources would buy from other areas, rather than investing money into potential technologies for renewable energy growth in-state.¹³³ Lastly, a national REC market could limit public understanding and education of renewable energies.¹³⁴ Local growth, for the most part, positively impacts public interest in renewable energy.¹³⁵ In western Pennsylvania, for instance, wind projects have created greater support for more wind based power and for renewable energy projects more generally.¹³⁶ By moving facility siting away from areas that have relatively few renewable resources, such acceptance and education could be lost.¹³⁷

In determining if a national RPS should consider a national REC market as well, a weighing of the benefits and negatives is helpful. A national REC market creates marked benefits, including (1) increased competition in renewable energy pricing (leading to a sustainable system with lower energy pricing), (2) compliance cost reductions, (3) greater accountability, transparency, (4) more accurate price indexing, and (5) greater investor confidence (which in turn would create renewable energy growth). Such a system

¹²⁸ *Id.* at 10.

¹²⁹ *Id.*

¹³⁰ *Id.*

¹³¹ *Id.*

¹³² *Id.*

¹³³ *Id.*

¹³⁴ *Id.*

¹³⁵ *Id.*

¹³⁶ *Id.*

¹³⁷ *Id.*

would create several negatives as well, including (a) disparate environmental benefits, (b) a decrease in renewable energy technology diversity, and (c) diminished public understanding of the RPS policy.

Although the negatives created by a REC market should not be dismissed, this paper recommends adopting such a market in a national RPS policy based upon two rationales. First, the positives created by a national REC market not only add considerable benefits to a RPS, but also further the underlying motivation driving the policy. By creating a competitive system, RPS goals are more readily attainable, and market forces move the policy towards greater increases in renewable energy usage. Second, the negatives created by a REC system can be mitigated to some extent. Disparate environmental benefits can be limited by creating a broad definition for renewable energy technology eligibility. Moreover, facility siting issues, as examined next in metric 5, pose a serious concern, but may, to some extent, be overstated and can possibly be overcome with legislative actions.

¹³⁸

F. Metric 5: Facility Siting

Choosing where to build renewable energy generating facilities raises four issues: disparate benefits, local response, transmission capacity, and disparate environmental harm.¹³⁹ At a state level, these four factors all exist; however, they are magnified at a national level.¹⁴⁰ Moreover, in a national RPS with a REC credit trading system, these issues become even more significant.¹⁴¹ Each issue is dealt with in turn below.

¹³⁸ Rabe, *supra* note 41, at 15; please see recommendation 6 for further examination of this issue.

¹³⁹ Rabe, *supra* note 41, at 15; Welton, *supra* note 12, at 1002-1003.

¹⁴⁰ Welton, *supra* note 12, at 1001-1003.

¹⁴¹ *Id.*

i. Disparate Benefits

Many state RPSs include provisions that either require or encourage in-state renewable energy growth.¹⁴² Colorado's RPS, for example, gives a multiplier to in-state renewable energy, which works much like the previously discussed preferred technology multipliers.¹⁴³ Iowa's policy works towards the same goal via a mandate, with only in-state renewable energy applicable to the RPS.¹⁴⁴ Legislatures have backed such provisions due to the benefits renewable energy facilities provide: environmental benefits, in relation to non-renewable energy plants, and job growth through the building and upkeep of new facilities.¹⁴⁵ State legislators, acting with the desire to keep these benefits in-state, use these provisions to ensure this end.¹⁴⁶

At a state level, in-state mandates or preferences raise Dormant Commerce Clause issues.¹⁴⁷ At a national level, this is no longer a concern; however, the underlying rationale behind these in-state provisions has significant ramifications.¹⁴⁸ Because different states have different resources, the ability to generate renewable electricity differs from state to state.¹⁴⁹ For instance, "the central U.S. (Kansas, Montana, Nebraska, North Dakota, Oklahoma, and Wyoming) has the best wind resources; California

¹⁴² BEAULIEU, *supra* note 23.

¹⁴³ *Id.* at 8.

¹⁴⁴ *Id.* at 20.

¹⁴⁵ Rabe, *supra* note 41, at 15.

¹⁴⁶ *Id.*; BEAULIEU, *supra* note 23.

¹⁴⁷ HEMPLING & RADER, *supra* note 46, at A-1.

¹⁴⁸ See generally Everett Britt & Raul Carrillo, Insight, *Renewable Energy Requirements and the Commerce Clause*, 19-SPG NAT. RESOURCES & ENV'T 61 (2005); Nathan E. Endrud, Note, *State Renewable Portfolio Standards: Their Continued Validity and Relevance in Light of the Dormant Commerce Clause, the Supremacy Clause, and Possible Federal Legislation*, 45 HARV. J. ON LEGIS. 259 (2008); Patrick R. Jacobi, Note, *Renewable Portfolio Standard Generator Applicability Requirements: How States Can Stop Worrying and Learn to Love the Dormant Commerce Clause*, 30 VT. L. REV. 1079 (2006).

¹⁴⁹ Welton, *supra* note 12, at 1002.

has 90 percent of the country's geothermal resources; and the southwest and the south Atlantic coast have the best solar technology potential."¹⁵⁰ A national RPS, with a nationalized REC market, would thus encourage investment in renewable resource-rich areas of the country.¹⁵¹ These areas would in turn gain unequal environmental and economic advantages at the expense of areas with fewer renewable resources.¹⁵² These areas with fewer renewable resources would need to make up the difference between what they could produce to meet the national RPS and the mandated level, in turn necessitating such areas to buy from renewable resource-rich states.¹⁵³

Simply disallowing a REC market would resolve the disproportionate burdens and benefits of the system; however, in doing so, a national RPS would lose the advantages of a credit trading system.¹⁵⁴ These advantages arguably balance the unfairness created by a credit trading system.¹⁵⁵ Moreover, the unfairness that the system creates may be overstated. According to the Renewable Energy Policy Project, "more than 16,000 firms in all fifty states have the technical potential to enter the growing wind turbine manufacturing sector. The twenty states that would potentially benefit the most, receiving 80% of the job creation, are the same states that account for '76% of the manufacturing jobs lost in the [U.S. over the] last 3 ½ years'."¹⁵⁶ Lastly, it is important to note that not all benefits of an RPS policy are localized.¹⁵⁷ RPS policies work to reduce CO₂ levels, as well as other greenhouse gases, by increasing renewable energy generation.¹⁵⁸ CO₂ and other greenhouse gases are not localized in

¹⁵⁰ *Id.*

¹⁵¹ *Id.*

¹⁵² *Id.*

¹⁵³ *Id.* at 1003.

¹⁵⁴ *Id.*

¹⁵⁵ *Id.*

¹⁵⁶ Fershee, *supra* note 14, at 58.

¹⁵⁷ HOLT, *supra* note 86, at 9.

¹⁵⁸ *Id.*

their impact, but spread across state lines.¹⁵⁹ A national RPS would thus create benefits for areas that do not host renewable energy facilities.¹⁶⁰

ii. Local Response

Although legislatures have, in the past, assumed local support for the renewable energy facility creation, this is not always the case.¹⁶¹ It is not the creation of renewable energy itself that can meet local opposition, but rather the creation of the plants that create the energy and transmissions systems that carry it.¹⁶² Massachusetts, for example, encountered local resistance in building wind-powered electricity plants near Nantucket.¹⁶³ The proposed facilities, collectively known as the Cape Wind project, met this opposition, “out of concern about the appearance of the turbines and their possible impact on tourism, recreation, and property values.”¹⁶⁴

This issue, juxtaposed with the previous disparate benefits issue, illustrates the second type of siting problem.¹⁶⁵ Rather than concerns revolving around the lack of potential renewable energy facilities within a particular area, the issue here is the opposite—an opposition to renewable energy facilities within a particular area.¹⁶⁶ The significance of this issue in regards to a national RPS lies in how legislators should understand natural resource facilities.¹⁶⁷ Unlike the previous paradigm of assuming public support, legislators should expect to encounter opposition to

¹⁵⁹ *Id.*

¹⁶⁰ *Id.*

¹⁶¹ Rabe, *supra* note 41, at 15.

¹⁶² *Id.*

¹⁶³ *Id.* at 12-13.

¹⁶⁴ *Id.*

¹⁶⁵ *Id.*

¹⁶⁶ *Id.*

¹⁶⁷ *Id.*

renewable energy facilities when other benefits, such as tourism and property value, could be lost.¹⁶⁸

iii. Transmission Capacity

Renewable energy, like all energy, requires a transmission system to deliver energy from the facility generating the power to consumers.¹⁶⁹ In areas where transmission systems are already in place, this is not an issue. But transmission systems do not always exist where renewable resources exist.¹⁷⁰ As such, “the development of both intra-state and inter-state transmission capacity remains a significant challenge, particularly in those regions of the country where there is substantial physical distance between the energy source and its potential customers.”¹⁷¹ In building a national RPS, legislators would thus have to take into account the time it will take to not only build the renewable energy plants themselves, but the transmission systems as well.¹⁷²

iv. Disparate Environmental Harm

As mentioned earlier, residents from the siting locality sometimes oppose renewable energy plants. Such opposition, termed ‘not in my back yard’ (NIMBY), stems from a desire to enjoy the benefit from a particular good without bearing the responsibility of the negative, known as ‘locally undesirable land uses’ (LULUs). While both the desire to build a renewable energy plant as well as the response to such a siting is quite rational, the resulting impact is often disparate. That is, although the entire community shares the particular good, the siting often disparately burdens particular localities. These localities are those that provide the path of least resistance to siting, which in turn are often those

¹⁶⁸ *Id.*

¹⁶⁹ *Id.* at 15.

¹⁷⁰ *Id.*

¹⁷¹ *Id.*

¹⁷² *Id.*

that are disproportionately poorer or made up in large part of particular races or ethnicities.¹⁷³

Issues of disparate environmental harm are collectively part of a larger movement known as environmental justice. Although theories stemming from this movement are not central to this work, it is important to consider such ramifications if a national RPS policy were created. As such, ensuring through legislative action that harms are not localized to a particular type of community is an important consideration and should be discussed in any RPS policy.¹⁷⁴

G. Metric 6: The RPS and State RPS Policies

A national RPS would likely most immediately impact state RPSs already in existence. In this, policy makers have two options. First, a national RPS could replace all state RPSs. Secondly, a national RPS could exist in concert with state RPSs. This paper recommends the latter choice, because it allows states the ability to create a policy exceeding a national RPS's time frame or renewable energy generation goals.¹⁷⁵

Next, it is useful to note that the language of the RPS legislation itself can impact the effectiveness of the policy, both generally and in regards to state RPSs.¹⁷⁶ The Texas RPS has been particularly noted as succeeding in this area for its clear language, unambiguous rules, and straightforward regulations. Moreover, its "rules establish efficient administration and clear penalties for

¹⁷³ Vicki Been, *What's fairness got to do with it? Environmental Justice and the siting of locally undesirable land uses*, 78 CORNELL L. REV. 1001 (1993).

¹⁷⁴ See *Id.*; David A. Super, *From the Greenhouse to the Poorhouse: Carbon-Emissions Control and the Rules of Legislative Joinder*, 158 U. PA. L. REV. 1093 (2010); U.S. ENVTL. PROT. AGENCY, *Environmental Justice* (March 17, 2011), <http://www.epa.gov/environmentaljustice/> (discussing possible legal or policy remedies to disparate environmental harms caused by siting).

¹⁷⁵ Fershee, *supra* note 14, at 55; Gielecki, *supra* note 20, at 14-15.

¹⁷⁶ Lunt, *supra* note 11, at 388.

failing to comply with the RPS. The RPS also provides sufficient flexibility to the retailers to meet their obligations.”¹⁷⁷ The Texas RPS policy’s language strikes a balance between clarity and flexibility, and has been mentioned as an ideal model, in terms of the language of the policy, for a national RPS.¹⁷⁸

III. Recommendations

This paper works to compare differing state RPSs using common metrics. The end goal, to apply the information gained from these comparisons towards building a national RPS, exists here in the form of ten recommendations. These recommendations are not meant to be definitive answers to building a national RPS; other considerations, such as a particular political atmosphere, for example, are not given sufficient weight to this end. Rather, the scope in which these recommendations should be understood is limited to both the data and metrics.

Recommendation 1: Create long-distance targeted completion dates with yearly goals

Consistency in an RPS adds to the policy’s effectiveness; investors can act with greater confidence, buyers and sellers have access to greater information, and long-term contracts are less risky.¹⁷⁹ Placing RPS completion dates far in the future accomplishes this, especially when accompanied by yearly, incrementally increasing goals.¹⁸⁰ A national RPS with these attributes would provide the consistency seen in some of the states with similar structures, with Texas serving as the best example.¹⁸¹ With a nationalized REC market and overall increases in renewable energy generation, the consistency this creates is even

¹⁷⁷ *Id.*

¹⁷⁸ *Id.* at 408.

¹⁷⁹ *Id.* at 390.

¹⁸⁰ *Id.*

¹⁸¹ *Id.*

more important.¹⁸² Consequently, long distance targeted completion dates with yearly goals will aid a national RPS in establishing the consistency and confidence the policy requires.¹⁸³

Recommendation 2: Construct effective dates and percentages that account for the realities of resources and capacities in the U.S.

Several states, in creating an RPS, legislated unrealistic goals with regard to both deadlines and energy percentages.¹⁸⁴ By not accounting for the realities of the situation—especially regarding the country’s natural resources, the ability to create necessary facilities, and the need for more extensive transmission systems—a national RPS could overburden electricity providers.¹⁸⁵ Building more transmission systems, in particular, must be taken into account, due to the siting of many renewable energies being relatively far away from dense populations.¹⁸⁶ Legislators should thus take these issues into account in creating both yearly and end goals in the policy.

Moreover, this balance should consider the impact the RPS is expected to have upon reaching such renewable energy goals. The analysis should thus not solely be based upon a backward analysis applied to future predictions. Rather, the analysis should additionally consider the impact the RPS itself will have upon shifting the attainability of renewable energy targets.

Recommendation 3: Design effective, RPS-specific enforcement policies

A national RPS’s enforcement policies should be a) effective and b) RPS-specific. Vague or hard to enforce policies

¹⁸² HOLT, *supra* note 86.

¹⁸³ *Id.*

¹⁸⁴ BEAULIEU, *supra* note 23; Rabe, *supra* note 41, at 11-12.

¹⁸⁵ BEAULIEU, *supra* note 23; Rabe, *supra* note 41, at 11-12.

¹⁸⁶ Rabe, *supra* note 41, at 11-12.

confuse all those involved in the system and impair investment.¹⁸⁷ Relying upon old enforcement policies, applicable to energy in general, likewise impedes enforcement with loopholes, such as in the previously discussed Connecticut statute.¹⁸⁸ RPSs are relatively new and require a level of specificity in enforcement standards not captured by older, more general laws.¹⁸⁹ Therefore, a national RPS should include enforcement policies specific to the RPS itself, covering all actors engaged in RPS activities. This recommendation, however, should not be read to endorse a rigid system of enforcement response. Rather, flexibility should be written into new enforcement policies to provide discretion to those responsible for enforcing penalties.

Recommendation 4: Admit renewable energy technologies that reflect the majority of state RPS eligible technology listings

A unified understanding of what is and what is not renewable energy for the purposes of a national RPS is, as discussed above, no easy task.¹⁹⁰ What constitutes an eligible technology varies greatly from state to state, with some RPSs considered to be ‘dirtier’ than others.¹⁹¹ As a first step, a national RPS should include all renewable energy technologies already in place in each state. Moreover, allowing eligibility for technologies accepted in the majority of states (in this paper, seventy-five percent of states was used as the cutoff) is likely a positive decision.

Less common renewable energy technologies should also be accepted with a balancing test—examining environmental benefits and resource diversity with respect to each technology. Because resource diversity has an overall benefit, a renewable

¹⁸⁷ BEAULIEU, *supra* note 23, at 5; HEMPLING & RADER, *supra* note 46, at 72.

¹⁸⁸ HEMPLING & RADER, *supra* note 46, at 72.

¹⁸⁹ *Id.*

¹⁹⁰ U.S. ENVTL. PROT. AGENCY, *supra* note 1.

¹⁹¹ *Id.*; Rabe, *supra* note 41, at 14.

energy technology should be accepted unless it is found not to be sufficiently environmentally beneficial.¹⁹² It is, moreover, better to be over-inclusive (so long as the technology is environmentally beneficial) not only because of resource diversity concerns, but also because of the impact upon market demand.¹⁹³ With a greater number of eligible technologies, investors have more options and a market system will have access to a wider range of options in finding the most cost effective response to a national RPS.¹⁹⁴

Recommendation 5: Allow organic energy preferences and limit legislatively created energy preferences

Organic energy preferences are driven by market demand and are thus in some ways impossible to disallow.¹⁹⁵ Legislatively created energy preferences artificially impact organic energy preferences, however, by creating incentives that alter true market demand.¹⁹⁶ By limiting legislatively created energy preferences, market demand can drive national RPS pricing and lower the overall cost for renewable energy.¹⁹⁷ Moreover, both data and rationale exist for limiting legislatively created energy preferences; they may not only stifle RPS compliance, but also run counter to an underlying RPS basis, a system where no one renewable resource is favored over another.¹⁹⁸

This recommendation, however, should not be read as arguing for the total abolition of legislatively created energy preferences. Because of the need to encourage resource diversity, renewable resource generation throughout as many areas as possible, and localized environmental benefits, some legislatively created energy preferences might help accomplish benefits in these

¹⁹² HEMPLING & RADER, *supra* note 46, at 15-17.

¹⁹³ *Id.*

¹⁹⁴ *Id.*

¹⁹⁵ Rabe, *supra* note 41, at 11.

¹⁹⁶ U.S. ENVTL. PROT. AGENCY, *supra* note 1.

¹⁹⁷ Rabe, *supra* note 41, at 15.

¹⁹⁸ *Id.*

areas at an acceptable cost.¹⁹⁹ However, the extent of such preferences requires far more data than presented here. In general, keeping such a policy, at a minimum, in a national RPS is recommended for the rationale above.

Recommendation 6: Create a national REC market with credits tradable throughout the nation

A national REC market likely creates, through increased competition in a larger market, more benefit than harm. Gains seen in more competitive renewable energy pricing would create sustainability in the system, with the costs of renewable energy being closer to that of other kinds of energy.²⁰⁰ Moreover, it would produce benefits such as compliance cost reductions, greater accountability, increased transparency, and more accurate price indexing.²⁰¹ Additionally, individuals would be able to invest with greater confidence, which would create renewable energy growth.²⁰²

The benefits found in a national REC system must, however, be weighed against the system's inherent costs. Namely, a national REC system would create a disparate environmental benefit across regions in the United States, decrease renewable energy technology diversity, and stymie public RPS understanding.²⁰³ In spite of these downsides, this paper recommends REC systems. This recommendation is made both upon the strength of REC system benefits and the potential ability for these downsides to be mitigated. Such mitigation could occur in a number of ways. First, disparate environmental benefit can be limited by allowing the greatest number of renewable energy technologies possible (as per recommendation four). Moreover,

¹⁹⁹ HEMPLING & RADER, *supra* note 45, at 16.

²⁰⁰ *Id.* at 55-57; HOLT, *supra* note 86, at 9.

²⁰¹ HEMPLING & RADER, *supra* note 46, at 55-57; HOLT, *supra* note 86, at 9.

²⁰² HEMPLING & RADER, *supra* note 46, at 55-57; HOLT, *supra* note 86, at 9.

²⁰³ HOLT, *supra* note 86, at 10.

this issue could be overstated, as facility siting is not always desirable.²⁰⁴ Lastly, legislatively created energy preferences can mitigate this issue. Although, as mentioned in recommendation five, legislatively created energy preferences should be limited. These same policy decisions, furthermore, would reduce the harms caused by a national REC system with respect to renewable energy technology diversity and limitations in public understanding and education.

Recommendation 7: Allow REC banking

Allowing REC producers to bank credits increases market stability by reducing price variations from year to year.²⁰⁵ This consistency allows for a more stable REC market with investors, buyers, and suppliers able to make decisions based upon reliable, less volatile information.²⁰⁶ REC banking is thus recommended in a national RPS due to the consistency and stability it would create in a national REC market.

Recommendation 8: Develop transmission capacities in high resource areas

Renewable energy facilities, located in renewable energy rich areas, are often physically distant from dense populations.²⁰⁷ Transmission systems must thus exist to connect areas where renewable energy is generated to areas where renewable energy can be used.²⁰⁸ As mentioned in recommendation two, RPS goals must take into account the time necessary to build transmission systems. A national RPS must also factor in the cost of developing transmission capacities and allow for an extensive transmission infrastructure.²⁰⁹ Because this issue already exists at a state level,

²⁰⁴ Rabe, *supra* note 41, at 15.

²⁰⁵ HOLT, *supra* note 86, at 23.

²⁰⁶ *Id.*

²⁰⁷ Rabe, *supra* note 41, at 15.

²⁰⁸ *Id.*

²⁰⁹ *Id.*

where the RPS covers far less physical size than a national RPS would, a clear policy to build such an infrastructure is recommended in building a national RPS.²¹⁰

Recommendation 9: Permit state RPSs to continue with the national RPS acting as a floor

A national RPS could be legislated to either replace or run concurrent to state RPSs.²¹¹ The first option of creating a policy that preempts state legislation is not recommended and the latter option is preferred. The rationale underlying this recommendation is based upon differences that exist between areas of the country; states are differently situated, with differing ability, opportunity, and drive to reach certain RPS goals.²¹² Allowing states to pursue higher than nationally mandated RPS levels promotes the overall objectives without sacrificing the benefits provided in a national policy.²¹³ Consequently, it is recommended that a national RPS act as a floor running concurrent to any state RPS that mandates higher RPS levels.

Recommendation 10: Draft the policy with clear, concise language, containing unambiguous rules and straightforward penalties

With the abundance of state RPSs, variations exist in not only substantive policy, but also legislative form.²¹⁴ Creating clear, concise policy in a national RPS would provide all involved actors with a better understanding of how penalties would be administered, how a REC market would work, and how best to engage in fulfilling the RPS mandate.²¹⁵ In this way, like Texas's RPS, straightforward provisions in a national RPS would aid the

²¹⁰ *Id.*

²¹¹ Fershee, *supra* note 14, at 55; Gielecki, *supra* note 20, at 14-15.

²¹² Fershee, *supra* note 14, at 55; Gielecki, *supra* note 20, at 14-15.

²¹³ Fershee, *supra* note 14, at 55; Gielecki, *supra* note 20, at 14-15.

²¹⁴ Lunt, *supra* note 11, at 390.

²¹⁵ *Id.*

substantive actions of the legislation.²¹⁶ With buyers, sellers, and investors able to act upon clear legislation, clarity in the policy would provide greater information to all those involved.²¹⁷ As such, using clear, concise language, following Texas's RPS as a model, is recommended in creating a national RPS.

Conclusion

Earlier in this work it was asserted that two truisms exist with regard to every RPS: (1) all RPSs share common themes and (2) every RPS is unique.²¹⁸ These truisms provide the basis for this paper—by examining common RPS themes as certain metrics, differences between state RPSs are ordered and compared. These comparisons are meant to provide information that can be extended to another area in which an RPS could exist, moving from the state level to a national one. This information is arranged above in a series of recommendations, which should be understood both within the context of the available data and the scope of this paper. The goal, however, can be understood more broadly: (1) to understand what choices exist in creating a national RPS and (2) to recommend, based upon information that exists, particular choices over other possible alternatives.

This information and set of recommendations are particularly significant when one examines both the history behind, and possible benefit of, a national RPS. As a policy that has been proposed multiple times (most recently in the 110th Congress), there is clearly support.²¹⁹ Moreover, the policy has not only been proposed, but also passed in one of the houses of Congress.²²⁰

²¹⁶ *Id.*

²¹⁷ *Id.*

²¹⁸ *Id.*

²¹⁹ Fershee, *supra* note 14, at 33.

²²⁰ *Id.*

The rationale behind a national RPS underlies these efforts. By moving the RPS from a state to national arena, pollution would be further reduced and reliance upon non-renewable energy will decrease.²²¹ Additionally, a national market would provide for a cost effective means to more efficiently meet these goals.²²² These benefits are, however, innately tied to the RPS's structure. Because a national RPS can be created in a myriad of ways, with countless design options, it is important to examine these possible choices in a systematic way. This paper works to this end by analyzing what data exists to provide context and by giving recommendations.

With the proposal and adoption of a national RPS a possibility in the future, the merits of such a policy will no doubt be discussed. However, this discussion should be informed and grounded upon possible forms that such a policy would take. This paper adds to this discussion by examining common metrics seen throughout the states currently implementing an RPS. The information gained from this analysis, extended to the national arena, can thus help in understanding how a national policy can and should be legislated.

²²¹ *Id.* at 55-58.

²²² *Id.*