Celebrating 15 Years of State Leadership

CleanEnergy States Alliance

WHEN RENEWABLE PORTFOLIO STANDARDS MAX OUT

Prepared for

The RPS Collaborative

by

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About This Report

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Acknowledgements

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Disclaimer

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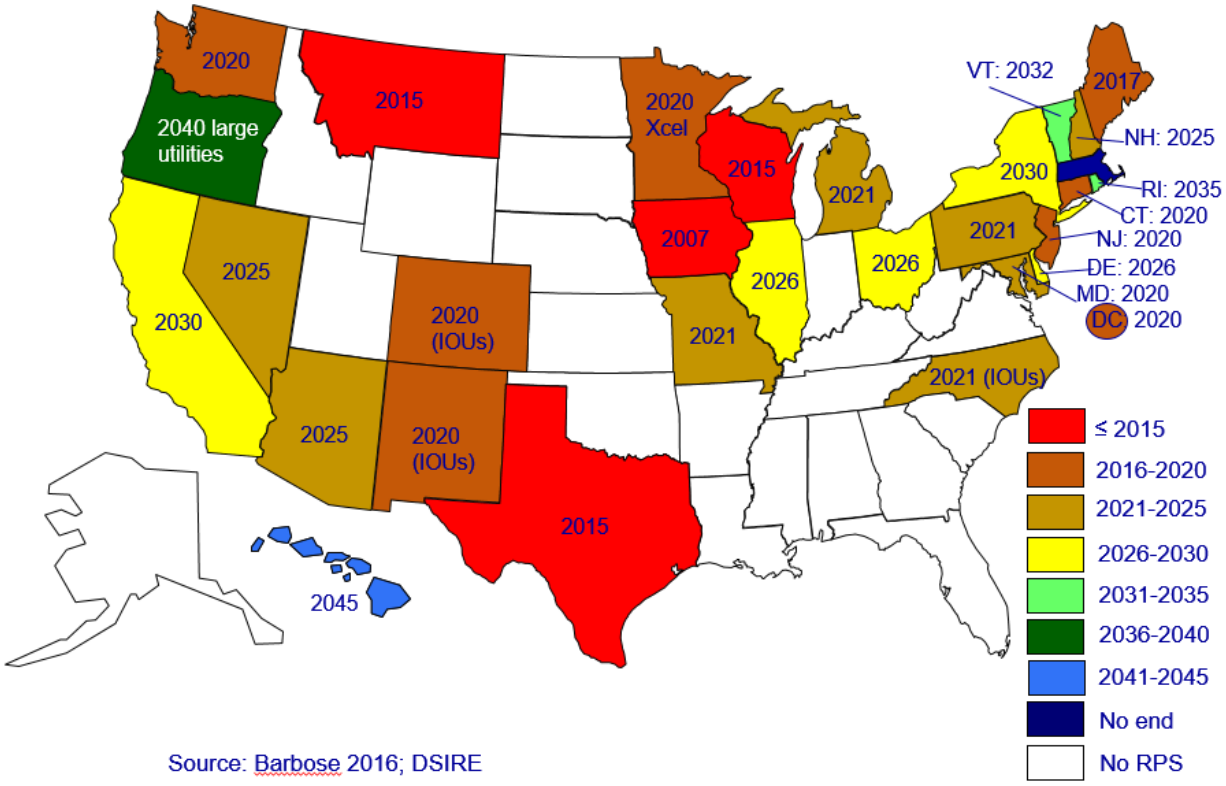
Introduction

Many state renewable portfolio standard (RPS) policies will reach their peak requirement over the next few years (see Figure 1). What effect will the RPS then have, and are states considering what, if anything, they want to do when their RPS maxes out?

Figure 1. Year of State RPS Maximums



In recent years, several states (e.g., California, Hawaii, Illinois, New York, Oregon, Rhode Island and Vermont) have increased and extended their RPS targets so that their peak requirements are now 10 to 20 years away. But four states have already crossed the finish line, and another 15 states will reach their maximum targets by 2025.[1]

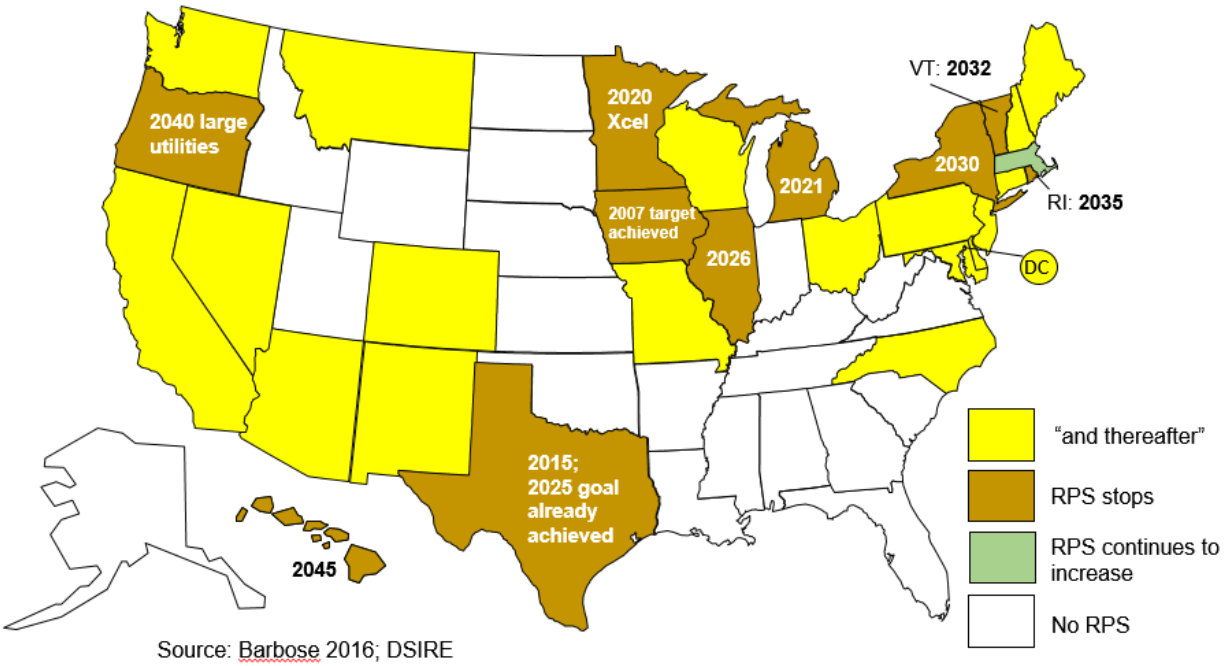
[1] Barbose, Galen. U.S. Renewables Portfolio Standards 2016 Annual Status Report. Lawrence Berkeley National Laboratory, April 2016. https://emp.lbl.gov/sites/default/files/lbnl-1005057.pdf; Database of State Incentives for Renewables and Efficiency, www.dsireusa.org. Hereafter, DSIRE.

This report explores what states say about their RPS end-of-life plans, what could happen after those RPSs max out, and what options the states have when, and if, they begin to plan for the end of RPS in their states.

State Intent for Renewable Portfolio Standards

State plans vary for what happens after the maximum target is reached. Many states call for their RPS to continue after reaching its maximum. In those cases, RPS statutes often have general language that specifies X percent in (year) "and thereafter." Some other states are silent about what happens after the peak requirement is reached, and without explicit policy, this probably means that obligated electricity suppliers (hereafter referred to simply as "utilities") would no longer need to procure any renewable energy or report annually on renewable energy in their portfolios. The one exception to these two approaches is Massachusetts, whose RPS directs that the Class I requirement (new resources) must reach 15 percent by 2020 and increase by an additional one percent each year thereafter.[2] It is not clear what happens when it reaches 100 percent, but without further change, that would not be reached until 2105. See Figure 2.

Figure 2. State Policy after RPS Reaches Maximum



Source: Barbose 2016; DSIRE

[2] DSIRE.

Effects on Neighboring States

State plans for RPS end-of-life can have a significant impact on both in-state generators and out-of-state generators.

Utilities in states where the RPS ends abruptly would no longer need to buy renewable energy for their supply portfolios. Renewable energy generators in those states would have to find other markets for their renewable energy certificates (RECs), and REC prices (for that state at least) would collapse. For example, markets in Minnesota and Michigan, with their targets ending in 2020 and 2021, respectively, could be hit hard.

The problem is not just for in-state generators, however. Generally, states allow out-of-state generation to count towards RPS compliance if the generator is located in adjacent states, is in the same regional electric grid, or the electricity is delivered to the RPS state or region. The RPS policies of neighboring states can affect what happens to renewable energy generated in a state, and likewise a state's own RPS policies can affect neighboring states. Therefore, states considering changes to their RPS should consider the impacts on renewable energy development and RPS compliance in nearby states.

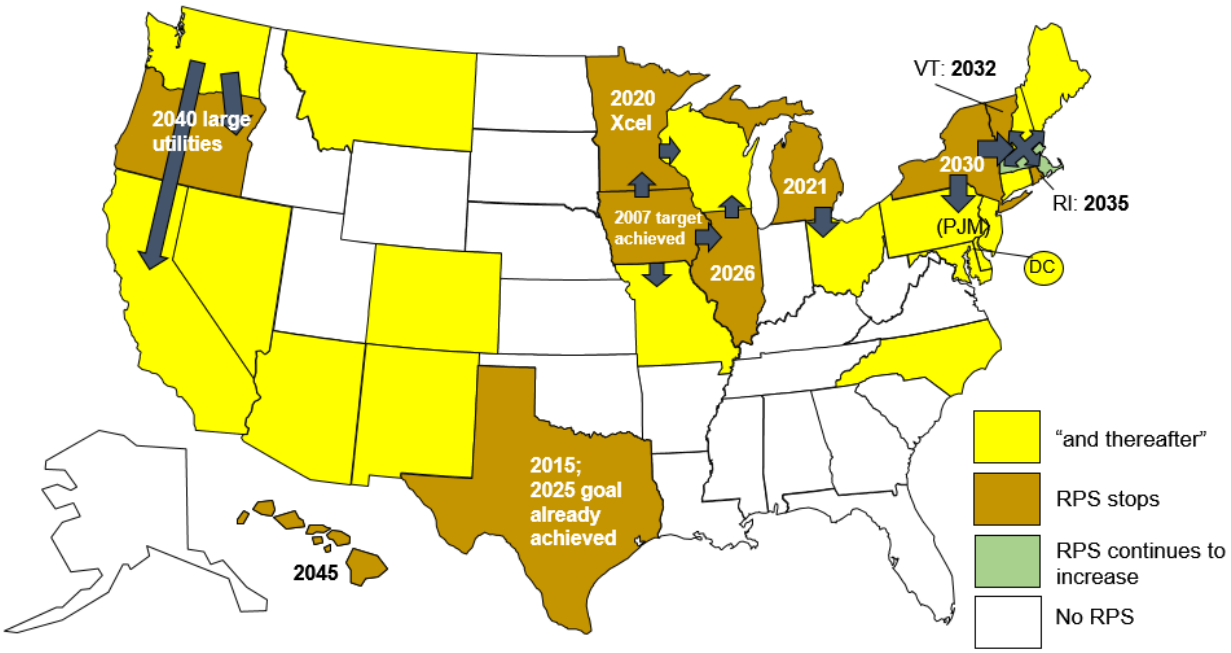
When a state RPS is still increasing, it is expected to motivate new generation development in the state and in neighboring states within the interconnected grid. But in states where the RPS is no longer growing, or is no longer in effect, in-state generators may choose to sell their output to other states whose electric service providers still face growing RPS compliance needs. There's nothing wrong with that—generation already serves across state lines where there are neighboring states with different RPS rules. But the generator's home state may no longer count on that generation to meet even its flat-line compliance needs.

Figure 3 illustrates the interdependency of REC markets in nearby states. The end of RPSs in some states will free up RECs that are no longer needed for compliance. Those RECs could migrate to other state markets.

One example is Iowa, which already met its RPS target (in 2007), and its RPS is effectively ended. It has not slowed development in Iowa because the state has an abundant, cost-competitive wind resource. The effect of no RPS in Iowa may be felt more in neighboring states where Iowa wind can be used under certain circumstances to help utilities in Minnesota, Missouri, Illinois and Wisconsin to comply with their RPS requirements. Voluntary market dynamics can also affect renewable energy availability and REC prices for compliance markets.

Between 2005 and 2014, Iowa wind generators contracted to sell 659 MW of capacity to large buyers for voluntary market claims,[3] and more contracts have been announced since then.

Figure 3. States that May Be Affected by the End of Neighboring RPSs



Another example is New York, where 10-year contracts entered into by NYSERDA for RPS attributes (i.e., RECs) under the state's original RPS are beginning to expire. The vintage of these generators is such that they are not eligible for the new Tier 1 requirement under the Clean Energy Standard (CES) that replaced the RPS.[4] Approximately 1,500 MW of renewable energy capacity that began operation in 2006-2015 will be released from contracts over the period 2016-2025.[5]

[3] O'Shaughnessy, Eric, Jenny Heeter, Chang Liu, and Erin Nobler. Status and Trends in the U.S. Voluntary Green Power Market (2014 Data). National Renewable Energy Laboratory, 2015. http://www.nrel.gov/docs/fy16osti/65252.pdf

[4] Generator vintage eligibility for the Tier 1 requirement is defined as projects that begin operation on or after January 1, 2015.

[5] Later contracts for another 492 MW were for 20 years; these projects will become available in 2037-2039. New York State Energy Research and Development Authority. New York State Renewable Portfolio Standard Annual Performance Report through December 31, 2016. Final Report, 2017. https://www.nyserda.ny.gov/-/media/Files/Publications/Energy-Analysis/RPS/2017-RPS-annual-report.pdf.

What will this mean for New York? The release of these projects from contract should not affect the need for new renewables development in New York because of the new requirements announced in 2016, but it could affect New York's neighbors.

As their New York RPS contracts expire, these renewable generators will look to sell their RECs in the most lucrative RPS market, which is likely to be in one of the New England states. The entry of New York RECs into New England in greater quantities than previously available will probably make compliance in those states cheaper because the added supply of RECs will have a depressing effect on price. Another option for New York generators that are released from NYSERDA contracts is to sell to utilities and other load serving entities obligated by state RPSs in the PJM region. Some of these states require an eligible generator to be located in PJM, but other states in the region simply require energy delivery into PJM, which can be done over existing transmission lines.[6]

Although there is no requirement for utilities to include this pre-2015 renewable generation in their retail sales, New York may still want to count this generation towards its 50 percent by 2030 CES goal. That will be problematic if the energy and RECs are sold out-of-state.

In the Pacific Northwest, the Washington RPS will reach its maximum in 2020, and although compliance will continue at the same level beyond that date, the still-growing RPS demand in Oregon and California might provide more lucrative market opportunities than in Washington. This could create scarcity in Washington, driving up REC prices, while undercutting hoped-for investment and economic development benefits in Oregon and California.

In contrast, Texas has met its mandated target and even its higher voluntary goal considerably earlier than its RPS requires, but most of the state is poorly interconnected with neighboring states, so its end-of-RPS date has little effect on neighboring state RPS compliance. However, Texas renewable energy generators also sell to in-state voluntary purchasers, and can sell to, and retire unbundled RECs on behalf of, voluntary purchasers out-of-state. In 2015, Texas REC retirements for voluntary markets (in-state or out-of-state) exceeded RECs used for in-state RPS compliance by 18 million RECs to 15 million RECs.[7]

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[6] Delaware, Maryland, New Jersey and the District of Columbia accept generation from outside the PJM Interconnection if the energy is delivered to PJM. See Holt, Ed. Potential RPS Markets for Renewable Energy Generators. Prepared for the State-Federal RPS Collaborative. Clean Energy States Alliance. 2016. http://www.cesa.org/assets/2016-Files/Potential-RPS-Markets-Report-Holt.pdf.

[7] Electric Reliability Council of Texas. 2016 Annual Report on the Texas Renewable Energy Credit Trading Program. [No publishing date]. https://www.texasrenewables.com/staticReports/Annual percent20Report/2016 percent20ERCOT percent20Annual percent20REC percent20Report.pdf.

Options

What are the options for states whose RPS is expiring? States could adopt one of several approaches listed below.

Job done

A state could conclude that the RPS has done its job—stimulated new generation, provided jobs, diversified the resource mix, helped reduce emissions. A state may be happy with that accomplishment and feel that an RPS is no longer needed because the jobs or other economic benefits have been achieved, because wind or solar is competitive with non-renewable alternatives and will continue to be developed without an RPS requirement, or because policy-makers are averse to further mandates. For example:

- Iowa's target was achieved in 2007 and no further action has been taken. The state has a great wind resource that has continued to develop, so Iowa gets the economic benefits of development without any mandates, and it does not matter to Iowa if the RECs are used in another state.

- Texas met its 2015 mandate early, and it even surpassed its 2025 goal in 2009. A competitive resource and the build-out of transmission made this early achievement possible. No further action has been taken, although bills have been proposed in the legislature to take the law off the books.

Both Iowa and Texas illustrate states that have exceeded their RPS because of their outstanding wind resources and inexpensive development opportunities. Absent these advantages, states would have a more difficult time sustaining renewables growth without an RPS to drive demand.

Extend RPS compliance or expand RPS coverage

States whose RPS ends abruptly could simply extend the compliance requirement without increasing the targets. This would continue demand without upsetting the regional supply-demand dynamic. Or a state could leave targets unchanged but expand coverage to include utilities not previously obligated to meet the RPS. Assuming this expanded coverage would affect smaller utilities, this would increase overall demand by a relatively small amount.

States that follow this option might expect mixed results. On the cost side, there would be a continued administrative burden on utilities required to file annual reports and on regulators required to review those reports. The cost of compliance and compliance review, however,

might be modest—it would depend on REC supply and demand in the region, and whether there are more lucrative markets elsewhere. One example is described below.

- The Illinois RPS target is 25 percent by 2025-26, with incremental increases annually, but 2016 legislation expanded the load subject to this target (among other changes to the RPS).[8]

Increase RPS targets

If states are reaching their maximum targets, they could set new, higher targets to continue support for new renewable development. In the past year or two, several states and the District of Columbia have done just that.

- Hawaii has adopted a series of RPS increases over the years, most recently in 2015, increasing the target from 40 percent in 2030 to 100 percent in 2045.

- In 2015, Vermont enacted legislation that moved the state from a voluntary renewable energy goal to a mandatory RPS of 75 percent by 2032.

- Rhode Island's RPS had an original target of 16 percent in 2019, subject to review by the Rhode Island Public Utility Commission. The PUC delayed the 1.5 percent increase for 2015, reducing the final target to 14.5 percent by 2019. In 2016, the legislature amended the RPS law to increase the target by 1.5 percent annually for 15 years, leading to a final target of 38.5 percent in 2035.

- The New York RPS, which required 29 percent renewable energy by 2015, was superseded in 2016 when the Public Service Commission issued an order adopted a new Clean Energy Standard calling for 50 percent by 2030. This target will be met by a combination of mandated renewables, nuclear support, and voluntary market activity.

- The Oregon RPS was established in 2007 with a final target of 25 percent by 2025 for large utilities; 2016 legislation increased the final targets to 50 percent by 2040.

- Michigan initially had an RPS target of 10 percent by 2015, but legislation adopted in December 2016 increased the target to 15 percent and extended the year of this target to 2021.

[8] Granahan, Brian P. (Illinois Power Agency). Implementing an Expanded Renewable Energy Portfolio Standard in Illinois. Clean Energy States Alliance Webinar, March 10, 2017. http://www.cesa.org/assets/2017-Files/RPS-webinar-slides-3.10.2017.pdf.

- The Maryland legislature voted in 2017 to override a gubernatorial veto and increased its RPS target from 20 percent by 2022 to 25 percent by 2020.

- The District of Columbia increased its RPS requirement in 2016 from 20 percent by 2020 to 50 percent by 2032. The solar carve out was also increased to 5 percent.

Beyond these recent changes, several states are considering modifications to their RPSs. Whether these proposals will be adopted remains to be seen, but examples include the following:

- A bill in the New Mexico legislature proposes an expansion of the state's RPS to 80 percent by 2040 from its current target of 20 percent by 2020.

- The Connecticut legislature is considering a bill that would increase its RPS from 20 percent by 2020 for Class I resources to 50 percent by 2030.

- Massachusetts legislation would increase the state's RPS from 15 percent by 2020, with an additional one percent of sales each year thereafter, to 100 percent by 2035 (and 100 percent economy-wide — including electricity, heating, transportation and other sectors —by 2050).

- Legislation in Nevada to increase the RPS target from 25 percent by 2025 to 50 percent by 2030 and 80 percent by 2040 passed the legislature but was vetoed by the Governor.

- California is considering a bill to increase the state's RPS, currently at 50 percent by 2030, to 100 percent by 2045.

Implications of State RPS Actions

What are implications of these options? The National Renewable Energy Laboratory and Lawrence Berkeley National Laboratory recently conducted an analysis of the costs, benefits and impacts of renewable portfolio standards.[9] The national lab team analyzed and compared three scenarios:

1) A No RPS baseline scenario that assumes no further growth in RPS requirements beyond 2015 but includes limited economic growth in renewables;

[9] Mai, Trieu, Ryan Wiser, Galen Barbose, Lori Bird, Jenny Heeter, David Keyser, Venkat Krishnan, Jordan Macknick, and Dev Millstein. 2016. A Prospective Analysis of the Costs, Benefits, and Impacts of U.S. Renewable Portfolio Standards. NREL/TP-6A20-67455/LBNL-1006962. Golden, CO and Berkeley, CA: National Renewable Energy Laboratory and Lawrence Berkeley National Laboratory. http://www.nrel.gov/docs/fy17osti/67455.pdf.

2) An Existing RPS scenario, which assumes that RPS requirements continue to grow based on existing state RPS policies as of July 2016; and

3) A High Renewable Electricity scenario, which assumes that nearly all states adopt an RPS with relatively aggressive targets.

The latter two scenarios are closest to the options that RPS states are now facing. According to the national labs' report, the electric system cost of fulfilling expectations of the Existing RPSs range from -0.7 percent to +0.8 percent, relative to No RPS beyond 2015. Normalized to a per kWh basis, the cost in electricity price terms is estimated to be -2.4 cents/kWh to +1.0 cent/kWh. Electric system costs of the High Renewable Electricity scenario would be expected to increase by 0.6 percent to 4.5 percent relative to the No RPS baseline, and the cost in price terms would range from -1.9 cents/kWh to 4.2 cents/kWh. The conclusion is that the cost of increasing and extending state RPSs exceeds the cost of taking no further action and just implementing state RPS targets in effect as of mid-2016, but not by much.

In terms of benefits, the study looked at reductions in greenhouse gases, air emissions, and water consumption, and found that relative to the No RPS baseline, the Existing RPS scenario would reduce greenhouse gases by 6 percent, and air emissions by about 6 percent, while the High Renewable Electricity scenario would reduce greenhouse gases by 23 percent, and air emissions by 29 percent (see Table 1). Water consumption, which is a serious issue particularly in the western US, would be reduced by 4 percent compared to 18 percent in the High Renewable Electricity scenario.

Table 1. Benefits of Maintaining vs. Increasing RPSs

Reductions in:	Existing RPS Scenario		High Renewable Energy Scenario	
	Percent Reduction	**Value of Benefit**	**Percent Reduction**	**Value of benefit**
Sulfur Dioxide	6%	2.4¢/kWh-RE	29%	5.0¢/kWh-RE
Nitrogen Oxides	6%		29%	
Particulate Matter 2.5	5%		29%	
Greenhouse Gases	6%	3.9¢/kWh-RE	23%	5.4¢/kWh-RE
Water Use	4%	NA	18%	NA

The study also considered the impacts of maintaining or increasing RPS targets. The impact metrics are not the same as benefits because they consider only the gross additions in renewable energy jobs and lower electricity prices caused by natural gas price suppression, rather than the net effect of jobs lost in the fossil fuel industry and the lower sales of natural gas.

The analysis found that the Existing RPS scenario would increase renewable energy jobs by 19 percent, and the High Renewable Energy scenario would increase such jobs by 47 percent, when compared to the No RPS baseline. Reducing natural gas demand in the electricity sector suppresses natural gas prices, and results in natural gas consumer savings (outside the electricity sector) in both the Existing RPS scenario and the High Renewable Electricity scenario, by 1.9¢/kWh-RE and 0.9¢/kWh-RE, respectively, on a levelized basis.

It is no surprise that the study suggests that states that increase their RPS targets would create greater environmental and economic benefits and impacts compared to maintaining the RPS status quo, at a modest cost (and potentially cost savings in some cases).

In addition to considering the quantified benefits and impacts in the national labs' study, states may want to consider more general and qualitative implications of terminating, extending or increasing their RPS.

Job done

The "job done" option means that a state considers that its RPS has had the desired effect when it reaches its maximum target, and compliance and reporting is discontinued. States whose RPS terminates without continuing a flat requirement might want to consider the following implications.

Implications in-state:

- No further cost of compliance
- No further cost of administration
- Upward pressure on electricity prices will be moderated because of no further compliance costs, but downward pressure on prices from displaced natural gas will dissipate
- Risk that investment in renewable resources development will shift to other states
- No assurance that shift to cleaner generation will continue in-state

- RECs may be sold out of state, reducing claims for in-state renewable energy use
- Forgone air emission and water use reductions
- Forgone renewable energy job opportunities

Implications for neighboring states with RPS:

- Available RECs will follow RPS markets, leading to more competition and lower REC prices because of increased supply
- May lower need for investment in neighboring states

Extend RPS compliance or expand RPS coverage

Rather than ending an RPS abruptly, states could consider extending compliance indefinitely or for a fixed number of years at a flat level. Alternatively, they might choose to expand the obligation to include utilities or loads that were previously exempted from the RPS.

Implications in-state:

- May provide sufficient support to eligible facilities so that they don't shut down prematurely
- On the other hand, eligible facilities might be profitable without any RPS-related income, meaning that the revenue leads to unnecessary increases in the cost of electricity
- Maintains interest in renewable energy investment in-state, though neighboring state generation may substitute for in-state investment
- Shift to cleaner generation may continue
- Continued moderate environmental benefits and economic impacts
- No loss to neighboring states
- Continued cost of compliance (may be minimal if target maintained but not expanded)
- Continued cost of administration

Implications for neighboring states with RPS:

- Maintaining RPS targets (flat) will not change REC market dynamics
- Expanding coverage will create more demand for RECs; generation in neighboring states may be more attracted to the first state and this could increase prices in neighboring states

Increase RPS targets

Following the example of several states noted above, states with expiring RPS targets could set higher targets to increase investment in and use of renewable energy. They might want to consider the following implications.

Implications in-state:

- Motivation for renewable energy investment and economic development in-state will continue
- Shift to cleaner generation will continue
- Likelihood of job growth and increased tax revenue will continue
- Environmental benefits will grow
- Utilities will continue to incur a cost of compliance
- Regulators will continue to bear a cost of administration
- Upward pressure on electricity prices will continue, although this may be partly offset by lower natural gas prices from renewable generation displacing natural gas generation.

Implications for neighboring states with RPS:

- Depending on relative cost of compliance in each state, increasing RPS targets in one state may draw RECs away from neighboring states, or make more REC supply available
- Depending on overall supply and demand, increasing RPS targets in one state may lower REC prices or increase REC prices for neighboring states

Conclusions

Four states have reached their peak RPS targets, and another 15 will max out by 2025. On the other hand, several states have increased their RPS targets as they approached their peak.

In 17 states, once the RPS reaches its maximum target, it continues in force without increasing. In 10 states the RPS ends when the peak is reached, and in one state it continues to increase automatically by one percent each year. Of course, legislatures in these states may always revisit and revise the RPS statutes.

Faced with nearing their maximum RPS targets, states have several options, as suggested by current experience. They can let their RPS expire, they can maintain their RPS at a fixed level, or they can increase their RPS targets further.

When an RPS maxes out, states will feel the effects of these options. The recent joint study by the National Renewable Energy Laboratory and the Lawrence Berkeley National Laboratory suggests that states that increase their RPS targets would create greater environmental and economic benefits and impacts compared to maintaining the RPS status quo, at a modest cost (potentially with a cost savings).

States that let their RPS expire after the current target is met will eliminate the cost of compliance and the administrative burden, and could reduce upward pressure on electric rates, but at an opportunity cost of forgone environmental benefits and economic impacts. States that extend in time their RPS compliance requirements or expand their RPS coverage to include more in-state load will experience modest increases in investment and jobs, and environmental benefits. States that increase their RPS targets are likely to see bigger investment in renewable energy and jobs impacts, and more significant environmental benefits, for a modest (if any) additional cost, not only because of the higher targets but also because policy certainty further into the future provides a more secure investment climate.

Almost all options have interactive effects on RPS compliance cost in neighboring states. This suggests that states should consider not only the in-state effects of their RPS options, but also the effects of their actions on neighboring states, as well as the effects of neighboring states' plans on them. States considering changes to their RPS should discuss possible changes with their neighboring states so their neighbors are not surprised by the sudden availability of more renewable energy (when an RPS ends), or by the increasing demand for renewable energy within the region (when an RPS is increased). Either effect could have implications for the price of RECs used for compliance.

Informational Resources

The **Lawrence Berkeley National Laboratory** (LBNL) has a robust list of publications relating to state renewable portfolio standards. These may be found at https://emp.lbl.gov/projects/renewables-portfolio/

Barbose, Galen L. *U.S. Renewables Portfolio Standards 2016 Annual Status Report*. 2016. https://emp.lbl.gov/sites/default/files/lbnl-1005057.pdf

> In recent years, this report has been updated annually and prepared as a detailed slide presentation. The report describes key trends, including recent legislative revisions, RPS policy design features, past and projected impacts on renewables development, compliance with interim targets, and costs. It is the "go-to" document for the latest summary information and overview of RPS activity in the states.

Mai, Trieu, Ryan Wiser, Galen Barbose, Lori Bird, Jenny Heeter, David Keyser, Venkat Krishnan, Jordan Macknick, and Dev Millstein. *A Prospective Analysis of the Costs, Benefits, and Impacts of U.S. Renewable Portfolio Standards*. Golden, CO and Berkeley, CA: National Renewable Energy Laboratory and Lawrence Berkeley National Laboratory. 2016. https://emp.lbl.gov/publications/prospective-analysis-costs-benefits.

> This report, undertaken jointly by the National Renewable Energy Laboratory and Lawrence Berkeley National Laboratory, evaluates the effects of renewable electricity used to meet aggregate RPS demand growth prospectively, over the period 2015-2050, under both current RPS policies as well as a potential expansion of those policies. The report quantifies: the costs to the electric system and retail electricity price impacts; the potential societal benefits associated with reduced greenhouse gas emissions, air pollution emissions, and water use; workforce requirements and economic development effects; and consumer savings associated with reduced natural gas prices. The study quantifies these effects in both physical and monetary terms, where possible, at both national and regional levels, and characterizes key uncertainties.

Wiser, Ryan H., Galen L. Barbose, Jenny Heeter, Trieu Mai, Lori Bird, Mark Bolinger, Alberta Carpenter, Garvin A. Heath, David Keyser, Jordan Macknick et al. *A Retrospective Analysis of the Benefits and Impacts of U.S. Renewable Portfolio Standards*. 2016. https://emp.lbl.gov/publications/retrospective-analysis-benefits-and.

> This joint report by the two national labs focuses on the benefits and impacts of all state RPS programs, in aggregate, for the year 2013. This report evaluates several important

benefits and impacts in both physical and monetary terms, where possible, and characterizes key uncertainties. The study evaluates potential societal benefits associated with reductions in greenhouse gas emissions, air pollution emissions, and water use. It also assesses the impacts—which are best considered resource transfers rather than societal benefits—associated with gross jobs and economic development, wholesale electricity prices, and natural gas prices.

Heeter, Jenny, Galen L. Barbose, Lori Bird, Samantha Weaver, Francisco Flores, Ksenia Kuskova-Burns, and Ryan H. Wiser. *A Survey of State-Level Cost and Benefit Estimates of Renewable Portfolio Standar*ds. 2014. https://emp.lbl.gov/publications/survey-state-level-cost-and-benefit.

This study, also by the two national labs, summarizes historical RPS compliance costs from 24 states with adequate RPS cost data. The report draws upon a variety of data sources, including estimates developed by utilities and public utility commissions (PUCs) as well renewable energy certificate pricing, to summarize the net (or "incremental") costs incurred by utilities to comply with RPS requirements. The report also surveys recent studies that have assessed the magnitude of potential broader societal benefits (though for a variety of reasons, those benefits estimates cannot be directly compared to RPS compliance costs).

The **National Renewable Energy Laboratory** (NREL) has a web page on RPS analysis resources, at www.nrel.gov/tech_deployment/state_local_governments/basics_portfolio_standards.html. This page references some of the same joint studies with LBNL as well as publications by other organizations.

The **Database of State Incentives for Renewables and Efficiency** (DSIRE), hosted by the North Carolina Clean Energy Technology Center, is a comprehensive resource for accessing current information about state, federal and sometimes local renewable energy policies and programs. For each state, DSIRE provides a summary of the RPS and links to enabling legislation and regulatory rulings.

The **Clean Energy States Alliance** (CESA) is a national, nonprofit coalition of public agencies and organizations working together to advance clean energy. CESA members—mostly state agencies— include many of the most innovative, successful, and influential public funders of clean energy initiatives in the country. See www.cesa.org. One of CESA's programs is the **RPS Collaborative**, which serves as a forum for the exchange of experiences and lessons learned regarding the implementation of state Renewable Portfolio Standard (RPS) policies. The RPS Collaborative sponsors a newsletter, publications, webinars and an annual conference called the National RPS Summit—all with a focus on RPS design and implementation. See www.cesa.org/projects/renewable-portfolio-standards/.

Leon, Warren. *The State of State Renewable Portfolio Standards*. Clean Energy States Alliance. 2013. http://cesa.org/assets/2013-Files/RPS/State-of-State-RPSs-Report-Final-June-2013.pdf

This report highlights several key achievements of RPS policies, in addition to the striking fact that they have become so widely adopted by states. They have led and are leading to considerable renewable energy generation; they have altered the decision-making and operations of electricity regulators, utilities, the energy industry, and other stakeholders; they have created jobs and contributed to local economic development; and they have laid the foundation for a national market for renewable energy. The report analyzes the RPS as a policy mechanism in order to identify its strengths as well as its weaknesses. The report also discusses five current challenges that could threaten the ability of RPSs to continue to be successful. It recommends two steps states may take to increase the effectiveness of their RPSs.

About the Author

Ed Holt is president of Ed Holt & Associates, Inc. and has practiced as an independent consultant on renewable energy policy and markets for over 20 years. He advises government agencies, utilities and non-profits on RPS requirements, the use of RECs and tracking systems, and greenhouse gas accounting for renewable energy. He was also one of the earliest to recognize the potential of voluntary markets to help achieve environmental goals. In 2009, Ed received the Green Power Pioneer Award from the Center for Resource Solutions.

About the RPS Collaborative

The RPS Collaborative, managed by the Clean Energy States Alliance, serves as a forum for the exchange of experiences and lessons learned regarding the implementation of state Renewable Portfolio Standard (RPS) policies. It was established to advance dialogue and cooperation among a broad network of state and federal government officials, renewable energy certificate tracking system administrators, NGO experts, industry representatives, and other stakeholders. It is supported by the U.S. Department of Energy and the Energy Foundation. The Collaborative offers a free monthly newsletter, webinars, reports, an annual National Summit on RPS, and other opportunities for information exchange. Key reports, webinar recordings, and presentations that have been produced for the RPS Collaborative are available on the Clean Energy States Alliance website at www.cesa.org/projects/state-federal-rps-collaborative/.




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The Clean Energy States Alliance (CESA) is a national, nonprofit coalition of public agencies and organizations working together to advance clean energy. CESA members—mostly state agencies—include many of the most innovative, successful, and influential public funders of clean energy initiatives in the country.

CESA works with state leaders, federal agencies, industry representatives, and other stakeholders to develop and promote clean energy technologies and markets. It supports effective state and local policies, programs, and innovation in the clean energy sector, with emphasis on renewable energy, power generation, financing strategies, and economic development. CESA facilitates information sharing, provides technical assistance, coordinates multi-state collaborative projects, and communicates the positions and achievements of its members.

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