

Renewable Portfolio Standards (RPS)

What Are RPS?

RPS stands for Renewable Portfolio Standards. In the United States, RPS are laws passed at the state level requiring that a certain percentage of power sold by utilities come from renewable sources of generation (such as wind or solar). Their purpose is to boost the renewable power sector.

RPS can set a single goal or have a series of escalating targets. Utilities failing to meet their targets are usually subject to a fine or other penalty. These fines can be waived under certain conditions, and many states place caps on how much power costs for consumers can increase due to RPS. In many states, utilities have the option of buying Renewable Energy Credits (RECs) to help reach their RPS targets.

As of the summer of 2023, 29 states (and the District of Columbia) had RPS laws in force. RPS focus on power sales (as opposed to generation) due to the interconnected nature of the United States' electric grid—many utilities sell power generated across a number of states. States can regulate what happens within their borders (the sale of power) but not what happens in other states (generation). At present 58 percent of retail electricity sales in the United States are subject to RPS legislation. Many countries that have national RPS laws apply requirements to power generation, not retail sales.

What Are the Main Elements of RPS?

RPS legislation varies substantially from state to state. All include a few key elements (targets, definitions of renewable power, penalties), and some have additional parts (like carve-outs or compliance caps). Common elements of RPS include:

Targets:

How much power sold by covered utilities must come from renewable sources? This is usually expressed as a percentage of power sold, although some early RPS laws set absolute targets in terms of megawatt hours (mWh). Some states have a single RPS goal, others set a series of escalating benchmarks over time.

Definition of Renewable Power:

Most RPS bills include wind, solar, biomass, and some forms of hydroelectric power. Other forms of renewable energy, such as geothermal, tidal, or landfill gas may also be included.

Penalties:

Utilities that do not meet RPS goals are usually subject to some type of penalty, often a monetary fine based on how far short they fell of the standard. These fines are often used to fund renewable energy projects or help homeowners and small businesses pay for energy

upgrades. Many states prohibit privately owned utilities from passing on the cost of these penalties to ratepayers.

Renewable Energy Credits (RECs):

Most RPS allow utilities to purchase RECs to offset shortfalls in meeting targets. RECs represent renewable power (usually measured in one MWh increments) that was generated and sold elsewhere. RECS must represent power that conforms to the purchaser's RPS requirements and has not been counted toward another RPS. Some RPS place geographic restrictions on where utilities can buy their RECs.

RECs are meant to provide an alternative to penalties for utilities unable to meet RPS goals, either due to cost issues or the unavailability of renewable power. The logic behind RECs is that they encourage the overall development of renewable power even if the utilities covered by RPS are unable to purchase it.

Caps on Compliance Costs:

Some states cap how much the cost of power can rise in order to meet RPS requirements. This is usually measured as a percentage of the average retail cost of a kilowatt hour (kWh) of electricity. The mechanisms for enforcing this vary widely from state to state.

Carve outs:

Some RPS require a certain percentage of renewable power to come from a defined source, often solar or distributed generation (distributed generation refers to power generated locally from a number of smaller sources, such as rooftop solar and small wind plants, which are aggregated together). Carve outs are meant to encourage the development of specific types of renewable generation.

Multipliers:

Some states give utilities additional credit for power generated from certain resources (so one kWh can count as two kWh towards RPS targets). Like carve outs, multipliers are designed to encourage the development of specific types of renewable power.

What Utilities are Covered:

Some RPS have different requirements for different types of utilities. In these cases, the highest targets are usually for private utilities (often called Investor-Owned Utilities, or IOUs). Municipal and cooperative utilities sometimes have lower or later targets, or are excluded entirely.

Benefits:

RPS laws are intended to stimulate the growth of renewable power generation. By ensuring there is a market for renewable power, they encourage investment and technological innovation. The creation of a market for renewable power also creates competition among producers that helps drive prices down.

States with RPS laws want to encourage renewable generation for a number of reasons, including:

- Environmental benefits (reduction in greenhouse gas emissions, cleaner air, reduction in water diversion for power generation)
- Increased diversity and security of energy supplies
- Economic benefits (job creation, tax revenues)
- Reduction in wholesale energy prices

Most observers believe that state RPS have succeeded in increasing renewable power generation capacity and making it more cost competitive with fossil-fuel generation. The Lawrence Berkeley National Laboratory estimates that as much as 50 percent of the renewable power generation that came on line in the United States between 2000 and 2020 can be attributed, at least in part, to RPS.

According to the National Renewable Energy Laboratory (NREL), RPS have helped contribute to the steep decline in the cost of renewable power over the past decade by spurring innovation and development. The same report suggests that RPS may also have unforeseen benefits, such as lowering the price of natural gas due to reduced demand. NREL estimates this may have saved utility ratepayers between \$1-3 billion in 2013 alone.

Criticisms:

Many of the criticisms leveled against RPS are ones used against renewable power generation in general. These include questioning if greenhouse gas reduction is necessary, claiming that renewable energy is too expensive, and that it is unreliable. Some have also questioned whether RPS actually achieve their goals, including the reduction of carbon emissions. The Lawrence Berkeley National Laboratory puts the average increase in electric rates due to RPS at about two percent a year, with considerable variation from state to state.

RPS vs. CES:

Clean Energy Standards (CES) are similar to RPS, but with a few key differences. While RPS are designed to increase renewable power generation, CES focus on reducing overall emissions of carbon dioxide or other harmful gasses. This means they can include a wider set of generation technologies, including nuclear power. CES can also include things that offset carbon emissions, such as energy efficiency measures or carbon capture.

Many CES are being established as goals without the enforcement mechanisms or penalties associated with RPS, although some are mandates with enforceable timelines. Some states with RPS have added supplemental CES with higher targets.

RPS Laws:

Currently 29 states and the District of Columbia have RPS statutes in place. 19 have introduced or expanded their RPS goals since 2018. Ten reached their maximum targets by 2021 and have not introduced new goals. Montana and Kansas have both repealed RPS laws. 13 states currently have both RPS and CES in place—in most cases, the CES targets are very high, in the 80-100 percent range. Only Hawaii has a 100 percent RPS goal.

RPS in Alaska:

In 2010 the Alaska Legislature set a non-binding target of 50 percent renewable generation by 2025. In 2022 about 33 percent of power generation came from renewable sources, the overwhelming majority of which (83 percent) was from hydroelectric generation.

In 2022 Governor Dunleavy introduced legislation (HB 301/SB 179) to establish an RPS for the Railbelt utilities, requiring them to reach 30 percent renewable power by 2030 and 80 percent by 2040. About 15 percent of Railbelt power currently comes from renewable sources. Elements of the bill were criticized by some officials from the Railbelt electric cooperatives, and, while it received hearings in several committees, it was not advanced for a vote in either chamber.

A slightly revised version of the RPS bill was reintroduced in March 2023 (HB 121/SB 101). These received committee hearings, but did not advance before the end of the 2023 session. As of February 12, no committee hearings had been held in 2024. In January 2024 the Chugach Electric Association's Board of Directors passed a resolution supporting the passage of RPS legislation for the Railbelt (with several caveats).

<https://www.chugachelectric.com/system/files/resolutions/Resolution%20No.%2001%2002%2024%20Support%20of%20a%20Renewable%20Portfolio%20Standard.pdf> The same month the Board of Golden Valley Electric Association passed a resolution endorsing the basic goals of an RPS, but calling for significant changes to the existing bill. <https://www.gvea.com/wp-content/uploads/January-23-2024-Member-Bookv4.pdf>

The question of an RPS was also raised by the Alaska Energy Security Task Force (AESTF) created by Governor Dunleavy in 2023. While the AESTF originally considered endorsing RPS legislation, it removed this from its final recommendations. Instead, at the behest of its Railbelt Sub-Committee, it recommended the Legislature pass a non-binding CES that rewards utilities for meeting certain renewable power benchmarks.

Additional Resources:

RPS basics from NREL:

<https://www.nrel.gov/state-local-tribal/basics-portfolio-standards.html>

National Conference of State Legislatures guide to state RPS and voluntary targets:

<https://www.ncsl.org/energy/state-renewable-portfolio-standards-and-goals>

NREL/Lawrence Berkeley National Laboratory 2016 report on the impact of RPS:

<https://www.nrel.gov/docs/fy16osti/65005.pdf>

Lawrence Berkeley National Laboratory 2023 RPS/CES status update:
<https://emp.lbl.gov/publications/us-state-renewables-portfolio-clean>

Listing of US RPS and CES programs with detailed descriptions at the North Carolina Clean Energy Center at North Carolina State University
<https://programs.dsireusa.org/system/program?type=38&category=2&>

Report on Clean Energy Standards from the Center for Climate and Energy Solutions:
<https://www.c2es.org/wp-content/uploads/2019/11/clean-energy-standards-state-and-federal-policy-options-and-considerations.pdf>

Clean Energy States Alliance guide to states with 100 percent clean energy goals:
<https://www.cesa.org/projects/100-clean-energy-collaborative/guide/>

REAP guide to RPS:
<https://alaskarenewableenergy.org/ppf/renewable-portfolio-standards/>