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A Brief History of U.S. Electricity Portfolio Standard Proposals

Electricity portfolio standards are designed to change the set of energy sources used to generate electricity, usually by establishing requirements on utilities to procure a percentage of electricity from specified eligible sources. Since the 105th Congress, 76 proposals for a national portfolio standard have been introduced, but none has become law. This analysis provides historical context on federal portfolio standard proposals.

Previous Federal Proposals

CRS sought to assemble a comprehensive list of federal portfolio standard proposals through a search in Congress.gov. A full description of the search methodology and the list of previous legislation is available in CRS Report R45913, *Electricity Portfolio Standards: Background, Design Elements, and Policy Considerations*.

Of the proposals CRS identified, the earliest bill was introduced in 1997 in the 105th Congress. Some proposals were stand-alone; in other words, a national portfolio standard was the only provision in the bill. Other proposals included a portfolio standard alongside other provisions.

As **Figure 1** shows, the number of introduced bills was highest in the 110th Congress. The 115th Congress saw the fewest number of introduced bills of any Congress in which a portfolio standard was proposed. Of the bills included in this analysis, 14 (18%) had some action in addition to introduction and referral to committee. Seven of these were passed in at least one chamber, but in all cases as part of a more comprehensive energy or environmental bill. For example, H.R. 2454 in the 111th Congress, the American Clean Energy and Security Act of 2009, passed the House.

Source Eligibility

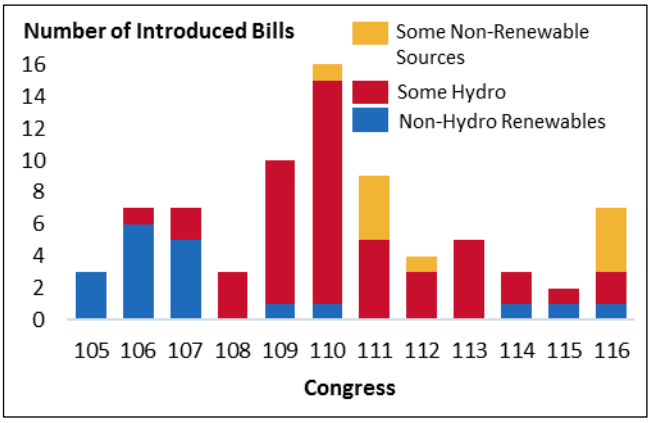
A chief distinction among portfolio standard proposals is which electricity generation sources may be used to fulfill the requirement (i.e., source eligibility). A portfolio standard might establish a requirement to procure electricity from renewable sources such as wind, solar, biomass, or geothermal energy. Many stakeholders refer to these as renewable portfolio standards (RPS).

Alternatively, a portfolio standard might establish requirements to procure electricity from a broader set of sources like nuclear, efficient natural gas-fired, or fossil fuel-fired power plants equipped with carbon capture and sequestration (CCS) technology in addition to renewable sources. Many stakeholders refer to this type of policy as a clean energy standard (CES).

Portfolio standard proposals differ in their treatment of hydropower, possibly reflecting the varying levels of support hydropower has among different stakeholders. Some proposals include hydropower in their definition of renewable sources, albeit often with restrictions based on size or age, while other proposals exclude hydropower in favor of non-hydro renewables. Many of the proposals identified by CRS (42) took an intermediate approach, exempting hydropower from the compliance requirement. In general, sources that are exempted from a portfolio standard requirement could receive indirect financial support. The level of support for exempted sources would likely be less than the support for eligible sources, but more than the support for ineligible sources. Some proposals also exempted other sources in addition to hydropower such as municipal solid waste (24 proposals) and new nuclear power plants (5 proposals).

Figure 1 categorizes bills according to the types of sources that would be eligible. All bills included some non-hydro renewables, though there were differences about eligibility for some types of sources, especially biomass. The introduced bills that *only* included non-hydro renewables are represented by blue bars in the figure. Five bills defined eligible sources as "renewable sources" without further clarification. These also are represented by the blue bars. The majority of bills explicitly included some hydropower for eligibility in addition to non-hydro renewables (red bars), though some of these had age or size restrictions. The figure does not distinguish bills that exempted hydropower or any other source from the compliance requirement. The third category of bills included non-hydro renewables, hydropower, and additional nonrenewable sources like nuclear or CCS (yellow bars) as eligible sources. No proposals included only nonrenewable sources.

Figure 1. Federal Portfolio Standard Proposals, by Source Eligibility



Source: CRS analysis, Congress.gov.

Notes: Bills are categorized according to the set of eligible sources under the proposed portfolio standard. Differences in other design aspects, such as exemptions for certain sources from compliance requirements, are not shown.

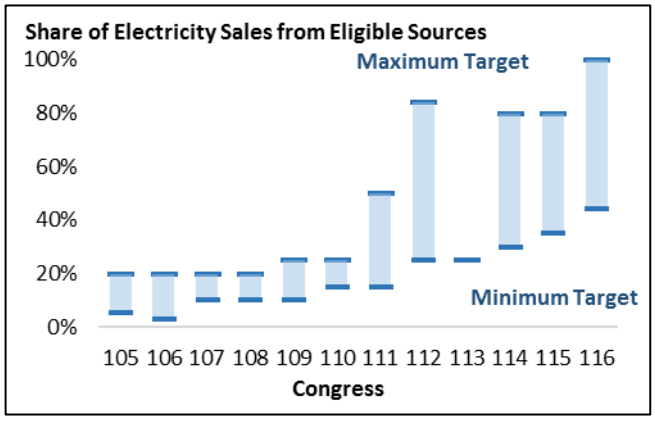
Of the 76 bills included in this analysis, 19 (25%) included only non-hydro renewables or did not define "renewable sources," 47 (62%) included non-hydro renewables and hydropower, and 10 (13%) also included some nonrenewable sources. Most proposals in the 105th-107th Congresses included non-hydro renewables only. In the 108th-115th Congresses, proposals that included non-hydro renewables and at least some hydro were the most common. CES proposals that would include nonrenewable sources have been the least common overall, but were the majority of proposals in the 116th Congress.

Target Stringency

Another distinction among proposals is the stringency of the portfolio standard. Often, stringency is expressed as the final target, in terms of the percentage of covered electricity sales to be procured from eligible sources. This topline number often is interpreted as a measure of expected policy outcome, although it is an imperfect measure. The date by which a final target must be achieved and other policy design choices together determine the expected changes from a business-as-usual scenario. Nonetheless, using final targets as a proxy for policy outcome may be useful in understanding changing congressional interest over time.

As **Figure 2** shows, both the minimum proposed final target and the maximum proposed final target in any Congress have increased over time. In the 105th-108th Congresses, the most stringent portfolio standard proposals by this measure would have 20% of electricity procured from eligible sources (target dates varied among proposals). In comparison, no proposal from the 112th Congress onward had a final target less than 25%. Beginning in the 112th Congress, some proposals would target 80% or more of electricity sales in the United States coming from eligible sources. Of the eight proposals with this level of stringency, four include some nonrenewable sources. Additionally, one CES proposal in the 116th Congress did not specify final targets, but rather directed the Secretary of Energy to set them to achieve 80% reductions in power sector carbon dioxide emissions by 2050.

Figure 2. Range of Final Targets in Federal Portfolio Standard Proposals



Source: CRS analysis, Congress.gov.

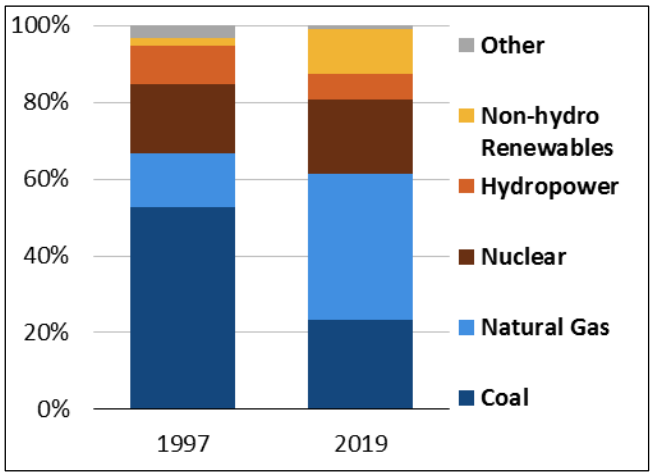
Notes: Bottom and top of the bars indicate the minimum and maximum proposed final target in any Congress, respectively. All bills in the 113th Congress had the same final target of 25%.

Other Developments

Market conditions and state policies might be relevant to congressional consideration of portfolio standards.

The U.S. electricity generation profile has changed since 1997, as shown in **Figure 3**. The figure shows the share of generation from different sources. The total amount of electricity generation was 3,492 terrawatt-hours (TWh) in 1997 and 4,153 TWh in 2019. In both absolute terms and as a share of the total, generation from coal has decreased while generation from natural gas, wind, and solar has increased. These trends are driven, in part, by changing capital costs for some technologies, changing fuel costs, and changing consumer preferences, some of which may have been affected by federal tax incentives or other policies. Many projections show these trends continuing.

Figure 3. U.S. Electricity Generation by Source



Source: EIA, *Electric Power Annual*

Notes: Other includes EIA categories Petroleum, Other Gases, and Other. Generation shown as share of total because most portfolio standard proposals to date have expressed final targets in this way.

The first state portfolio standard was established in Iowa in 1983, and many states adopted similar policies in the 2000s. Now, 30 states, the District of Columbia, and 3 U.S. territories have mandatory portfolio standards. Eleven of these jurisdictions have amended their portfolio standard to have a final target of 100%, with most amendments occurring since 2015: California, Colorado, the District of Columbia, Hawaii, Maine, Massachusetts, New Mexico, New York, Puerto Rico, Virginia, and Washington. Six states have non-binding goals of 100% eligible clean energy for electricity generation: Connecticut, Maine, Nevada, New Jersey, Rhode Island, and Wisconsin. These policies vary in their policy details (e.g., eligible sources).

Additional Analysis

CRS Report R45913, *Electricity Portfolio Standards: Background, Design Elements, and Policy Considerations*

CRS Report R46691, *Clean Energy Standards: Selected Issues for the 117th Congress*

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