



September 20, 2019

# 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 105<sup>th</sup> Congress, over 70 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 searched Congress.gov to assemble a comprehensive list of all federal portfolio standard proposals. 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*.

CRS identified 73 proposals, with the earliest identified bill introduced in 1997 in the 105<sup>th</sup> Congress. Some proposals were standalone; 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 110<sup>th</sup> Congress. The 115<sup>th</sup> 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 (19%) had some action other than introduction and referral to committee. Seven of these were voted favorably in at least one chamber, but in all cases as part of a more comprehensive energy or environmental bill. For example, H.R. 4 in the 107<sup>th</sup> Congress, the Energy Policy Act of 2002, passed both chambers, though it did not become law. H.R. 2454 in the 111<sup>th</sup> Congress, the American Clean Energy and Security Act of 2009, passed the House.

## Source Eligibility

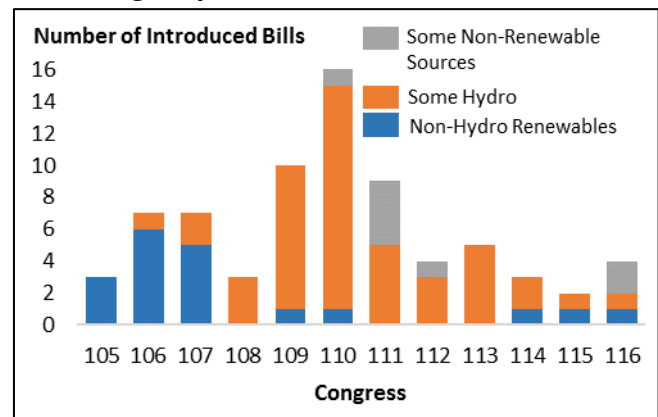
A chief distinction among portfolio standard proposals is which electricity generation sources may be used to fulfill the requirement (i.e., source eligibility). A portfolio standard might establish a requirement to procure electricity from renewable sources such as wind, solar, biomass, or geothermal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

A portfolio standard might alternatively 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 different 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 (41) took an intermediate approach, exempting hydropower from the compliance requirement. Sources that are exempted from a portfolio standard requirement could receive indirect financial incentives. 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 (23 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. The majority of bills included some hydropower for eligibility in addition to non-hydro renewables, though some of these had age or size restrictions (orange bars). The figure does not distinguish bills that exempted hydropower or any other source from the compliance requirement. The third category of bills in this analysis included non-hydro renewables, hydropower, and additional non-renewable sources like nuclear or CCS (gray bars) as eligible sources. No proposals included only non-renewable 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. Information for the 116<sup>th</sup> Congress is as of September 6, 2019.

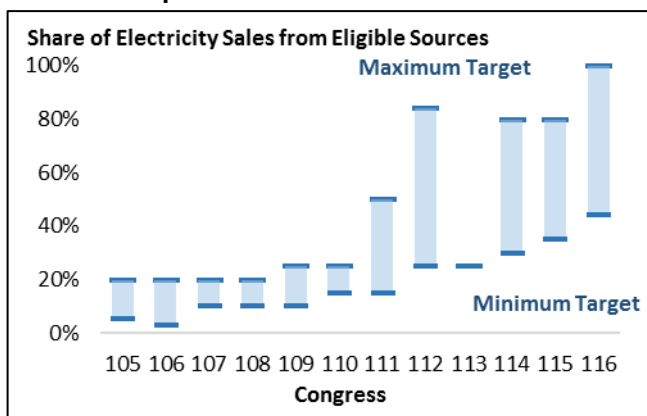
Of the 73 bills included in this analysis, 19 (26%) included only non-hydro renewables, 46 (63%) included non-hydro renewables and hydropower, and 8 (11%) also included some non-renewable sources. Most proposals in the 105<sup>th</sup>-107<sup>th</sup> Congresses included non-hydro renewables only. Beginning with the 108<sup>th</sup> Congress, proposals that include non-hydro renewables and hydropower have been the most common. CES proposals that would include non-renewable sources have been the least common overall. They were also the latest type to be introduced, with the first proposal in the 110<sup>th</sup> Congress.

## Target Stringency

Another distinction among proposals is the stringency of the portfolio standard. Stringency is often expressed as the final target, in terms of the percentage of electricity sales to be procured from eligible sources. This topline number is often 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 has increased over time. In the 105<sup>th</sup>-108<sup>th</sup> 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 112<sup>th</sup> Congress onward had a final target less than 25%. Beginning in the 112<sup>th</sup> Congress, some proposals would target 80% or more of electricity sales in the United States coming from eligible sources. Of the six proposals with this level of stringency, three include some non-renewable sources.

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



Source: CRS analysis, [Congress.gov](https://www.congress.gov).

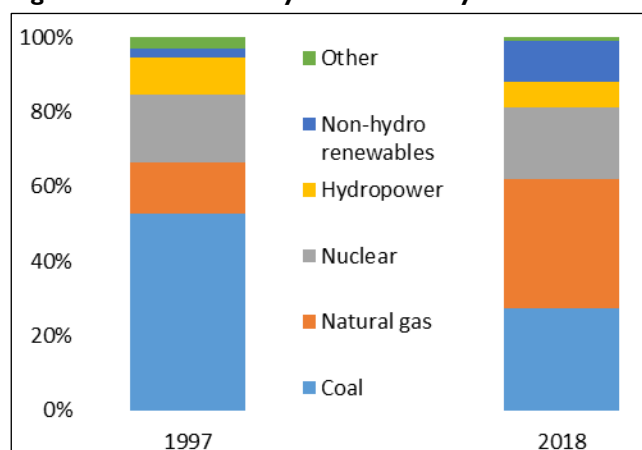
Notes: Bottom and top of the bars indicate the minimum and maximum proposed final target in any Congress, respectively. All bills in the 113<sup>th</sup> Congress had the same final target of 25%.

## Other Developments

Congressional interest in portfolio standard policies can be influenced by many factors, including market conditions and state policy developments. Some of the developments that may have influenced past proposals are discussed here. No attempt has been made to attribute any specific external factor or motivation to any particular proposal.

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 4,207 TWh in 2018. 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*, <https://www.eia.gov/electricity/data.php>.

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, 29 states, the District of Columbia, and 3 U.S. territories have mandatory portfolio standards. Since 2015, nine of these jurisdictions (California, the District of Columbia, Hawaii, Maine, Nevada, New Mexico, New York, Puerto Rico, and Washington) have amended their portfolio standard to have a final target of 100%. These policies vary in their final target year and eligible sources.

## Additional Analysis

CRS Report R45913, *Electricity Portfolio Standards: Background, Design Elements, and Policy Considerations*, by Ashley J. Lawson

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