

Cleary, Kathryne; Palmer, Karen

**Article**

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# US States Lead the Way on Climate Policy

Carbon dioxide, a greenhouse gas emitted through the combustion of fossil fuels, is a main contributor to global climate change. The societal price of these harmful emissions is not reflected in the private market cost of producing or consuming energy, and as a result, energy markets produce too much carbon emission in the absence of policy. Economists typically agree that the most economically efficient method of reducing carbon pollution is to put a price on carbon emissions, thereby allowing supply and demand in the energy marketplace to reflect these costs and adjust accordingly. Doing so would raise the price of energy resources that produce more carbon relative to those that produce less or none, which incentivizes a shift to lower-carbon fuels and ultimately reduces emissions. A carbon price can be direct, through a tax on carbon, or indirect, through a cap-and-trade program that caps the quantity of total emissions and allows for the trading of emission allowances, where the price of the allowances is determined by the market.<sup>1</sup>

Despite the cost-effectiveness of pricing carbon, policymakers in the US have struggled to pass this type of legislation. An infamous example is the Waxman-Markey bill (American Clean Energy and Security Act) of 2009 that would have capped national economy-wide greenhouse gas emissions and permitted allowance trading, similar to the EU's Emissions Trading System. The bill passed in the House of Representatives but ultimately failed to reach the Senate due to strong political opposition. Several legislative proposals have been introduced since – without success.

In the absence of federal action, several states have implemented policies that cost-effectively limit emissions and provide a solid foundation for future policy. A coalition of nine northeastern states (soon to be ten with the addition of New Jersey) has formed a regional cap-and-trade program called the Regional Greenhouse Gas Initiative (RGGI). This policy places a regional cap on emissions from the electricity sector that declines over time and allows power plants to trade allowances. California similarly has its own cap-and-trade program that is linked to the Canadian Province Quebec's program and also covers large industrial plants and fuel distributors.

Many states (29 in total plus the District of Columbia) have implemented Renewable Portfolio Standards (RPS) to encourage deployment of renewable resources. An RPS requires a percentage of electricity sold to come from renewables, and this percentage typically increases over time. Renewable resources receive renewable energy credits (RECs) for every MWh of electricity they produce and this minimizes costs of achieving the standard as these RECs are tradable.

RPS policies can help overcome barriers to market entry for renewable technologies by facilitating learning-by-doing and innovation that lower future costs. In this sense, RPS policies can lay the groundwork for future carbon-focused policies by addressing these technology-related market failures, thereby enabling more viable alternatives to fossil-based generation.<sup>2</sup>

An RPS can also provide a foundation for a technology-based carbon policy called a Clean Energy Standard (CES), which, like an RPS, sets a minimum percentage of electricity sales that must come from a particular class of generators. However, a CES rewards all resources that produce little or no carbon, such as nuclear plants, hydroelectric plants or fossil plants fitted with carbon capture and storage. By expanding the range of technologies, a CES acts more like a carbon price

**Kathryne Cleary**, Resources for the Future, Washington, DC USA.

**Karen Palmer**, Resources for the Future, Washington, DC USA.

1 R. Schmalensee, R. Stavins: Lessons learned from three decades of experience with cap-and-trade, NBER Working Paper No. 21742, 2015, National Bureau of Economic Research.

2 C. Fischer, R.G. Newell: Environmental and technology policies for climate mitigation, in: Journal of Environmental Economics and Management, Vol. 55, No. 2, 2008, pp. 142-162.

by incentivizing a switch to lower-carbon generators and increases competition, thus lowering the cost of achieving emissions reductions relative to an RPS alone.

Several states, like California and New York, are in the process of expanding their RPS policies to be more inclusive and more aggressive in an attempt to reach 100% clean energy in the next few decades. While the specific policies to achieve these goals are not fully developed yet, the announcements thus far have suggested that they will be more technology-inclusive, like a CES.

Regional and state-level policies like these can be effective at reducing carbon emissions where they apply. However, they have some potential drawbacks. With the exception of California's cap-and-trade program, most of the above-mentioned programs only cover the electricity sector. This limited coverage can hinder emissions reductions for a few reasons. Electricity generation only makes up about 28% of total US greenhouse gas emissions and, therefore, targeting the remaining parts of the economy will be critical. While cap-and-trade programs can be expanded to include more sectors, RPS and CES programs focus solely on the power sector.

Also, decarbonizing the transportation, buildings and industrial sectors will be more challenging due to a paucity of alternatives to fossil fuels. For this reason, electrifying these sectors (e.g. switching from gasoline powered to electric powered cars) and continuing to decarbonize the electricity system are often considered the most viable ways to reduce emissions from these sectors. However, if a regional carbon policy applies to the electricity sector alone, it could in fact discourage the electrification of other sectors by making electricity more expensive.

Regional policies can also experience leakage to surrounding regions when carbon pricing in one area increases emissions in a neighboring area that is not subject to the price. The RGGI policy has resulted in some increases in emissions in surrounding states like Pennsylvania and Ohio, partially offsetting reductions in the RGGI region.<sup>3</sup>

Most states with carbon pricing also have clean technology policies in place, and interactions between policies can limit their intended impact. California, for example, has a suite of policies to reduce carbon emissions including an aggressive RPS and ambitious energy efficiency and water conservation programs. A fixed emissions cap limits the emissions reduction potential of companion policies because the required quantity of emissions is fixed and an aggressive RPS may lower the price of meeting the emissions cap. Thus, preparing for potential interactions among these overlapping policies is an important aspect of carbon pricing policy design. A recent change to the RGGI program that introduces a price-responsive supply of allowances simultaneously helps contain costs and enables greater environmental ambition by adding or removing emission allowances in the market when faced with unexpectedly high or low prices, respectively. This flexibility allows other policies to further reduce emissions beyond the cap.

Overall, many states have managed to enact policies to tackle greenhouse gas emissions. Despite some challenges, their policies have helped enable the growth of renewable energy in the US and can also provide useful lessons and frameworks for future national climate action. While a comprehensive federal policy limiting greenhouse gas emissions is not imminent, states continue to fill this gap by setting more ambitious goals, expanding existing policies and experimenting with new approaches to reach beyond electricity. In the Northeast, the RGGI states plus a few others are currently working together to design a program that caps emissions from the transportation sector called the Transportation and Climate Initiative. Using an economic mechanism, this nascent policy should create a source of funds to promote alternatives to fossil-fueled private and commercial transport in the region. Policy experiments like these will help prepare the US for the time when the federal government is ready to address the climate challenge.

<sup>3</sup> H. Fell, P. Manilloff: Leakage in regional environmental policy: The case of the regional greenhouse gas initiative, in: *Journal of Environmental Economics and Management*, Vol. 87, Issue C, 2018, pp. 1-23.