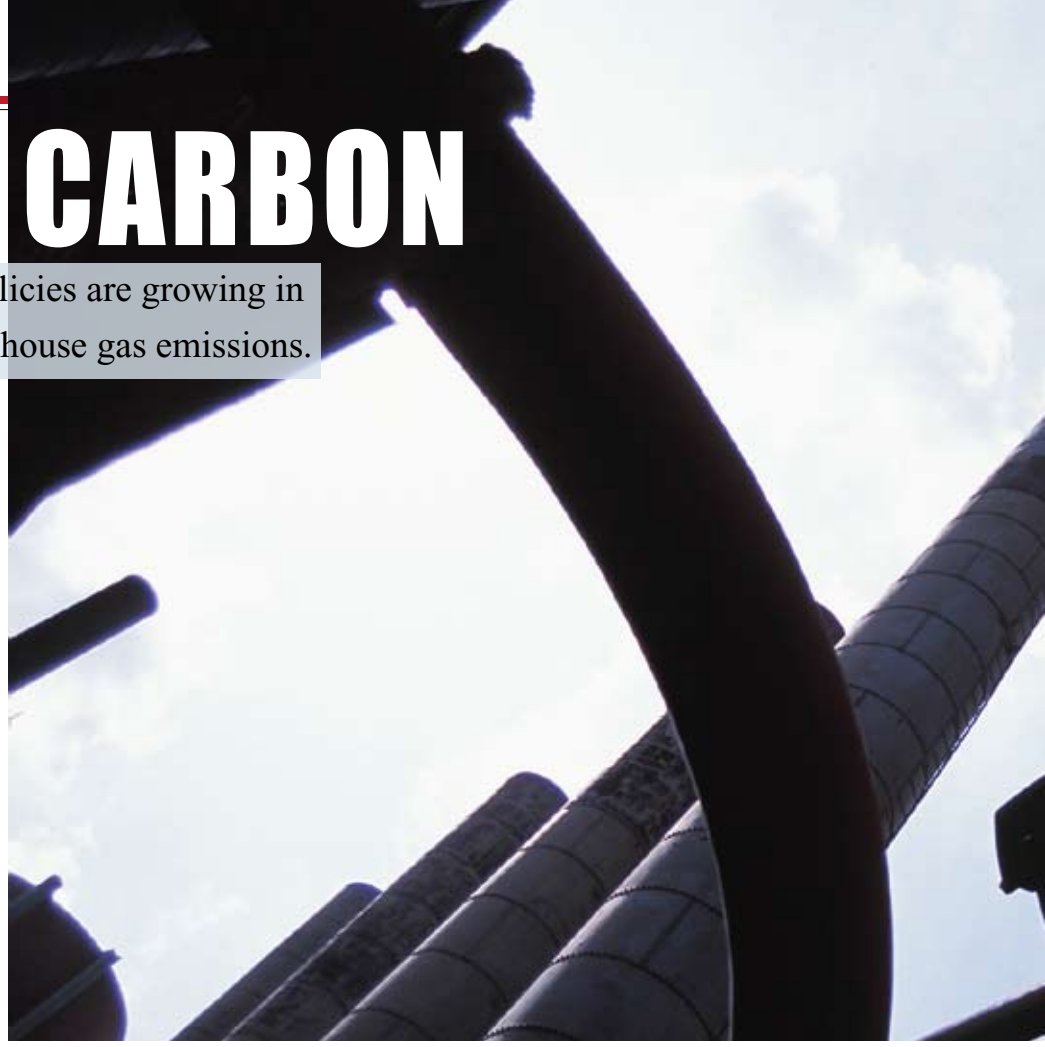
CAPPING CARBON

Cap-and-trade and carbon tax policies are growing in appeal as states look to cut greenhouse gas emissions.

BY GLEN ANDERSEN



States have long been leading the federal government in their efforts to tackle climate change, passing legislation to require greenhouse gas reductions as far back as 2006. As they continue and expand their efforts, states are hoping that federal actions build on what they've already done.

The debate also is gearing up in Washington, D.C., over how to reduce greenhouse gases and at what cost. Sponsors in Congress hope to have major climate legislation to the president by the end of summer.

One thing both state and federal efforts are almost certain to have in common are market-based incentives, which use pricing to drive emission reductions. Ten northeastern states—Connecticut, Delaware, Maine, Maryland, Massachusetts, New Hampshire, New Jersey, New York, Rhode Island and Vermont—already have a system called carbon cap and trade through the Regional Greenhouse Gas Initiative. It places a limit on the amount of greenhouse gas emissions in a region and requires utilities to pay for the pollution they emit.

"While we considered other regulatory options for addressing electricity generation, a cap-and-trade approach offers maximum flexibility for the regulated community and resulted in emissions reductions at lower costs," says New Jersey Assemblyman Upendra Chivukula.

New Jersey was one of the first states to set enforceable greenhouse gas reduction targets, and officials there see cap and trade as an integral part of its comprehensive greenhouse gas reduction plan. But it's not the main focus.

"The cap-and-trade program is projected to contribute 23 percent" to the state's 2020 reduction target, says Chivukula, who chairs the Assemby's Telecommunications and Utilities Committee. Energy efficiency, renewable energy, a low-emissions-vehicles program and other efforts will make up the rest of the reductions.

ASSEMBLYMAN
UPENDRA CHIVUKULA
NEW JERSEY

Twenty states are seeking a 50 percent to 80 percent decrease in greenhouse gas emissions by 2050. Seven of them, including New Jersey, have made these targets mandatory. The goals are based on research that suggests an 80 percent reduction in global emissions by 2050 is needed to avoid catastrophic climate change scenarios.

The goal of cap and trade is to ensure the environmental and societal costs of climate change are included in the price tag of activities that emit greenhouse gases. These costs could include the loss of land because of rising seas, a reduction in the availability of fresh water, and lower crop yields, according to reports by the National Academy of Sciences and the U.S. Environmental Protection Agency.

REGIONAL INITIATIVE

The 10 states in the greenhouse initiative were the first to get a carbon cap-and-trade program running. Their goal—and that of cap-and-trade programs in general—is to reduce carbon dioxide emissions from power plants, which generate more than one-quarter of the region's greenhouse gases.

Under the program, power plants pay to pollute. The utilities are required to purchase an emissions allowance for each ton of carbon dioxide emitted. Plants that can reduce emissions for less than the cost of buying allowances will do so. Plants where cutting emissions costs more than the allowances will purchase them.

The quarterly auctions are open to utilities and anyone else who wants to try investing in the carbon market. The first three auctions—September and December 2008 and March 2009—netted $262 million, and allowances sold for $3.51 per ton in March. Policies that put a cost on emissions must be phased

Glen Andersen tracks environmental issues for NCSL.

THE LESSON FROM ACID RAIN

The 1990 Clean Air Act Amendments required the U.S. Environmental Protection Agency to establish a cap-and-trade approach to reduce sulfur dioxide (SO_2) emissions from coal-burning power plants.

At the time, acid rain, which is caused by the release of SO_2, was damaging lake and forest ecosystems. By 2006, the program had reduced power plant SO_2 emissions by 40 percent below 1990 emission levels, at just one-fourth of projected costs.

In 2010, the annual health benefits from the acid-rain reduction program are predicted to total more than $119 billion, not including the value of reduced acid content in lakes and streams.

Although these efforts have reduced acid rain, many lakes in the Northeast have a long way to go before they recover—more than half of the lakes in New York's Adirondacks are still considered acidified. To help these lakes recover, a New York congressman is promoting legislation that requires power plants to decrease sulfur and nitrogen emissions by 75 percent from 1997 levels.

in slowly so companies have time to adapt. Consequently, it is likely to take a number of years before market-based policies have a significant effect on greenhouse gas emissions.

Since states with emissions targets need to begin reductions immediately to reach their goals, most are also exploring separate policies. These include promoting energy efficiency and renewable energy and cutting vehicle emissions.

States within the initiative have agreed to use the money on projects that benefit consumers, including helping people with low incomes with energy costs, developing clean energy production and promoting the use of renewable energy.

"Using auction revenue to reduce electricity demand is critical," says Chivukula.

To ensure that higher energy costs don't hurt low-income customers, 20 percent of New Jersey's auction revenues go to programs that reduce electricity costs for those with low and moderate incomes.

Maryland is also using its revenue—it has collected $54.3 million from the auctions—to reduce emissions through the Strategic Energy Investment Fund, which encourages renewables, energy conservation and efficiency, and pays for low-income assistance and weatherization.

DELEGATE
SALLY JAMESON
MARYLAND

Some think these cap-and-trade policies will allow clean energy technologies to compete with well-established fossil fuel technology. Including the cost of carbon emissions in calculating what type of power plant to build already has had an effect on planning new power generation in Maryland.

"Of 17 projects for power plants that I've heard discussed, a nuclear plant and a gas-fired one appear to be the most viable," says Assembly Delegate Sally Jameson. "You have to make sure it will be financially viable given the cost of carbon allowances, so it affects how people plan."

Over time, the number of allowances for sale will be reduced, eventually raising prices to a level that motivates power producers to cut emissions. The 10-state consortium starts out with low allowance prices to allow industry time to adjust.

"We are going to see a greater demand for emissions allowances, since there are only so many available," says Jameson. "If you are not buying them, you'll need to do something to eliminate your need for them."

Western states also plan to create a regional cap-and-trade market beginning in 2012 as part of the Western Climate Initiative. The initiative will cover a larger region, including Arizona, British Columbia, California, Manitoba, Montana, New Mexico, Ontario, Oregon, Quebec, Utah and Washington.

A regional cap-and-trade agreement among Midwestern states also is in the works.

Not all states are supportive of regional cap-and-trade efforts. "Issues surrounding greenhouse gases are not 'regional issues,'"

THE SILVER BB APPROACH

California, which is furthest along in developing its greenhouse gas reduction strategy, has realized there is no silver bullet approach to emission reductions, and efforts must be diverse.

State officials there are relying on an array of efforts, some of which make small but important contributions toward their goals. One is a soon-to-be-adopted rule that tires be inflated to the proper pressure during oil changes, brake checks and routine maintenance. Since fewer than half of drivers properly inflate their tires, the rule is expected to save 75 million gallons of gas each year while preventing 700,000 tons of emissions.

California is hoping that adding together many such approaches—so-called silver BBs as opposed to a silver bullet—will get the state to its emissions reduction goal. The California Clean Air Resources Board, which administers climate change efforts, estimates California's cap-and-trade policy will meet about 24 percent of its targeted greenhouse gas emissions reductions by 2020. Other policies—such as renewable electricity requirements, low-carbon fuel standards, vehicle emissions standards and energy efficiency requirements—will get them the rest of the way.

SENATOR
BEVERLY GARD
INDIANA

says Indiana Senator Beverly Gard. "They are global, and any program designed to address only regional emissions will have little or no real value in addressing greenhouse gas emission issues."

CARBON TAX

Concerns have been raised regarding the cost and efficiency of cap and trade, particularly since prices could undergo wild swings, making it difficult for industries to predict the benefits of reducing emissions. One of the arguments for an alternative approach, the carbon tax, is that it not only provides a stable price so companies can better predict the future cost of emissions but also reduces emissions at a lower cost.

"It is a lot simpler, and administrative costs are much lower, since we already have a tax structure and most entities that are taxed are already paying taxes," says Gilbert E. Metcalf, an economics professor at Tufts University. Another benefit of the carbon tax, Metcalf says, is that it is "more predictable up front" than any cap-and-trade pricing scheme.

The carbon tax puts a direct fee on CO_2 emissions, at the utility or power plant level, and raises it over time until emission goals are reached. Many economists think the carbon tax is the most efficient way to reduce emissions because it is easily understood, transparent and relatively simple. A slowly increasing tax would encourage the lowest-cost abatement measures first and allow time for industry to invest in technology to cut emissions and develop low-carbon energy alternatives. Proponents believe utilities will reduce emissions when the tax becomes higher than the cost of cutting emissions.

A carbon tax also avoids the pitfalls of the speculative market. "With cap and trade, we don't know how the secondary derivative market will develop, since there is so much value and wealth there," says Metcalf. "A carbon tax avoids the potential for negative market activity caused by complex derivatives and speculative bubbles."

It is difficult, however, to know exactly what effect the tax will have on CO_2 emissions. Emissions would have to be monitored closely so the tax could be increased over time to reach levels that match reduction goals. Cap and trade, in contrast, sets the emissions amount and allows the cost of emissions to adjust through auctions and trading until the price is right to meet reduction goals. Eight governments worldwide have a carbon tax—British Columbia, Finland, Great Britain, New Zealand, Quebec, Sweden and the cities of Boulder, Colo., and San Francisco, Calif.

Carbon taxation is considered politically unpopular because it places an additional tax burden on the economy. Cap and trade and the carbon tax, however, both use essentially the same mechanism—raise the cost of producing greenhouse gas emissions to drive reductions.

CAP-AND-TRADE HYBRID

Alterations to the cap-and-trade system can help stabilize prices, one of the benefits of the carbon tax approach.

To keep prices from becoming too low, there can be a floor on the price of emissions allowances. Prices won't drop too low, providing an incentive to continue cutting emissions. To prevent price spikes, cap-and-trade policies can include a ceiling. If the ceiling, say $10, were hit, the government then would allow the purchase of more allowances at the ceiling price, ensuring that prices do not rise higher.

It seems clear that, as more features are added to stabilize prices, the more complex the cap-and-trade system becomes. The relative sizes of current congressional bills demonstrate this complexity. The 600-page bill sponsored by U.S. Representatives Henry Waxman and Ed Markey deals mainly with cap and trade. U.S. Representative John Larson's carbon tax bill weighs in at fewer than 30.

ACTION IN CONGRESS

"The existence of regional cap-and-trade programs has been instrumental in bringing industry to the table to discuss a federal program," says Chivukula.

As the states move forward, Congress and the president are busy building support for a national cap-and-trade law. This has created growing concern about how much freedom states would have under a federal program and whether they would be allowed to surpass federal standards. Since states are at the forefront of cap-and-trade systems, and many regional monitoring and trading systems will be operating by the time national legislation is passed, many states with existing climate policies are urging federal policymakers to expand on existing state efforts instead of creating completely new systems.

State lawmakers in some states are concerned about the effects the program may have on coal-reliant regions. "We need to be clear that the cap-and-trade system should not be designed to punish those of us who have relied on coal for our electricity needs," says Gard. "A national program can be valid only if it is part of a global effort."

CHECK OUT an online story about the cost effect of climate change and NCSL's other climate change resources at www.ncsl.org/magazine.