

## Rutgers scientists support carbon tax

New Jersey scientists oppose cap-and-trade, support carbon tax

Thursday, 24 December 2009 13:46

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NEWJERSEYNEWSROOM.COM

"Cap-and-trade is a pretty lousy idea," says Paul Falkowski, Ph.D., director of Rutgers University's Energy Institute. "It doesn't reduce emissions in the near term, and we have to reduce, not just keep emissions steady. If we put a cap on and start trading, we'll slowly get off a carbon diet, but it's not going to be a steep curve, and it's going to be painful."

Falkowski, who researches the carbon cycle - the uptake and release of carbon - in the oceans, is one of many scientists who view cap-and-trade, the creation of a market for carbon-based substances, as an impractical solution to climate change.

Karina Schäfer, Ph.D., a Rutgers ecosystem ecologist, is similarly skeptical about a carbon market: "Cap-and-trade will be the next bubble. We've seen how unstable the financial and housing markets are - we've watched them increase and crash. Do we want to have the earth's climate rely on those instruments?"

"I favor a simple carbon tax," said Falkowski. "It costs 'x' amount of money to put 'x' amount of carbon in the atmosphere, and everybody pays that cost. We know the sources of oil everywhere in the world and how much oil is put on the market every day-futures trading is based on it. We know most of sources of coal and every major supplier of natural gas. We can tax the suppliers."

Former U.S. Vice President Al Gore believes cap-and-trade is more likely to be adopted in Congress, since it will be supported by industries that can benefit from a trading scheme. Politicians are loath to propose taxes of any kind, due to their unpopularity with the voters.

"New Jersey has the third lowest gas tax in the country," Falkowski observed. "If we raise gas two cents a gallon per month over the next two years, we'll solve most of our budget deficit problems. There will be screaming and crying for a couple of years, and then that will die down. This idea is anathema to the people in Trenton, but that's reality."

Carbon credits

Another problem some scientists see with the cap-and-trade scheme is the inclusion of carbon credits for areas that operate as "carbon sinks", such as forests and wetlands that sequester carbon in plant matter and soil, keeping it out of

the atmosphere. Industries and utilities can buy credits as part of their obligation to reduce emissions, lessening the financial pressure to build renewable sources of energy.

Falkowski opposes carbon credits on principle. He remarked, "Imagine this scenario. A burglar comes in and steals everything in your house. You're left with nothing. You go out and ask for \$5 for dinner. The burglar gives you \$5 and then wants a tax credit for being so generous. We have deforested the eastern lands, and we want a carbon credit now that we're letting a little bit of it grow back. It's a political game."

Schäfer's work involves measuring carbon output and retention in the Meadowlands, part of New Jersey's effort to obtain carbon credits as a member of the Regional Greenhouse Gas Initiative (RGGI), a cap-and-trade agreement by ten New England and Middle Atlantic states. The agreement, signed in 2005, went into operation on January 1, 2009, and has a goal of stabilizing emissions by 2014, with ten percent reduction of emissions by 2018. (So far the proceeds of RGGI have been used to fund weatherization and energy efficiency programs.)

Wetlands and forests operate as carbon sinks in summer, absorbing more carbon dioxide through photosynthesis than they give off through respiration. In winter, they are carbon sources, as photosynthesis does not occur in leafless trees, while respiration continues. The net effect across all seasons is generally removal of carbon from the atmosphere.

However, Schäfer noted, "Forests can become a carbon source under some conditions. For instance, if there's a defoliation event-when an infestation of insects eats all the leaves-or if there's a drought. Old-growth forests become balanced or eventually become a source, as trees respire more when they're older."

Scientists agree that the carbon cycle's complexity makes it difficult to measure and evaluate. Richard Lathrop, Ph.D., head of a Rutgers research team, is using computer and statistical models in an attempt to estimate how much carbon is sequestered in New Jersey's forests and soils.

Lathrop explained the purpose of his project: "The question would be, can you set aside enough acreage to make the carbon sequestration significant? We are trying to determine, if you set aside an acre of land, this is the amount of carbon you might expect to sequester over 100 years."

Such calculations are required to put a price on carbon credits. "For instance," says Lathrop, "if I were a forest landowner, and I put 1000 acres aside, how much are you going to pay me?"

Lathrop feels his team has made "a good first pass" at creating a model that weights such variables as aboveground and belowground biomass, geographic location, tree species, and soil composition. There are less data available on shrubs and down and dead wood.

"We're not taking into account changes in climate - there's definitely an amount of uncertainty," he said. "The budget's

not big, and the timeframe is short. We could play with different scenarios, if climate changed, include temperature, precipitation, then how much [CO<sub>2</sub>] change would there be - we could do it as a follow-up."

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