

# Professor Charles Driscoll Co-Authors Study on Clean Air, Health Benefits of EPA Plan

May 4, 2015

The top option in the plan prevents an expected 3,500 premature deaths in the U.S. every year, as well as more than 1,000 heart attacks and hospitalizations annually from air pollution-related illness.



States will gain large, widespread and nearly immediate health benefits if the Environmental Protection Agency (EPA) sets strong standards in the final Clean Power Plan, according to the first independent, peer-reviewed paper of its kind, published today in the journal *Nature Climate Change*. Charles Driscoll, University Professor of Environmental Systems Engineering in the [College of Engineering and Computer Science](#) is lead author of the paper.

The researchers analyzed three options for power plant carbon standards. The top option in the study prevents an expected 3,500 premature deaths in the U.S. every year, with a range of 780 to up to 6,100. It also averts more than 1,000 heart attacks and hospitalizations annually from air pollution-related illness. But weaker options considered in the study provide fewer estimated health benefits and could even have detrimental health effects, according to the paper.

The study comes at a pivotal time for climate policy as EPA prepares to release the final Clean Power Plan this summer. The plan is the nation's first attempt to establish standards for carbon dioxide emissions from power plants. It is also viewed as an important signal of U.S. leadership in the run-up to international climate negotiations in Paris in December.

"The bottom line is, the more the standards promote cleaner fuels and energy efficiency, the greater the added health benefits," says Driscoll. "We found that the greatest clean air and health benefits occur when stringent targets for carbon dioxide emissions are combined with compliance measures that promote demand-side energy efficiency and cleaner energy sources across the power sector."

"If EPA sets strong carbon standards, we can expect large public health benefits from cleaner air almost immediately after the standards are implemented," says Jonathan Buonocore, research fellow in the Center for Health and the Global Environment at the Harvard T.H. Chan School of Public Health and a co-author of the new paper.

The researchers mapped the air quality and related health benefits for the entire continental U.S. under three options for the Clean Power Plan. They found that all states and all types of communities see improved air quality under the top option. Pennsylvania, Ohio and Texas post the greatest health gains with 330 to 230 estimated premature deaths prevented each year.

"An important implication of this study is that the largest health benefits from the transition to cleaner energy are expected in states that currently have the greatest dependence on coal-fired electricity," says Dallas Burtraw, Darius Gaskins Senior Fellow at Resources for the Future and a co-author of the new paper.

Power plants are the nation's largest source of carbon dioxide emissions that contribute to climate change. They also release other pollutants like sulfur dioxide, nitrogen oxides and particulate matter—precursors to smog and soot that harm human health. The study looks at the added health benefits, or co-benefits, of carbon standards from reductions in these other air pollutants.

The results from the three policy options analyzed in the study are surprising. The option that only implements power plant upgrades, as favored by some groups, results in slightly lower air quality and modest adverse health effects. The option with the deepest cuts in carbon emissions does not produce the largest health benefits because it lacks new end-user energy efficiency. The top option for health prevents almost twice as many premature deaths as the runner-up for every ton of carbon dioxide reduced.

The results pan out like the story of the "three little pigs." One option is like the house of straw—it seems protective, but it isn't. Another option is like the house of sticks—it is stronger than straw but ultimately doesn't hold up. The final option is like the house of bricks—it uses all the right building blocks and has the best outcome.

The findings demonstrate that EPA's policy choices will determine the clean air and public health benefits for states and communities. The option in the study with the top health benefits is the one that is most similar to the draft standards released by EPA last June. So, the good news is that the formula in the draft Clean Power Plan is on the right track to provide large health benefits.

The new paper also has important international implications and brings much-needed attention to the benefits of climate change solutions. "The immediate and widespread local health benefits of cleaner air from policies to address greenhouse gas emissions can provide a strong motivation for U.S. and global action on climate change," Driscoll concludes.

A follow-on study analyzing the added benefits of power plant carbon standards for water, visibility crops and trees is expected out this summer.