

October 13, 2015

The Honorable Mike Pence
State of Indiana
State Capitol Building
Indianapolis, IN 46202

Dear Governor Pence:

We are reaching out to you as Hoosiers who are PhD-trained experts in climate change with a deep commitment to ensuring a strong State of Indiana for generations to come. Our diverse backgrounds in more than a dozen disciplinary fields have informed our collective understanding of the impacts of changing climate on the environment, infrastructure, and citizens of Indiana. We want to offer our collective knowledge to you, your Administration, and the state legislature to address the important challenges presented by a changing climate.

Our understanding of Earth's climate has come a long way in the past 100 years, and the role of greenhouse gases is now well documented. The Earth's atmosphere contains greenhouse gases like carbon dioxide that trap heat from the Sun that would otherwise be transmitted back out to space. Changes in the carbon dioxide concentration strongly influence Earth's climate. In the past century, the carbon dioxide concentration of the atmosphere has increased by 30%. This increase is, *in large measure*, the result of human use of fossil fuels for energy. This carbon transfer has increased global temperatures in our lifetimes, with a set of secondary effects such as weather patterns that are more erratic and extreme. Like the overwhelming majority of scientists, we project that this human-produced effect will continue to grow into the foreseeable future.

Models of projected population and economic growth can help us develop a more sophisticated assessment of projected impacts from climate change, such as agricultural losses from flooding and drought, stressed distribution networks for municipal water, and strain on our electrical grid from additional loads for indoor climate control. Hoosier scientists, and you as our Governor, must pay close attention to current changes and future projections, and actively engage in planning and action required to mitigate and adapt to the changes.

As greenhouse gas concentrations continue to increase, Indiana faces a number of impacts, not all of them "bad" but certainly all worthy of attention. The Purdue Climate Change Research Center produced a report that highlights a broad range of climate change impacts for Indiana. For example, the occurrence of extreme hot events is likely to increase in Indiana, while the occurrence of extreme cold events is likely to decrease. Indianapolis in particular will experience heat wave conditions for which many are underprepared, particularly the elderly and young residents. Vulnerability of soils to dry winters could increase the risk of multi-year droughts in Indiana, which would impact the important agricultural and forestry sectors. But the current "corn belt" will likely remain the best area for corn and soybean production and Indiana will likely maintain its position as a top producer of those crops. Indeed,

the pace of climate change relative to the rate of technological change will be an important determinant of agricultural impacts and outcomes in Indiana, and this provides clear opportunities for Indiana to be at the forefront of climate change mitigation and adaptation practices. The Purdue Climate Change Research Center is starting to develop a new assessment of projected climate change impacts in Indiana, which will further inform the State moving forward.

We are eager to engage with you and your staff to ensure that sound science is included in planning and energy & transportation infrastructure programs and policies. As a former Senior Science Advisor in the U.S. Department of State, I appreciate the importance of balancing science, economics, and human welfare in developing solid policy. Together we can ensure that sound practices and policies are developed which are implementable, sustainable, and based upon sound science.

The signatories of this letter have spent decades studying the principles and impacts of climate change on air, land, water, and human health. We also collectively study the balance between society's needs and the need to protect environmental processes. For example, a study published in July 2015 by researchers at the Center for Urban Health documents the impacts of mercury from coal-combustion emissions have had on central Indiana, and highlights the projected recovery of fisheries and ecosystems in central Indiana following a decision by Citizens Energy to convert from coal to natural gas at the Harding Street facility. This synergy between a local company and environmental quality is just one example of the need to look locally as well as at broader geographic scales for climate solutions.

The basic science of climate change is settled; our challenge today is to explore opportunities to develop mitigation and adaptation strategies in Indiana that reflect our interests to protect energy and transportation infrastructure, the health of the public and economic development. We would be privileged to help you in this effort. We ask to be a part of the agency-level strategic planning process when moving Indiana forward in the face of multiple environmental changes and challenges.

With respect,



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