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FACT SHEET: What Climate Change Means for Iowa and the Midwest



Today, the Obama Administration released the third U.S. National Climate Assessment – the most comprehensive scientific assessment ever generated of climate change and its impacts across every region of America and major sectors of the U.S. economy. The findings in this National Climate Assessment underscore the need for urgent action to combat the threats from climate change, protect American citizens and communities today, and build a sustainable future for our kids and grandkids.

The National Climate Assessment is a key deliverable of President Obama’s Climate Action Plan to cut carbon pollution, prepare America’s communities for climate-change impacts, and lead international efforts to address this global challenge. Importantly, the plan acknowledges that even as we act to reduce the greenhouse-gas pollution that is driving climate change, we must also empower the Nation’s states, communities, businesses, and decision makers with the information they need prepare for climate impacts already underway.

The Obama Administration has already taken a number of steps to deliver on that commitment to states, regions, and communities across America. In the past year alone, these efforts have included: establishing a Task Force of State, Local, and Tribal Leaders on Climate Preparedness and Resilience to advise the Administration on how the Federal Government can respond to the needs of communities nationwide that are dealing with the impacts of climate change; launching a Climate Data Initiative to bring together extensive open government data with strong commitments from the private and philanthropic sectors to develop planning and resilience tools for communities; and establishing seven new “climate hubs” across the country to help farmers and ranchers adapt their operations to a changing climate.

IOWA is part of the U.S. National Climate Assessment U.S. Midwest Region. The regional phenomena identified by the Assessment may not occur in every state that is part of a particular region. According to the third U.S. National Climate Assessment Highlights report:

“The Midwest’s agricultural lands, forests, Great Lakes, industrial activities, and cities are all vulnerable to climate variability and climate change. Climate change will tend to amplify existing risks climate poses to people, ecosystems, and infrastructure. Direct effects will include increased heat stress, flooding, drought, and late spring freezes. Climate change also alters pests and disease prevalence, competition from non-native or opportunistic native species, ecosystem disturbances, land-use change, landscape fragmentation, atmospheric and watershed pollutants, and economic shocks such as crop failures, reduced yields, or toxic blooms of algae due to extreme weather events. These added stresses, together with the direct effects of climate change, are projected to alter ecosystem and socioeconomic patterns and processes in ways that most people in the region would consider detrimental.

Most of the Midwest's population lives in urban environments. Climate change may intensify other stresses on urban dwellers and vegetation, including increased atmospheric pollution, heat island effects, a highly variable water cycle, and frequent exposure to new pests and diseases. Further, many of the cities have aging infrastructure and are particularly vulnerable to climate change related flooding and life-threatening heat waves. The increase in heavy downpours has contributed to the discharge of untreated sewage due to excess water in combined sewage-overflow systems in a number of cities in the Midwest." (NCA Highlights, p.74)

Regional Findings of the Third U.S. National Climate Assessment: MIDWEST

- "In the next few decades, longer growing seasons and rising carbon dioxide levels will increase yields of some crops, though those benefits will be progressively offset by extreme weather events. Though adaptation options can reduce some of the detrimental effects, in the long term, the combined stresses associated with climate change are expected to decrease agricultural productivity.
- The composition of the region's forests is expected to change as rising temperatures drive habitats for many tree species northward. The role of the region's forests as a net absorber of carbon is at risk from disruptions to forest ecosystems, in part due to climate change.
- Increased heat wave intensity and frequency, increased humidity, degraded air quality, and reduced water quality will increase public health risks.
- The Midwest has a highly energy-intensive economy with per capita emissions of greenhouse gases more than 20% higher than the national average. The region also has a large and increasingly utilized potential to reduce emissions that cause climate change.
- Extreme rainfall events and flooding have increased during the last century, and these trends are expected to continue, causing erosion, declining water quality, and negative impacts on transportation, agriculture, human health, and infrastructure.
- Climate change will exacerbate a range of risks to the Great Lakes, including changes in the range and distribution of certain fish species, increased invasive species and harmful blooms of algae, and declining beach health. Ice cover declines will lengthen the commercial navigation season." (NCA, Ch. 18: Midwest)

Selected Findings and Information from the Third U.S. National Climate Assessment Relevant to IOWA

- **Climate:** "The rate of warming in the Midwest has markedly accelerated over the past few decades. Between 1900 and 2010, the average Midwest air temperature increased by more than 1.5°F. Since 1991, the amount of rain falling in very heavy precipitation events has been significantly above average. This increase has been greatest in the Northeast, Midwest, and upper Great Plains - more than 30% above the 1901-1960 average. There has also been an increase in flooding events in the Midwest and Northeast where the largest increases in heavy rain amounts have occurred." (NCA, Ch. 18: Midwest; Ch. 2: Our

Changing Climate)

- **Precipitation:** “An analysis of the rainfall patterns across Iowa has shown there has not been an increase in total annual precipitation; however, there has been a large increase in the number of days with heavy rainfall. The increase in spring precipitation is evidenced by a decrease of three days in the number of workable days in the April to May period during 2001 through 2011 in Iowa compared to the period 1980-2000. To offset this increased precipitation, producers have been installing subsurface drainage to remove more water from the fields at a cost of \$500 per acre.” (NCA, Ch. 6: Agriculture)
- **Floods:** “Cedar Rapids, Des Moines, Iowa City, and Ames, Iowa, have all suffered multi-million-dollar losses from floods since 1993. With the help of more than \$3 billion in funding from the federal and state government, Cedar Rapids is recovering and has taken significant steps to reduce future flood damage, with buyouts of more than 1,000 properties, and numerous buildings adapted with flood protection measures.” (NCA, Ch. 18: Midwest)
- **Agriculture:** “Future crop yields will be more strongly influenced by anomalous weather events than by changes in average temperature or annual precipitation. As a result, increased productivity of some crops due to higher temperatures, longer growing seasons, and elevated CO₂ concentrations could be offset by increased freeze damage. Heat waves during pollination of field crops such as corn and soybean also reduce yields. For example, corn and soybean harvests in Illinois and Indiana, two major producers, were lower in years with average maximum summer (June, July, and August) temperatures higher than the average from 1980 to 2007. Wetter springs may reduce crop yields and profits, especially if growers are forced to switch to late-planted, shorter-season varieties. Agriculture is responsible for about 8% of U.S. heat-trapping gas emissions, and there is tremendous potential for farming practices to reduce emissions or store more carbon in soil. Use of agricultural best management practices can increase CO₂ uptake and reduce energy use and also improve water quality by reducing the loss of sediments and nutrients from farm fields.” (NCA, Ch. 18: Midwest)
- **Transportation:** “Transportation systems are already experiencing costly climate change related impacts. Many inland states – for example, Vermont, Tennessee, Iowa, and Missouri – have experienced severe precipitation events, hail, and flooding during the past three years, damaging roads, bridges, and rail systems and the vehicles that use them. Over the coming decades, all regions and modes of transportation will be affected by increasing temperatures, more extreme weather events, and changes in precipitation.” (NCA, Ch. 5: Transportation)

Examples of Efforts Underway in IOWA to Address Climate Change

In IOWA, many efforts are already underway to mitigate and respond to the impacts of climate change, including:

Preparing Communities for the Consequences of Climate Change:

Many important preparedness, resilience, and adaptation efforts are already being led by local, state, and regional entities across the country. Mechanisms being used by local governments to prepare for climate change include: land-use planning; provisions to protect infrastructure and ecosystems; regulations related to the design and construction of buildings, road, and bridges; and preparation for emergency response and recovery. These local adaptation planning and actions are unfolding in municipalities of different sizes, and regional agencies and regional aggregations of governments are also taking actions. And States have also become important actors in efforts related to climate change.

- Mayor Frank Cownie (Des Moines, IA) serves on the President's State, Local and Tribal Leaders Task Force for Climate Preparedness. After serious flooding in 2008, Des Moines joined the Four Mile Watershed Management Authority; with Mayor Cownie as Chair the Authority has developed additional flood planning to react to precipitation extremes.
- The U.S. Department of Agriculture's Midwest Regional "Climate Hub" is located in Ames, Iowa, with a sub-hub located in Houghton, Michigan. The Hub is designed to deliver science-based knowledge, practical information, and program support for farmers, ranchers, landowners, and resource managers to support informed on-the-ground decision-making related to climate change.

Cutting Carbon Pollution in IOWA:

In 2012, power plants and major industrial facilities in Iowa emitted more than 56 million metric tons of carbon pollution – that's equal to the yearly pollution from more than 11 million cars. Through the Climate Action Plan and state initiatives, there are many efforts already underway to mitigate and respond to the impacts of climate change in Iowa, including:

- ***Investing in Clean Energy:*** Since President Obama took office, the U.S. increased solar-electricity generation by more than ten-fold and tripled electricity production from wind power. In Iowa, renewable energy generation from wind, solar, and geothermal sources increased nearly by a factor of four. Since 2009, the Administration has supported tens of thousands of renewable energy projects throughout the country, including 170 in Iowa, generating enough energy to power more than 200,000 homes and helping Iowa meet its own goal of generating 105 megawatts of its electricity from renewable energy sources.
- ***Improving Efficiency:*** Using less energy to power our homes, businesses and vehicles is critical to building a clean and secure energy future. President Obama has made essential investments in research and development for energy efficiency advances, and set new standards to make the things we use every day – from cars to microwaves – more efficient.
 - President Obama established the toughest fuel economy standards for passenger vehicles in U.S. history. These standards will double the fuel efficiency of our cars and trucks by 2025, saving the average driver more than \$8,000 over the lifetime of a 2025 vehicle and cutting carbon pollution.
 - Since October 2009, the Department of Energy and the Department of Housing and Urban Development have jointly completed energy upgrades nearly two million

homes across the country, saving many families more than \$400 on their heating and cooling bills in the first year alone.

- As part of the President's Better Buildings Challenge, the state of Iowa committed to reducing energy intensity 20 percent by 2020 in 22 million square feet of buildings.

For more information about the third U.S. National Climate Assessment, please visit www.globalchange.gov or contact engagement@usgcrp.gov.

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