



A Vision for Iowa's Future in Facing Climate Change

Climate change poses an existential threat to life on this planet. The 2021 report by the United Nations Intergovernmental Panel on Climate Change issued a "code red" for the planet if we do not act to reduce the levels of greenhouse gases emitted into the atmosphere¹. As a state and a nation, we need to implement policies that encourage the reduction of carbon dioxide and methane emissions, not merely continuing business-as-usual.

Iowans must aggressively reduce the emissions of greenhouse gases and must begin planning adaptation and mitigation strategies to protect all Iowans, businesses, and our agricultural economy. As we look to Iowa's future, relating to climate change must be among our key priorities. Iowans are already dealing with changing weather patterns caused by climate change. Addressing climate change will require government action, as well as actions from businesses and individuals.

Our responses will involve a combination of mitigation, adaptation, and coping and enduring.

- Mitigation involves strategies, processes, and technologies that reduce greenhouse gases. These can include moving to new technologies such as using wind and solar energy to generate electricity, driving more fuel-efficient vehicles, and implementing energy efficiency and conservation practices to reduce energy use.
- Adaptation involves improving infrastructure, more sustainably managing water and other resources, modifying agriculture processes, and improving emergency responses. It includes more robustly building structures to better withstand storms, moving structures out of areas prone to increased flooding, changing when crops are planted to better take advantage of the weather, and shifting to seed varieties that are more capable of maturing in the climate where they are being planted.
- Coping and enduring will include dealing with more severe weather and the suffering that occurs with extreme weather. Unrestricted dumping of carbon dioxide into the atmosphere is not free; it costs taxpayers in recovering from storm damage.

Strategies to Plan for the Future

It should be a goal for Iowa's state government to reduce the impact of factors associated with climate change. Iowa's future depends on adapting to the changes brought about by climate change. As climate change brings changing weather patterns, the state's infrastructure must be protected, homes and businesses must be protected, and Iowa's agriculture industry must adapt.

¹ Climate Change 2021, Sixth Assessment Report, Intergovernmental Panel on Climate Change, August, 2021,

See Associated Press, "Code red for humanity", *Cedar Rapids Gazette*, August 10, 2021

Also see Perry Beeman, "Iowa scientists: Latest UN climate change report means Iowa politicians must act to avert 'crisis'", *Iowa Capital Dispatch*, August 9, 2021

In light of this, there is no single individual in state government who has been charged with planning for the response to climate change. Although there are efforts within some departments of state government to consider climate change and its effects, other departments are oblivious to the need to proactively plan for the future. In fact, in 2019, members of the Iowa House turned down an effort to have the state climatologist “convene task forces to study the effects of evolving atmospheric conditions and weather patterns on agriculture and make recommendations to the governor and general assembly regarding how the state can prevent, mitigate, and adapt to their associated risks and impacts”²

- The state could engage in this effort by creating a new positions for a climate mitigation and adaptation trustee.
- The second position is for an advocate for future generations, environmental quality, public health, and climate which would be housed in the Attorney General’s office, similar to the Office of the Consumer Advocate.
- The Iowa Department of Agriculture and Land Stewardship (IDALS) should develop an Agriculture Climate Adaptation Plan. IDALS is at the forefront of establishing agriculture policies for the state. IDALS also provides technical assistance to farmers across the state.

Strategies to Reduce Carbon Dioxide Emissions in the Energy Sector

We need to end the use of fossil fuels, not extend the use of fossil fuels.

- That means an energy policy to rapidly transition to wind, solar, battery storage, plus energy efficiency and conservation. Iowa utility companies need to continue building solar farms. At the same time, homeowners, businesses, and industries need to be able to install solar panels on their homes and businesses.
- It means moving our transportation vehicles to electric vehicles.
- The Iowa Department of Agriculture and Land Stewardship needs to develop a plan for a future of farming if the hopes of the ethanol industry are dashed. It won’t be just the ethanol industry that declines; it will be the farmers producing the corn for the ethanol industry. Nobody wants to see the farmers suffer. So what should we, as a state, be doing to provide contingencies in the event that demand for ethanol continues its decline?
- Changes in state law should be made to allow the expansion of community solar and distributed generation.

Strategies to Deal with Carbon in the Agriculture Sector

Agriculture is in a unique position with respect to climate change. Agriculture activities emit carbon, but agricultural techniques can be a solution to reducing carbon, particularly in restoring carbon to our soils. If we get the solutions in restoring soil health correct, we can solve a lot of other problems including reducing nutrients in our water bodies, protecting crops during droughts, preventing soil erosion, and sequestering carbon, all the while ensuring farmers can earn a living from their farming operation.

- Research should be funded to develop and evaluate measurement tools that determine how much carbon is in soils. A tool similar to the corn suitability rating would be helpful for comparing farmland and determining beneficial carbon sequestration efforts.

² See amendment H1218 to bill HF750. The amendment failed with 51 Republicans opposing the amendment, and 46 Democrats and 1 Republican favoring the amendment.

- Among the farming techniques that sequester carbon are
 - Soil cover at all times (soil armor) – Soil cover prevents wind and water erosion. It reduces soil evaporation rates which means that more water is available for plants. Soil cover helps reduce weeds.
 - Minimizing physical, chemical, and biological disturbance of the soil – Tillage removes the pore spaces between soil particles, which reduces the infiltration of water, destroys the soil structure, and leads to compaction. Chemicals - herbicides, pesticides, fungicides - can destroy the beneficial web of microbes in the soil. Biological disturbance, such as overgrazing, can reduce soil cover, can cause compaction, and can reduce soil nutrients.
 - Living roots in the soil at all times – Living plants hold carbon in the soil and reduce erosion.
 - Plant diversity – Crop rotations, including small grains and hay, improve the soil microbes, increase the soil fertility, and reduce pests.
 - Integrating animals – Managed livestock help reduce weeds and provide natural fertilizer to the land.
 - Taking fragile land out of production and re-wilding it by planting native prairie and trees
- Restoring funding to the Leopold Center so it can continue its basic research into visionary farming techniques, promoting beginning farmer's access to farming, advocating for sustainable farming, and demonstrating the value of farming crops beyond soy, corn, and confined animals.
- By implementing the nutrient reduction strategy, a number of the solutions will have benefits on carbon sequestration and reduction of carbon dioxide and its equivalents released by farming practices.

Iowans Are Already Dealing with Climate Change

Reports on the effects of climate change seem worlds away from us in Iowa. Yet, Iowans also are dealing with its effects. Until recently, one could predict certain weather events would happen during certain months of the year. Lately that predictability has been changing. These noticeable changes are part of a pattern called climate change. Here are some of its impacts:³

- Precipitation has increased about 10 percent since the 1940s. More rain falls in the first half of the year, leading to wetter springs and difficulty completing field work. The rain comes in downpours, which leads to greater erosion.
- Stronger storms are occurring.
- Floods are more frequent and more severe. Since 2000, significant floods have occurred in all of Iowa's major rivers. Flooding inundates farm fields and creates extensive damage to creek crossings.
- Stream flows have increased since the 1940s.
- Soils remain closer to saturation points in the spring, which affects the ability to work in the fields.

³ Material is compiled from:

"Iowa Climate Change Adaptation and Resilience Report," 2011, United States Environmental Protection Agency pilot project, pages 17, 41, 42 and 44

"Climate Change Impacts on Iowa, 2010," Iowa Climate Change Impacts Committee, article by Eugene "Gene" S. Tackle titled "Climate Changes in Iowa," January 1, 2011, pages 8 to 13

Gene Tackle Prepared Testimony, Exhibit Sierra Club-GT-1, Iowa Utilities Board, Docket No. HLP-2014-0001, In Re Dakota Access LLC, October 12, 2015

Daniel P. Finney and Yvonne Beasley, "As Iowa winters warm up, gardeners see more options," *The Des Moines Register*, January 26, 2012

- Over the last 30 years, wind speeds have declined.
- Dew-point temperatures are rising, meaning there is more moisture in the air, particularly during the summer.
- Nighttime temperatures are rising more than daytime temperatures and winter temperatures are increasing more than summer temperatures.
- There are five more frost-free days per year since 1950. The growing season has been extended. The US Department of Agriculture even updated its Plant Hardiness Zone Map to reflect Iowa's warmer temperatures.

Addressing Climate Change Makes a Difference

Already Iowans and Iowa businesses are spending their hard-earned money dealing with the changing climate. To avert the ever-intensifying impacts of climate change, we must address solutions and plan for the future. Investing in climate change solutions will bequeath our children and grandchildren a world that is safe, healthy, prosperous, and sustainable. Here are just a few of the benefits Iowans stand to gain:

- New jobs in wind, solar, battery, and energy efficiency manufacturing and installation
- Reducing energy costs by increasing energy efficiency and fuel efficiency
- Greater energy independence by reducing our reliance on fossil fuels
- Improving public health from the reduction of fossil fuel pollutants in our air and water.
- Ensuring that agriculture is a key part of Iowa's economy now and in the future.

At the same time taxpayers want to know that their taxes are funding solutions that make a difference, that protect the public health and welfare, and are not wasted.

There Is Plenty of Good News Right Here In Iowa

- Iowa is a national leader in wind energy production.
- The wind industry in Iowa has generated millions of dollars in tax revenues for use by schools, colleges, roads, and county services. It supports thousands of jobs throughout the manufacturing and installation sectors and provides much-needed lease payments for Iowa farmers.
- Iowa's solar capacity is growing rapidly.
- Cities and counties across the state are developing extensive energy plans that will both benefit taxpayers and combat climate change.
- Growing numbers of Iowa farmers, businesses, and homeowners are installing their own solar and wind projects and reaping substantial financial rewards.

All of these are a win for Iowans. That is why we need to continue planning for our future.