

Climate Change and Future Nebraska Water Challenges

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Climate change is projected to make Nebraska hotter and stormier. Below is a partial transcript of a recent podcast on this subject with Dave Aiken, professor and water and agricultural law specialist in the University of Nebraska-Lincoln's Department of Agricultural Economics.

So we are going to see some big changes in Nebraska as climate change proceeds. Yes, temperatures are expected to rise, storms are expected to be more intense, and water use is expected to increase.

What will temperature change look like? Currently the number of days over 100 degrees range from 2-5 days per year in Omaha, Lincoln, Grand Island and Scottsbluff to 11 days in McCook. In the high-emission, business as usual scenario those very hot days are expected to increase by 2040 or so to 24-27 days per year in eastern Nebraska to 33-36 days per year in western Nebraska.

That sounds pretty hot. Yes, and it means running air conditioners a lot more and pumping up to 50% or more ground water for irrigation, as occurred during the 2012 drought.

What would happen with that much ground water irrigation pumping? It could create at least temporary water shortages, especially for neighboring farmstead or livestock wells. As this becomes a more frequent occurrence, it could lead to declining water tables in some irrigated areas in Nebraska.

What would that mean to other ground water users? Both farmsteads and rural communities could need some backup or supplemental water supplies to get them through the heavy irrigation well pumping season.

What could that look like? For farmsteads, rain barrels can be used to collect runoff from building down spouts for lawn and garden watering. A traditional farmstead backup supply would be a larger water tank that can be filled with water before the heavy irrigation season pumping starts. More sophisticated (and expensive) rainwater capture systems can be used to capture and treat rain water runoff from buildings for household water supply.

How about for rural communities? In irrigated areas, purchasing water or a well from an irrigator is always an option. Where ground water supplies are more limited, a community can explore rainwater capture options. In extreme situations, communities in California, Texas, Florida and other states have used highly treated municipal wastewater to recharge municipal wellfields or as a supplemental drinking water supply.

What about rainfall? Warmer air holds more water. This means that as average temperatures rise, storms become more severe. One way to reduce the erosion and flooding risks posed by heavier spring storms is

to install more riparian vegetative buffers to slow storm runoff. Over time roads, bridges and culverts may need to be raised and resized to deal with heavier stormwater flows.

*This material is based on the invited essay, "[Climate Change and Water Management Challenges Facing the Great Plains](#)," by Dave Aiken and Katie Nieland, published in *Great Plains Research*, Volume 30, Number 2, Fall 2020 by the University of Nebraska Press.*

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