

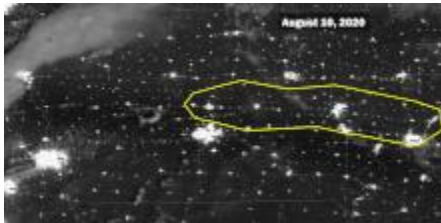
August 2020 Midwest derecho

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Impact and damage

Overview

In its October 2020 review, [NOAA](#) updated its database of billion-dollar disasters to include this event (along with other disasters from the summer season) with preliminary estimated damages averaging 7.5 billion dollars (± 2.8 billion dollars at 90 percent [confidence](#)).^{[20][3]} As of October 2020, it is the most costly thunderstorm in US history.^[3] As of November 2020, the financial toll of this storm is second-highest for a 2020 U.S. natural disaster, surpassed only by [Hurricane Laura](#)'s preliminary damage figure of 14.1 billion.^{[4][21]}



Infrared satellite imagery from [VIIRS](#) on NASA's [Suomi NPP](#) satellite animated before and the days after the derecho showing widespread power outages.

Utilities and telecommunications disruption

Utility disruption and infrastructure damage occurred in much of the storm's path.^{[22][23]} Early estimates showed more than a million customers without power.^{[24][25]} Between August 10 and 13, 1.9 million customers were affected by 1.4 million maximum simultaneous outages—759,000 in Illinois, 585,000 in Iowa, 283,000 in Indiana, and 345,000 in other states.^{[5][26]}

Three days after the derecho, over 100,000 customers in Illinois, and 200,000 in Iowa, remained without power.^[22] The damage in that area was so extensive that [Mid-American Energy](#) sent [linemen](#) to competing utility [Alliant Energy](#) to assist.^[27] By August 23, Alliant announced that power had been restored to 99 percent of their affected customers.^[28] [Mediacom](#), a telecommunications company, reported 340,000 customers [lost Internet access](#) in the affected states.^{[29][30]}



A damaged farmhouse in [Vinton, Iowa](#) partially-covered by a mangled piece of silo sidewall on August 11, 2020.

Property damage

The storm's winds caused wide-scale damage to plants, particularly trees, snapping large limbs, ripping off branches, and even felling or uprooting whole trees, often damaging houses and vehicles, as well as electrical and telecommunications infrastructure.^{[29][13]} Houses sustained significant damage to roofs, windows, and siding.^[31] Commercial and industrial property also sustained major structural damage from the storm.^{[32][33]} Large vehicles (such as [semi-trailer trucks](#) and [recreational vehicles](#)) as well as [mobile homes](#) were blown over, sent flying, or destroyed.^{[29][23][13]} Terry Dusky, [chief executive officer](#) of electrical infrastructure company ITC Midwest, described the storm damage as "...equivalent of a 40-mile wide tornado that rolled over 100 miles of the state."^[34]



Animated [satellite imagery](#) taken from the [MODIS](#) aboard NASA's [Terra](#) satellite showing widespread agricultural and foliage damage resulting from the derecho.

Agricultural damage



Storm reports from the National Weather Service layered over the United States Department of Agriculture's corn production area maps.

Farmers in Iowa, a major agricultural state and top [corn](#) producer in the US, found their crops had been flattened and agricultural infrastructure such as silos, grain bins and grain elevators imploded by the storm.^{[29][35]} The crop damage was visible in satellite imagery, which the [USDA](#) called impressive.^{[35][7][36]} NASA researchers are assisting in satellite image analysis of derecho crop damage.^[37]

The USDA's [Risk Management Agency](#) reported that 57 of Iowa's 99 counties, with 14 million acres (56,700 km²) of crops, had been in the derecho's path.^{[19][38]} This is almost 66 percent of the 21.3 million acres (86,200 km²) of corn and [soybeans](#) planted in 2020, or 45 percent of the state's total 30.6 million acres (124,000 km²) of [arable land](#).^[29] Damage was particularly heavy in 36 of those 57 counties, accounting for a total of 3.57 million acres (14,400 km²) of corn and 2.5 million acres (10,100 km²) of soybeans, which combined account for 20 percent of Iowa's cropland.^{[31][35][38]}

[Iowa Secretary of Agriculture Mike Naig](#) said, on August 14, that the storm was a "devastating blow" to the Iowa agricultural industry, especially since it took place mere weeks before the beginning of the seasonal harvest.^[38] On August 19, he said the storm destroyed an estimated 100 million US bushels (3.52 million cubic metres) worth of grain storage and processing infrastructure as well.^[39]

The average projected yield for the state was nearly halved, from 202 US bushels per acre (1,760 m³/km²) to 100–150 US bushels per acre (871–1,310 m³/km²).^[40] Prescient Weather CEO Jan Dutton estimated that 180–270 million US bushels (6.34–9.51 million cubic metres) had been destroyed or degraded, a small portion of the tens of billions of bushels the US produces annually.^[35] Arlan Suderman, chief commodities economist for StoneX, estimated the damage to Iowa crops to be 200–400 million US bushels (7.05–14.1 million cubic metres).^[41]

The agricultural damage of the derecho has been compounded by a concurrent [drought](#) affecting 31 counties. Farmers preferred drought to wet conditions in the wake of the derecho damage, as wet conditions would induce rot and make it harder to harvest the flattened crops.^{[42][43]}

Confirmed fatalities

In [Fort Wayne, Indiana](#), a woman was killed when high winds tipped over her mobile home.^[44] [Poweshiek County, Iowa](#), Emergency Management confirmed the deaths of two: a [Malcom](#) woman in her 40s killed when a tree fell on her porch and a [Brooklyn](#) man in his 40s, a city employee and [electrician](#), killed by electrocution from a downed power line he was attempting to repair.^[34] The [Linn County](#) Sheriff's Office confirmed a 63-year-old man died from a falling tree while biking.^[45]

Nebraska

In eastern Nebraska near [Tekamah](#) and [Fremont](#), some of earliest storm damage occurred. The National Weather Service issued a warning at 8:45 a.m., with [Omaha](#) reporting its first damage just eight minutes later. Winds reached 67 mph (108 km/h; 30.0 m/s), tree damage was significant, downed limbs blocked some roads. At least one person was injured.^[46] In [Omaha](#), the state's largest city, over 50,000 were left without power, a couple thousand remained so for two or three days.^{[31][46][47]}



Cornfield near [Roland, Iowa](#), flattened by derecho winds

Iowa

The Iowa Governor's office estimated on August 16 that the storm severely damaged or destroyed over 8,000 homes and caused \$23.6 million in damage to public infrastructure. The cost of cleaning up debris from the storm is estimated at \$21.6 million.^[48] Several major roads in Iowa City were closed due to storm debris, including [Interstate 380](#) between Iowa City and Cedar Rapids.^[49] Four state parks were closed through the end of August for cleanup,^[50] as of December 2020, all had reopened except Palisades-Kepler State Park, which has been closed indefinitely due to storm damage.^[51] Emma Hanigan, an [urban forester](#) for the [Iowa Department of Natural Resources](#), said that the impacts on trees will be felt for decades.^[3]

Affected towns and cities advised residents not to travel due to damage. City-wide and county-wide [states of emergency](#) were declared.^[52] On August 13, Iowa Governor [Kim Reynolds](#) issued a state-level disaster proclamation for 23 of [Iowa's counties](#),^[22] which expanded to 27 counties on August 14.^[53] On August 17, President Trump partially approved Gov. Reynolds' request for a federal disaster declaration.^[54] An amended declaration for Individual Assistance was approved by the White House for [Linn County, Iowa](#) alone on August 20, then expanded to 10 counties on September 1 along with concurrent natural disaster declarations from the United States Department of Agriculture on September 3.^{[55][56][57][58]} On September 10, Gov. Reynolds extended the disaster proclamation for aforementioned Iowa counties.^[59] On September 11, it

was announced FEMA added seven additional Iowa counties (for a total of 23) to the August 17 federal disaster declaration, as well as the [Sac and Fox Tribe of the Mississippi in Iowa](#).^[60]



[WMT \(AM\)](#) radio tower north of [Marion, Iowa](#) estimated by the National Weather Service to have been downed by 130 mph (210 km/h; 58 m/s) winds.^[2]

Cedar Rapids area

[Cedar Rapids, Iowa](#), the [Linn County seat](#), was one of the hardest hit areas of the storm.^{[14][8][9]} [Adjutant General](#) Benjamin Corell, Commander of the [Iowa National Guard](#), compared the extent of the damage with what he personally witnessed after [Hurricane Katrina](#).^[61] Cedar Rapids city officials described the damage as being worse than the [2008 flood](#).^[14] Local hospitals, running on backup power, saw hundreds of injuries due to the storm.^[62] The widespread debris, downed electrical lines, and gas leaks led to a curfew through August 24.^{[62][63]} Cedar Rapids Director of Public Works Jen Winter said months of cleanup lay ahead for the city.^[64]

Utility damage and outages



Trees torn to pieces by the derecho in [Cedar Rapids, Iowa](#).

After the storm, Linn County peaked at over 95 percent power loss to residents due to [infrastructure](#) damage, with Cedar Rapids experiencing a maximum 98 percent power loss.^{[14][29][65]} Thousands of electrical poles and miles of wire were downed; many residential [gas](#) connections were also broken.^[8] [Radio masts and towers](#) were damaged or destroyed, causing radio outages and dysfunctional mobile phone service.^[8]

On August 12, [Mediacom](#) said 57,000 modems were offline across eastern Iowa, most of them in the Cedar Rapids area; two days later, nearly 10,000 of those customers were still without

service.^{[62][66]} On August 14, a hundred engineering and support personnel of the [Iowa National Guard](#) were activated to assist the region. A week after the storm, 75,000 Iowans, most of them in Linn County, still lacked electricity.^{[67][68]} On August 19, the Linn County [Rural Electric Cooperative](#) announced 99 percent power restoration to its customers.^[69]

Property damage



Heavy damage to Wiley Plaza in southwest [Cedar Rapids, Iowa](#) on August 19.

Almost every structure within the 75 square miles (190 km²) Cedar Rapids city limits, including residences, 20 schools, and businesses, were damaged in some way, much of it severe, some of it catastrophic.^{[12][9][65][62]}

Hundreds of thousands of trees, of which Cedar Rapids was known for, were severely damaged or felled by the storm with both Cedar Rapids and nearby [Marion](#) estimated to have lost half or more of their tree canopy from the storm;^[15] professional [arborists](#) and state [foresters](#) urged residents to seek professional help for their tree damage, saying it could take months to clean up.^{[62][70]} Many local businesses were forced to close, some indefinitely due to damage.^{[8][9]} Most of the city's roads became impassible due to storm debris.^{[14][8][9]} Without electrical refrigeration, [food spoiled](#) en masse while trash and recycling pickup has been halted until August 31 due to impassable streets causing bags of rotting trash to line curbsides, subjecting them to [scavengers](#).^{[9][62][63]}

Official metrics on damage and cleanup

In a preliminary evaluation four days after the storm, the Cedar Rapids fire department declared over a thousand residences unsafe to occupy; in addition, 300 had non-structural damage and over 200 cosmetic damage. By August 23, that count had shrunk to 140, with many more buildings being added to the non-structural damage category.^{[71][72]}

By September 4, utility workers had installed over 3,400 new poles along with 400 mi (640 km; 640,000 m) of wiring in the Cedar Rapids area after repairing most of the main electrical infrastructure in the city.^[64] As of November 17, 2020, Alliant Energy was still working on restoring [street lights](#) in the area, many still hampered by debris or broken trees.^[73]

On November 9, Dr. Melanie Giesler, a local physician, said increased allergies in the area were likely due to the derecho damage, spurred on by dust, debris, and mold growing on dead plant matter.^[74]

Debris collection and tree removals

On August 21, [Marion](#) city officials announced 98 percent of its streets were cleared and over 7,000 truckloads of debris had been removed.^[175] A month after the storm, Cedar Rapids had completed the first pass of storm debris collection on only 37.5 percent of its streets.^[163] By September 28, the city had removed 53,598 truckloads of debris for an approximate total of 230,000 short tons (210,000 t).^[176]

As of November 24, cleanup was ongoing with the city currently working on the final public collection of non-organic debris. Collection of organic/tree debris is continuing indefinitely with the city having removed 2.8 million cubic yards (2.1 million cubic metres) of organic debris to date; the trimming of damaged tree limbs in the public [right of way](#) is 73 percent complete.^[171]

On December 3, Taylor Burgin, Cedar Rapids's construction engineering manager, said that city crews and contractors are beginning a thorough cleanup of city parks — this is expected to add an estimated 1.5 million cubic yards (1.1 million cubic metres) to city removal metrics. Burgin also noted the city has removed around 2,000 trees, but needed at least 10,000 more to complete citywide cleanup.^[177]

Des Moines metropolitan area

In the [Des Moines metropolitan area](#), over 132,000 customer experienced outages, according to MidAmerican.^{[113][78][79]} The city said on August 21 that cleanup was slower than desired, estimating that damage cleanup could take up to six weeks. It planned to lease equipment from contractors to accelerate cleanup.^[150]

The city of [Ankeny](#) estimated it would take four to six weeks to fully clean up debris.^[180] A [Hy-Vee](#) grocery store there was found by the [Iowa Department of Natural Resources](#) to have [illegally dumped](#) 800 US gallons (3,000 L) of spoiled milk into [storm sewers](#), contaminating a local waterway. The company assisted the state in cleanup efforts, blaming misinformed employees.^[181] [Buccaneer Arena](#), home ice of the [Des Moines Buccaneers](#) minor-league hockey team, sustained significant roof damage.^{[123][113]}

Marshalltown

[Marshalltown](#) suffered extensive property damage. Over a hundred cars parked near a factory had their windows blown out. Reports described 99 miles per hour (160 kilometers per hour; 44 meters per second) winds, roofs being ripped off, and loose wood debris embedded in the sides of buildings.^{[23][82][83]} One week after the storm, nearly 7,000 residents of the city were still waiting for power restoration; 99 percent restoration was achieved on Aug 23.^{[28][84]} The damage to public parks in the city and surrounding [Marshall County](#) was "extensive", particularly to trees.^[185]

Damage metrics released on September 1 showed nearly 2,800 buildings were damaged or destroyed in the storm, more than the [2018 EF3 tornado](#) which hit the city.^[186] City cleanup for the derecho is estimated around \$4 million, of which [FEMA](#) and the Iowa Homeland Security

and Emergency Management will assist for reimbursement.^[87] By August 20, the city had hauled away 66,000 cubic yards (50,000 m³) of debris, almost triple the amount of the 2018 tornado.^[88] By late October, Justin Nickel, the city's public works director, said debris collection and cleanup were nearly complete for the city.^[87]

Marshalltown Veteran's Memorial Coliseum, a historic city sports venue, is reopening soon as of November 30, 2020 after being severely damaged by the 2018 tornado and later impacted by the derecho.^[89] As of December 8, 2020, Riverside Cemetery, a century-old burial site located in the city, remains littered with debris as the city struggles to raise money for its care.^[90]



Phone pole that was knocked down in [Midlothian, Illinois](#)

Illinois

Across the state of Illinois, high winds and fifteen weak tornadoes, the majority of the derecho's tornadoes (see [§ Confirmed tornadoes](#)), caused variable damage to buildings, trees, and vehicles.^[6] Officials reported a dozen individuals directly injured by the storm across the state.^[6] A month after the storm, Chicago was still cleaning up storm damaged areas. In city parks, over 500 trees were felled. The city fielded over 12,000 emergency calls regarding trees in the city after the storm hit.^[91]^[needs update]

Responses and criticism

In the week after the storm, Iowa elected officials such as US Senators [Chuck Grassley](#) and [Joni Ernst](#), US Representative [Abby Finkenauer](#), and Governor [Kim Reynolds](#) called for and worked to secure a federal disaster declaration from President Donald Trump.^[12] The declaration was formally requested by Reynolds on August 16 for nearly \$4 billion in federal aid.^[48]

The following day, Trump announced he had partially approved Reynolds's request, but did not approve the requested FEMA Individual Assistance Program, which Reynolds's office says "provides disaster-impacted homeowners and businesses with programs and services to maximize recovery, including assistance with housing, personal property replacement, medical expenses and legal services".^[54]^[48]^[92] An amended declaration to include Individual Assistance worked its way through Washington, according to Reynolds. The White House approved it for Linn County on August 20.^[55]^[56]

On September 1, the governor's Office announced the addition of 10 counties^[VI] approved for FEMA Individual Assistance.^[57] On September 3, [US Secretary of Agriculture Sonny Perdue](#)

declared natural disasters in eighteen^[57], opening up [Farm Service Agency](#) and other [USDA](#) disaster relief programs.^[58] On September 11, it was announced FEMA added seven^[59] Iowa counties to the August 17 federal disaster declaration increasing the total counties to 23^[60], allowing for Public Assistance Program use in those counties; a separate declaration was declared for the [Sac and Fox Tribe of the Mississippi in Iowa](#) as well.^[61]

Official visits



President Donald Trump receiving a briefing on [Iowa](#) disaster recovery, August 18, 2020

On August 13, [Vice President Mike Pence](#) held two campaign rallies in Iowa. He promised to help Iowa rebuild, but did not tour areas damaged by the storm.^[61]

On August 14, Reynolds arrived in Cedar Rapids, Iowa with more than 100 [Iowa National Guard](#) members, activated to help repair the damage.^[61]

On August 15, Finkenauer toured damage in Marshalltown.^[93]

On August 17, [Pete Gaynor](#), Administrator of [FEMA](#), traveled to Iowa to meet with Governor Reynolds about the disaster.^[94]

On August 18, Trump arrived at midday in Cedar Rapids, joining a private meeting with Iowa senators Grassley, Ernst and Cedar Rapids Mayor [Brad Hart](#). At the meeting, Hart begged Trump to approve the Individual Assistance Program. Trump remained at the airport and did not interact with the public, tour damage, or assist in recovery efforts during his visit.^{[92][95][96]}

On August 19, Naig met with farmers in Marion to personally assess the damage. Ernst toured damaged in Marshalltown.^{[39][97]}

On September 2, Grassley and Ernst fielded questions from Cedar Rapids-area non-profit organizations.^[98]

On September 3, [US Secretary of Agriculture Sonny Perdue](#) underwent an Iowa National Guard-hosted aerial tour of crop damage in Iowa along with Reynolds, Ernst, and Naig.^{[58][99]}

Local, non-government, or individual assistance efforts

On August 14, the city of Cedar Rapids set up five resource centers to distribute basic necessities to the public.^[100] These centers were later shut down on August 31.^[63] Many local businesses,^[101] private individuals,^[92] religious groups,^{[102][103][104]} and non-profit organizations,^[105] such as Cedar Valley [Black Lives Matter](#),^[9] [The Salvation Army](#) and [Tyson Foods](#),^[106] and [United Way](#),^[107] raised money online or provided relief efforts on their own, distributing food, fuel, toiletries, or assisting in debris removal.^{[92][108]}

[Mid-American Energy](#), one of Iowa's two major electric utilities, gave away bagged ice in Cedar Rapids on August 20–21.^[109] [Operation BBQ Relief](#), a disaster relief agency specializing in [barbecue](#), deployed to Cedar Rapids starting August 16, providing over 45,000 meals to residents as of August 21, earning praise from politicians.^[110] Local non-profits told Iowa's senators that assisting the region has been difficult due to the [COVID-19 pandemic](#) significantly reducing their donations and funding.^[98] On November 14, a large replanting campaign was announced that would begin in the spring of 2021.^[16]

Possible impact of climate change

Further information: [Physical impacts of climate change § Effects on weather](#)

The severity of the storm raised the question of whether [climate change](#) intensified it.^[120] A variety of climate experts from Georgia Tech, Colorado University, North Carolina State, and other institutions told the [Associated Press](#), in the wake of the derecho, [2020 wildfire season](#), and [2020 Atlantic hurricane season](#), that more intense natural disasters like these are consistent with climate change.^[120]

Climate change is a possible cause of the intensity of derechos overall, said [Iowa State University](#) and [National Weather Service \(Des Moines\)](#) scientists; experts disagreed if it was responsible for this particular storm. The NWS said it was atypical for such a severe storm to not appear in the previous day's weather models. Additionally, NWS research into derechos indicate weather patterns in the region to be shifting towards the poles, which might be a result of climate change.^{[121][122]} **The high damage estimate aligns with analysis showing increases in the costs of natural disasters due as a result of climate change-driven storm intensity.**^{[3][123]}