

Climate change raises new risk: Are inland bridges too low?

June 6 2017, by Scott Mcfetridge



In this April 18, 2017, photo, the Red Bridge pedestrian bridge is seen over the Des Moines River in Des Moines, Iowa. A little more than a decade after it was restored, crews went back to the site with a crane to hoist the span more than 4 feet higher, at a cost of \$3 million, after experts concluded that the river's flooding risk was double the previous estimates. (AP Photo/Charlie Neibergall)

A century-old train trestle stands as one of the trophies of Des Moines' push to spruce up its downtown. Bicyclists and pedestrians pose for

pictures beside the brightly painted beams of the Red Bridge and gather on viewing platforms overlooking the Des Moines River.

But little more than a decade after it was restored, crews went back to the site with a crane to hoist the span 4½ feet (1.4 meters) higher, at a cost of \$3 million, after experts concluded that the river's flooding risk was nearly double earlier estimates. Climate change was likely to blame.

"It was like a bomb was dropped off in our lap," City Engineer Pam Cooksey said of the revised flood forecasts from the Army Corps of Engineers. The findings suggested that the bridge could act as a dam during bad storms, sending waves of backed-up floodwater into the refurbished business district.

Climate change is often seen as posing the greatest risk to coastal areas. But the nation's inland cities face perils of their own, including more intense storms and more frequent flooding. Even as President Donald Trump has announced his intention for the U.S. to withdraw from a global climate agreement, many of the nation's river communities are responding to climate change by raising or replacing bridges that suddenly seem too low to stay safely above water.



This April 17, 2017, photo shows the construction of the new Park Road Bridge in Iowa City, Iowa. After routine flooding in recent years, the city has started a \$40 million project to raise Dubuque Street and the bridge, which takes traffic over the Iowa River near the University of Iowa campus. (AP Photo/Ryan J. Foley)

The reconstructed bridges range from multi-lane structures that handle heavy traffic loads to small rural spans traversed by country school buses and farmers shuttling between their fields. The bridges are being raised even in states such as Texas, where political leaders have long questioned whether climate change is real.

In Milwaukee, bridges have been raised as part of \$400 million in flood-management projects across a metro area with 28 communities. In Reno, Nevada, officials spent about \$18 million to replace a bridge over the

Truckee River last year and plan to replace three more after flood-danger projections were increased by up to 15 percent.

Because the cities are inland, "A lot of these are not the kind of places that people are used to thinking of being in the forefront of climate change," said Jim Schwab, manager of the Hazards Planning Center at the American Planning Association, which is working with nearly a dozen cities on flood-mitigation options.

Many communities are "still feeling their way through this particular problem," he said.



In this Jan. 4, 2017, file photo, traffic crosses the Virginia Street bridge in downtown Reno, Nev., above the rising waters of the Truckee River, where a flash flood watch was in effect. The bridge built last year replaced a century-old one where logjams were blamed for intensifying flooding that caused hundreds of millions of dollars of damage in January 1997. (AP Photo/Scott Sonner, File)

No one tracks how many communities are raising bridges or replacing them with higher ones, but the Federal Emergency Management Agency says it's now routinely providing money for this purpose, although no dollar total is available. Typically, more than 1,500 bridges are reconstructed each year for an assortment of reasons.

Schwab said he's sure hundreds and possibly thousands of bridge-raising projects have been completed recently or are planned. A cursory check by the AP in a handful of states found at least 20 locations where bridges have been raised or construction will begin soon.

FEMA is now finalizing a rule that states that floods "are expected to be more frequent and more severe over the next century due in part to the projected effects of climate change." That could mean higher costs for a country that sustained more than \$260 billion in flood damage between 1980 and 2013.

Given the Trump administration's skepticism of climate change, however, a FEMA spokeswoman says the agency "has not determined what its next action will be" on the rule. The Corps of Engineers did not respond to requests for information on cities where flood risks have been reassessed.



In this March 28, 2017, photo, the Red Bridge pedestrian bridge is seen over the Des Moines River in Des Moines, Iowa. A little more than a decade after it was restored, crews went back to the site with a crane to hoist the span more than 4 feet higher, at a cost of \$3 million, after experts concluded that the river's flooding risk was double the previous estimates. (AP Photo/Charlie Neibergall)

Increasing humidity from the more than 1.5 degree increase in global temperatures since 1880 has resulted in more intense downpours, according to David R. Easterling, director of the national climate assessment unit at the National Oceanic and Atmospheric Administration.

"It causes day after day of rainfall, and that leads to flooding," Easterling said.

In some cases, a city's 100-year flood could be seen as twice what it was 40 years ago, with double the risk, as it was for Des Moines. A 100-year

flood is the worst flood that can be expected to happen over a century. It has a 1 percent chance of occurring in any given year.

River level forecasts have increased in Cedar Rapids, Iowa, since tropic-like rainstorms in 2008 caused the normally placid Cedar River to climb higher than anyone thought possible, eventually topping the previous record flood by 11 feet (3.4 meters). More than 1,100 blocks in Iowa's second-largest city wound up underwater.



This April 6, 2017 photo shows Milwaukee's South Sixth Street Bridge over the Kinnickinnic River. The Milwaukee Metropolitan Sewerage District raised the bridge to prevent the waterway from backing up amid downpours. It's a technique cities nationwide are using as officials prepare for more intense rainstorms resulting from a warming climate. (AP Photo/Ivan Moreno)

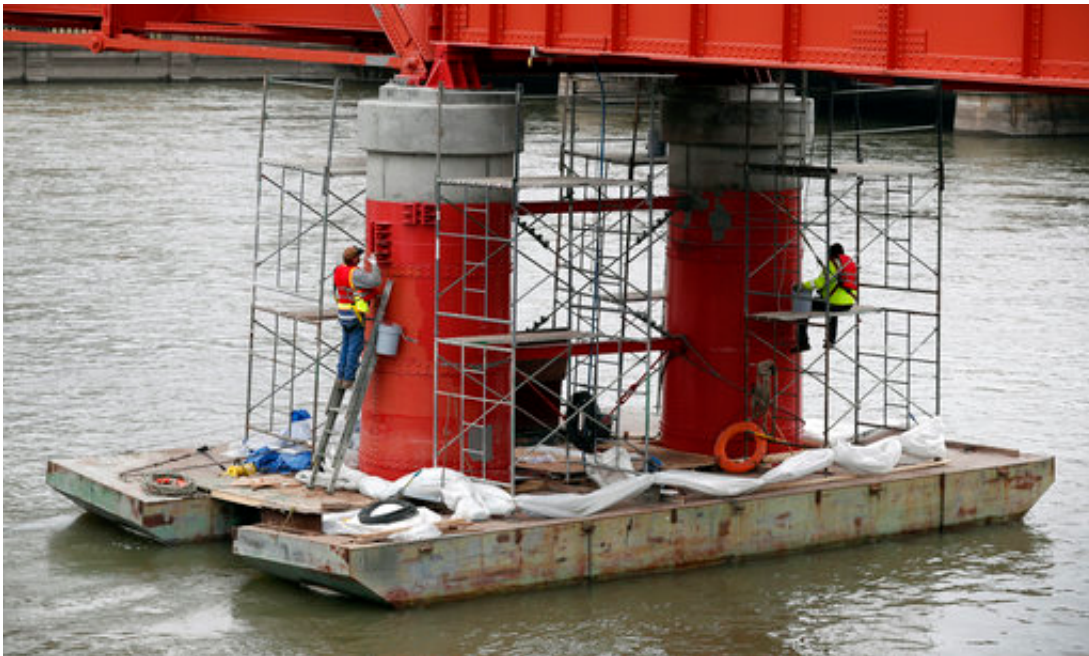
Afterward, the Corps of Engineers raised Cedar Rapids' projections for

a 100-year flood by 8 percent. As part of a massive flood-control project, the city decided to raise its Eighth Avenue Bridge by 14 feet (4.3 meters), putting it 28 feet (8.6 meters) above the average water surface.

"What used to be the norm is no longer the norm," said Rob Davis, the city's flood-control program manager. "The norm is much higher."

Elsewhere, the college town of Iowa City plans to add about 5 feet (1.5 meters) of clearance with a new bridge over the Iowa River, and the Milwaukee Metropolitan Sewerage District raised a bridge over the Kinnickinnic River to prevent the waterway from backing up amid downpours.

Similar projects are planned in Hobart, Indiana, and Rockford, Illinois, where higher river levels have been projected.



In this March 28, 2017, photo, work is done on a piling on the Red Bridge pedestrian bridge over the Des Moines River in Des Moines, Iowa. A little more

than a decade after it was restored, crews went back to the site with a crane to hoist the span more than 4 feet higher, at a cost of \$3 million, after experts concluded that the river's flooding risk was double the previous estimates. (AP Photo/Charlie Neibergall)

The preparations for climate change seem oddly disconnected from the political debate about the issue.

In Texas, where politicians including Sen. Ted Cruz have questioned whether the climate is growing warmer and if humans have caused the change, Austin has raised two bridges in the past five years and plans to improve three more stream crossings, said Pam Kearfott, a supervising engineer in the city's watershed protection department.

Officials "try to stick to the technical basis for change" and ignore the politics, she said.

San Antonio is among other Texas cities that have raised bridges in anticipation of greater dangers.



This April 17, 2017, photo shows the construction of the new Park Road Bridge in Iowa City, Iowa. After routine flooding in recent years, the city has started a \$40 million project to raise Dubuque Street and the bridge, which takes traffic over the Iowa River near the University of Iowa campus. (AP Photo/Ryan J. Foley)

Sterling Burnett, a research fellow at the Heartland Institute, a think tank that promotes skepticism about human-caused climate change, said the new flooding predictions and climate outlook could be exaggerated, but he doesn't begrudge local governments for raising bridges and making other preparations.

"They have to work with the data given to them and make decisions," Burnett said.

In the West, small communities in the Ross Valley north of San Francisco anticipate worse seasonal flooding from climate change. They

plan to replace five bridges that are now too low, at a cost of more than \$10 million.

As Cooper Martin, who heads the National League of Cities' Sustainable Cities Institute, puts it, "With the changing climate, cities have to do something."

A look at inland bridges raised because of climate change

The nation's inland cities are raising many bridges in the expectation that climate change will bring more intense storms and more frequent flooding. A look at some of the projects:

BRIDGE: Red Multi-Use Trail Bridge

CITY: Des Moines, Iowa

BUILT: 1891, rehabilitated in 2005 and raised higher in 2016-17

ORIGINAL HEIGHT: Walking surface 29.5 feet above river bed

NEW HEIGHT: Surface raised to 34 feet over river bed

COST: \$3 million

BRIDGE: Eighth Avenue Bridge

CITY: Cedar Rapids, Iowa

BUILT: Removal of bridge built in 1938; new bridge construction to start in 2020

ORIGINAL HEIGHT: 14 feet above Cedar River

NEW HEIGHT: 28 feet

COST: Up to \$30 million

BRIDGE: Sixth Street Bridge

CITY: Milwaukee

BUILT: New bridge completed in 2011 to replace bridge built in 1982.

ORIGINAL HEIGHT: 10 feet above Kinnickinnic River

NEW HEIGHT: 15½ feet above river

COST: \$3 million

BRIDGE: Virginia Street Bridge

CITY: Reno, Nevada

BUILT: New bridge completed in 2016 to replace bridge built in 1905.

ORIGINAL HEIGHT: 12 feet above Truckee River

NEW HEIGHT: 15 feet

COST: \$18 million

BRIDGE: Park Road Bridge

CITY: Iowa City

BUILT: Bridge built in 1959 to be replaced by bridge now under construction. Completion expected in 2018.

ORIGINAL HEIGHT: 9.5 feet over Iowa River

NEW HEIGHT: 15 feet over river

COST: \$13 million

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