

# The storm of the decade

On Feb. 13, Texas began to feel the weight of a colossal snow storm, bigger than any of its kind in the past ten years. After the winds stopped and the skies cleared, the power grid was wrecked — nearly 1.1 million people in Dallas-Fort Worth were left without power. Here's a look at the science behind the storm and the reasons why Texas wasn't ready.

**E**ighth-grader George Hoverman was wrapped up warm and grinding away at his math homework at his desk when he heard a shriek from upstairs.

His sister had noticed a steady drip falling from her ceiling — a frozen pipe had burst.

By the time Hoverman and his family got upstairs with their bright orange five-gallon Home Depot buckets, an ominous balloon-shaped swell was forming in the ceiling.

All of a sudden, water began to pour. Sheetrock, insulation and pieces of ceiling streamed down into the room.

In a flash, the family started moving — George's father searched for the water valve. His sister grabbed her valuables. His mother phoned the neighbors for help.

"When it popped, the room was flooded," Hoverman said. "It was like a two-inch kiddie pool of water."

For the next three hours, neighbors surged in and out of the house, collecting debris in black trash bags and tossing them out of the window onto the grass. A group of guys rolled the dripping-wet carpet up. By the time all

with how the freezing temperatures affected his pipes.

"I work in emergency preparedness for the University of Texas," Kimmel said. "On that Monday after the big snow, we had no power, as many people in Texas didn't, and the university police wanted to get me out of my house to a place where I could work and cover things for them. I have a pretty widespread security system in the house with cameras, and, at about 10:30 on Wednesday night, I was watching my security system and suddenly I saw a lot of water in places there shouldn't be water."

The science behind bursting pipes is fairly straightforward. Environmental science teacher Dan Northcut '81 avoided leaks by 'dripping' his faucets to keep the water moving.

"When water changes state from liquid to solid, it expands by about nine percent," Northcut said. "What will happen is that plastic, PVC or copper pipes will crack — and that's not the scary part. You won't even know they've cracked until the water stops being frozen, which could be days later."

Kimmel says the unusual cold front Texas received was the result of a blast of air from the Arctic.

"It was an interesting event because there were early signs," Kimmel said. "Beginning in late December, we saw some stratospheric warming over the polar regions, which ties into this thing we call the polar vortex. That tells us there's going to be excessively cold air near the ground, the polar regions. The earth operates on this premise of thermal equilibrium — the cold air in the north has to go south and vice versa."

Northcut is also frustrated by how the government handled the situation.

"What people need to understand is that they have those sorts of temperatures in the northern states all the time, and they don't have this type of problem," Northcut said. "It's because they did their due diligence. They winterized all the pipes to the power plants, so they're

able to handle those temperatures that are fairly annual to them."

The power situation in Texas is somewhat controversial. The state has been on an independent power grid from the rest of the country since 1935 when all of the utility companies in the state agreed to not send power out of the state.

"Texas moved to deregulate the power industry 20-something years ago because the people in charge didn't want to have to have federal regulations on our Texas electrical businesses," Northcut said. "Everywhere else in the country, the federal regulations dictate that all these power plants need to be prepared for something like the



**WHEN IT RAINS** Drenched in water leaking from the ceiling, eighth-grader George Hoverman's sister's room sustained significant structural damage after a frozen pipe burst. Luckily, the Hovermans salvaged smaller personal belongings.

snowstorm. Because it'll happen — sooner or later, it will happen."

Another controversy that arose during the storm was an argument around renewable energy versus age-old fossil fuels.

"What's interesting is that renewable energy only accounts for about ten percent of our electricity," Northcut said. "So, all the other 90 percent of our electricity is from coal, natural gas and nuclear plants. When this happened, the first thing our governor did was blame wind energy. That was just completely false."



There was no real question that there would be some bitterly cold air coming in. It came south from Canada, flowed down the slope of the Rockies and came smack-dab into Texas.

**Troy Kimmel**, incident meteorologist

Northcut added that all of the different power producers had trouble with their production. One of the biggest issues stemmed from the pipes.

"The cooling water that's needed for thermo-electric plants was freezing up," Northcut said. "You can't make energy without water, so once those pipes froze up, they had to shut those plants down."

Northcut's biggest concern is that power companies won't learn from the snowstorm. If a major event like this only happens every decade or so, he worries that they might just hope for the best and endanger more lives.

"You hear a lot of disgust for government regulations," Northcut said. "But people have to realize that a certain amount of regulation is necessary for people's safety and health. And comfort. I mean, don't we have street lights? Don't we have speed limits? Human beings are just not terribly good at dealing with greed, and it's too bad because this is a situation where not doing the preparation work cost over 100 people their lives."

**STORY** Austin Williams, Toby Barrett

**PHOTOS** Ekansh Tambe, George Hoverman,

**SLIPPERY SLOPE** Roads throughout Texas became hazardous to drivers after a layer of ice caused tractional complications. Many Texans faced problems with transportation and were stranded.



**SNOWED OUT** At locations around the state, temperatures reached as low as -20 °F. The Dallas-Fort Worth Metroplex received a total of three to five inches of powdered snow.

the valuables were saved, the room looked unsalvageable.

Families all across the state faced difficulties like the Hovermans, some even worse. Power was unreliable and limited. Water had to be boiled.

The state was unprepared — but will that change next time?

**Austin meteorologist** Troy Kimmel doesn't think so.

"The people at the government level, state and local, did not do their jobs," Kimmel said. "That's something that's very apparent to me. When I rebuild, I'm going to have a power generator in my house. I no longer trust the state and local people to be able to supply utilities to me."

Much like Hoverman, Kimmel faced issues



## Discoveries

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### Cuisine

Senior Rohan Khatti talks about his cooking hobby and the science of food.

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### In brief

**GARDEN** Director of Environmental Studies Dan Northcut dug out an area behind the greenhouse as a garden for students.

The garden will be used primarily by the Gardening Club, but the Cultivation Nation also plans to make use of the space in the future.

Northcut plans to grow vegetable and berry plants but also is looking to see what else he can grow over the summer. Since most students do not get as much experience from a garden as they might from a greenhouse, the area could become fruitful for future teaching.

**STEM FESTIVAL** The new schedule for the 2020-21 school year provided students with many academic opportunities to choose from through a wider variety of classes than have ever been offered before.

Next year, however, middle schoolers will still take the required courses offered in previous years before the implementation of the new schedule. One new course has been made available to eighth grade students: engineering 8, a non-departmental elective taught by Makerspace Director Stewart Mayer.