

The costs and causes of downtime



Power outages kill productivity. North American organizations lose \$700 billion per year to downtime, with the U.S. experiencing the bulk of electric outages. In fact, 9 out of 10 large corporations experienced at least one network outage within a year, and 69 percent endured two or more — with some 60 percent of network outages lasting more than an hour.



36,179,833

People affected by outages in 2017



4,735 hours

Combined duration of outages

Downtime in Dollars

The U.S. experiences more electric outages than any other developed nation, and that translates to millions of lost IT dollars for businesses. How much could downtime cost you?



3,526

There were 3,526 total outages across the U.S. in 2017, with an average duration of 81 minutes.



\$8,851

The average total cost per minute of a data center outage has risen to \$8,851, a 38% increase since 2010.¹

That's an average cost per event of \$716,931
Or an average cost per hour of \$531,060

Why the Grid Goes Down

When the lights go out we usually think the power company is to blame. However, unforeseen incidents and accidents often cause grid havoc, and some of them might surprise you. Check out what triggered major outages in 2015.



Weather & trees:
1,159 major outages.

Severe weather is the number one cause of U.S. power outages, costing the economy between \$18 and \$33 billion every year in lost output and wages, spoiled inventory, delayed production and damage to grid infrastructure.² Since 2000, there have been 19 weather-related grid disruption events that affected more than one million customers.³

Planned outages:
224 major outages.



The planned outages that Eaton tracked last year are only part of the story. Power providers perform thousands of minor outages every year to maintain and upgrade equipment, often giving five days' advanced notice to customers. Warnings for rolling blackouts (intentional shutdowns staggered over parts of a region) are often much shorter.



Equipment & human error:
791 major outages.

High voltage faults, cable faults, poorly serviced equipment and human error—a lot can go wrong. Human error aside, aged equipment causes many outages. Much of the U.S. grid was built just after World War II, with minor improvements made since. In fact, the U.S. Department of Energy has built only 668 new miles of interstate transmission lines since 2000.⁴



Overdemand:
7 major outages.

In a connected world, demands placed on the grid push electricity production and transmission to the brink. The U.S. Department of Energy states that growth in peak demand for electricity—driven by population increase, bigger TVs, more air conditioners and more computers—has exceeded transmission growth by almost 25% each year since 1982.⁵



Vehicle accidents:
444 major outages.

There are about 30 utility poles within reach of automobiles on an average mile of public road.⁷ When cars and construction vehicles collide with poles, the result is often unforeseen downtime that lasts hours or even days, impacting large neighborhoods and businesses across hundreds of square miles.



Animals:
173 major outages.

When it comes to the grid, furry woodland creatures are far from cute. The most common short-circuit culprit? The squirrel. Eaton tracked 89 squirrel-related blackouts in 2015, but that's believed to be the tip of the iceberg. The American Public Power Association's "squirrel index" suggests that squirrels cause thousands of power cuts nationwide each year.



Unknown:
693 major outages.

Many outages remain unexplained. While the catalysts for numerous downtime events may never be known, new technologies and threats will play huge roles in future outages.

Cyberattacks—The fastest growing cause of data center outages, American companies suffer 160 successful cyberattacks per week on average.⁶

Drones—Many electricity producers use un-manned flight drones to inspect utility infrastructures to prevent failures before they happen. However, hobbyist drones increasingly collide with power lines to cause outages.

Is your local grid vulnerable to frequent failure? See Eaton's **Blackout Tracker** and explore outage causes and impacts for your region.