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## **Power Outages Caused by Animals** July 2016

In August of 2009, John C. Inglis, Former Deputy Director, National Security Agency, noted:



"I don't think paralysis [of the electrical grid] is more likely by cyberattack than by natural disaster. And frankly the number-one threat experienced to date by the US electrical grid is squirrels."

A disturbing number of power outages have been caused by a variety of animals gnawing through high-voltage wires or falling on transformers or other electrical equipment. It seems that most of these unfortunate critters are squirrels. However, they are joined by weasels, monkeys, and even birds.

### **Squirrels**

According to CyberSquirrel1, a site that tracks power outages caused by squirrels, in a single four-month period in 2013 there were fifty reports of squirrel-caused outages in 24 U.S. states. In just two days, fifteen hundred customers in Mason City, Iowa; 1,500 customers in Roanoke, Va.; 5,000 customers in Clackamas County, Ore.; and 10,000 customers in Wichita, Kansas, all lost power. A month later, there were two separate outages caused by squirrels around the small town of Evergreen, Montana.



During this same time period, squirrels cut power to a regional airport in Virginia, a Veterans Affairs medical center in Tennessee, a university in Montana, and a Trader Joe's in South Carolina. Five days after the Trader Joe's went down, another squirrel cut power to 7,200 customers in Rock Hill, S.C., on the opposite end of the state. Nine days later, 3,800 more South Carolinians lost power after a squirrel blew up a circuit breaker in the town of Summerville.

In Portland, Ore., squirrels inconvenienced 9,200 customers on July 1; 3,140 customers on July 23; and 7,400 customers on July 26, 2013. In Kentucky, more than 10,000 people lost power in two separate squirrel attacks a few days apart. The town of Lynchburg, Va., suffered large-scale attacks on two consecutive Thursdays in June, 2013. The entire downtown area went dark following one of the attacks.

## **Other Animal Attacks**

### ***The Large Hadron Collider***

A weasel brought down CERN's Large Hadron Collider when it chewed through a 66-kilovolt power cable connected to the LHC,<sup>1</sup> taking it offline for two weeks. The Large Hadron Collider is the largest machine ever made by man. It is a superconducting tunnel seventeen miles in diameter straddling the French/Swiss border. It is designed to smash subatomic particles together at close to the speed of light.

This was not the first time the LHC ran into trouble because of something small and cute. In 2009, a bird dropped a baguette onto a critical electrical system, shutting off power to the LHC.

### ***Fukushima***

Two years after the Fukushima meltdowns in Japan, the systems dedicated to cooling spent nuclear fuel rods experienced an unexpected 29-hour outage. The cause? A rat.

Engineers found a dead rat that appeared to have suffered an electric shock near a temporary switchboard used to supply power to the cooling systems at three fuel pools in the facility devastated by a massive earthquake and tsunami in 2011. Fortunately, no radiation leaked as a result of the outage. The only casualty was the poor rat.

### ***A Monkey Knocks Out Power to the Entire Country of Kenya***

A monkey lost its footing on the roof of the biggest power-generating station in Kenya. The 225-megawatt station is Kenya's largest, being driven by a massive dam. With the monkey on its back, the first transformer shut down, causing other transformers at the station to trip as well. The loss of all this power triggered a national power blackout that lasted for four hours.

Lucky monkey! It survived and ran away.

### ***Pigeon Poop***

In an unexpected act of sabotage, a flock of pigeons in Japan caused a blackout by just pooping all over the place. Around three feet of excrement had been allowed to pile up on an electricity substation's insulator. The insulator finally shorted, resulting in power being knocked out across the area. Some 25,000 traffic lights lost power because of the bird dung, leaving drivers stuck in traffic. Hundreds of homes also lost power.

### ***Fried Chicken***

A chicken got into a Maui Electric Co. transformer in the rental car area in Kahului airport in Hawaii. The chicken caused a power outage that left some passengers having to disembark their planes by mobile stairway.

### ***Colorado Springs Taken Down by Raccoon***

A raccoon found its way into a power transformer and caused an outage that affected about 5,600 customers in Colorado Springs, Colorado, U.S.A. Power was restored to a great majority of customers an hour later by rerouting electricity to the affected areas.

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<sup>1</sup> [Pop! Goes the Weasel](http://www.availabilitydigest.com/public_articles/1106/cern_weasel.pdf), *Availability Digest*, June 2016.  
[http://www.availabilitydigest.com/public\\_articles/1106/cern\\_weasel.pdf](http://www.availabilitydigest.com/public_articles/1106/cern_weasel.pdf)

### ***Rat Blacks Out Aberdeen Rail Station in Scotland***

Train passengers were left in the dark after a rat chewed through a power cable and caused a six-hour station blackout. Engineers found the dead rodent beside the damaged cable at Aberdeen (Scotland) railway station shortly after the power went out around 9.30 am. Although train services were not affected, power was not restored until later in the afternoon, leaving the electronic departures boards in the black.

### ***Crow Blacks Out San Fernando Valley***

A crow flew into a 34,500-volt circuit breaker, triggering blackouts throughout the San Fernando Valley in California, U.S.A. About 15,000 homes and businesses lost power for most of the day, and traffic lights went out over a large area. It took about ten hours to restore power.

This type of outage is typically restored quickly by switching the circuit to a functioning power bank. However, in this situation, the entire distribution station had lost power.

## **Lessons Learned**

Unfortunately, a power substation's reliability can be compromised by changes in its physical environment. Plants grow, wildlife populations change, and the topography of the site can erode. These natural changes can lead to a greater chance of animal incursions – incursions that can cause equipment failures and power outages.

The utility should check for overhanging branches or brush growth around the substations that may provide climbing-animal access. It should add pole wraps and line guards to prevent animal incursion.

You probably cannot prevent all animal access, but look for ways to discourage such access.

## **Acknowledgements**

Information for this article was taken from the following sources:

Squirrel Power, *New York Times*; August 31, 2013.

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Avoiding power outages caused by animals, *Electric Light and Power*; August 20, 2015.

A Weasel Shuts Down the Large Hadron Collider, *Gizmodo*; April 29, 2016.

Rat chewing through Aberdeen rail station power cable caused six-hour blackout, *The Scotsman*; May 30, 2016.

Monkey stumbles into hydroelectric power plant and triggers 4-hour blackout across Kenya, *The Washington Post*; June 8, 2016.

7 Animals that Caused Power Outages, *Popular Mechanics*; June 17, 2016.

Crow Causes Blackouts Across San Fernando Valley, *Canyon News*; June 26, 2016.