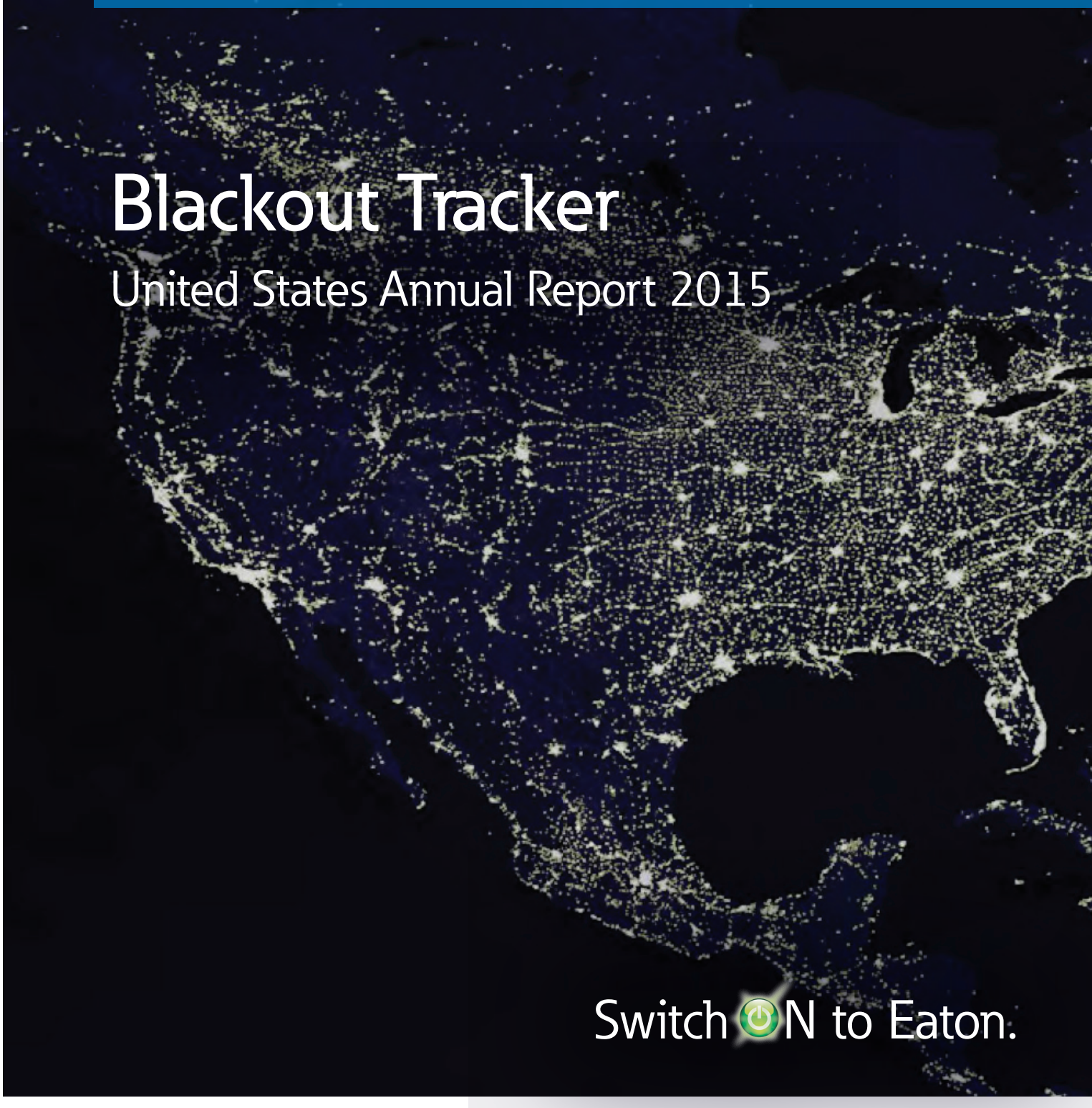
Power Outage Annual Report

Blackout Tracker

United States Annual Report 2015



Switch ON to Eaton.

EATON

Powering Business Worldwide

Table of contents

Introduction

Welcome to Eaton's Blackout Tracker Annual Report for 2015. This marks the eighth year that Eaton has been following the fallout that power failures cause across the nation — from minor events that affected a handful of homes or businesses, to massive outages resulting from Arctic blasts, heat waves and other nuances of Mother Nature. This year alone, we have compiled data on more than 3,500 blackouts that caused problems for people and businesses spanning all 50 states.

This annual report is based on reported power outages in the U.S., with sources of data including: news services, newspapers, websites (including those of newspapers and TV stations) and personal accounts. We at Eaton hope that you not only find this report insightful, but that it prompts you to take appropriate action to prepare for power outages that could affect you and your business.

The main body of the report follows this introduction and is organized into two sections:

1. Overview of national power outage data
2. Power outage data by state

In all, 3,571 outages were tabulated and used as the basis for the 2015 report, a slight dip compared to the 3,634 outages we tracked in 2014. The number of people affected by outages also dropped between 2014 and 2015. However, it's important to note that complete data is often unavailable on certain aspects of reported outages, including the number of people affected and the duration of the blackout.

The following chart outlines some overall data accumulated since 2008:

Year	Total number of outages	People affected
2008*	2,169	25.8 million
2009	2,840	13.5 million
2010	3,149	17.5 million
2011	3,071	41.8 million
2012	2,808	25.0 million
2013	3,236	14.0 million
2014	3,634	14.2 million
2015	3,571	13.2 million

**Partial-year data. Data collection began on February 16, 2008.*

Downtime is disastrous

With the ability to cause irreparable damage and irretrievable loss of revenue in a matter of minutes, downtime is, in a word, disastrous. Electrical power outages, surges and spikes are estimated to cost more than $150 billion in annual damages to the U.S. economy. The price tag varies not only by industry, but by the scale of business operations. For a medium-size business, the exact hourly cost may be lower, yet the impact on the business can be proportionally much larger. Nailing down the cost of each hour of downtime varies widely on a number of factors, such as the nature of the business, the size of the company, and the criticality of its IT systems related to revenue generating processes. For instance, a global financial services organization may lose millions of dollars for every hour of downtime, whereas a small firm might lose only a margin of productivity.

According to Dunn & Bradstreet, 59 percent of Fortune 500 companies experience a minimum of 1.6 hours of downtime per week. Assuming an average staff of 10,000 employees who are paid an average of $56 per hour (including benefits), the downtime loss in labor alone for a Fortune 500 firm would ring up at $896,000 per week — or more than $46 million annually.

Despite the enormous price tag attached to downtime, there's still good news: by investing in power backup solutions to protect critical systems, you can significantly slash the risks and consequences.

Outages closely linked to business continuity losses

File this in the "unsurprising fact" folder: a recent analysis by Allianz Global Corporate & Specialty confirmed that power interruptions are among the leading global causes of business continuity insurance losses. Based on a study of nearly 2,000 business insurance claims from 68 countries between 2010 and 2014, the report estimated the average large business property claim at a staggering $2.4 million, with blackouts ranked among the top 10 causes of such losses.

Allianz, a specialist insurer for business and industrial risks, revealed that the 10 sources — with fire and explosion topping the list — accounted for more than 90 percent of all business interruption losses globally, with the majority attributed to non-natural catastrophe events. In fact, the report excluded losses from claims related to "very large events," such as Superstorm Sandy in 2012.

Allianz attributed the recent rise in business-interruption insurance losses to increasingly interconnected and complex global supply chains. "Power infrastructure, for example, was once localized and isolated, but today, energy supply and distribution are far more integrated and span entire continents," the report states. "As a result of increased interconnectivity, a solar storm or a cyber-attack on a power grid could result in countrywide blackouts lasting days, or potentially weeks, with a multitude of knock-on effects."

Catastrophic weather leads to longer outages

If you feel like you're being left in the dark longer than ever before, it's not just your imagination. Now a study from the Lawrence Berkeley National Laboratory and Stanford University has confirmed that catastrophic weather is the culprit.

Researchers from both institutions, who deemed their report "the most comprehensive study of this topic to date," examined 13 years worth of data on the annual duration and frequency of power interruptions for a large cross-section of U.S. electricity distribution utilities. While the number of blackouts per year hasn't dramatically changed, the duration has, and researchers blame the weather.

"This finding suggests that increasingly severe weather events are linked to a 5 to 10 percent increase in the total number of minutes customers are without power each year," according to the study's lead author Peter Larsen, Berkeley Lab Research Scientist and Stanford PhD candidate.

Factoring data related to lightning strikes, precipitation levels, wind speed and temperatures, researchers discovered some interesting effects. For instance, a mere 5 percent increase in annual average wind speeds produced a 56 percent increase in the total amount of time that a utility's customers were without power over the course of a year. Furthermore, a 10 percent increase in annual precipitation translated to a 10 percent increase in the duration of an outage.

The authors of the study suggest that as climate continues to change, so should adaptations to the electrical grid. "We hope the findings from the study will provide a more solid basis upon which to ground future private and public decisions on the long-term reliability of the U.S. electric power system," said co-author and Berkeley Lab Staff Scientist Joseph Eto.

Vulnerability of grid magnified as power outages continue to rise

Power outages are on the rise, and that trend will likely continue in coming years unless the United States electrical grid is modernized, according to a report by the nonprofit Pew Charitable Trusts.

The study — which highlights the age of the country's transmission grid and power plants, coupled with an upswing in the number and severity of weather events, as primary factors — is among the latest in a growing number of analyses taking issue with the lack of investment in the U.S. electrical grid. The Pew report assesses that the grid's vulnerabilities have contributed to an average 100 major outages a year since 2010, a significant upswing compared to earlier findings. The report shows that between 2000 and 2005, the country was only averaging 43 large-scale outages a year. "Data show that the United States experiences more electric outages than any other developed nation," the report states.

Much of the U.S. electrical grid — which is constructed of many power lines and power plants built just after World War II — is approaching more than four decades in operation, an age that Pew says makes it increasingly vulnerable. Indeed, the geriatric infrastructure was underscored by several significant outages in 2015.

On April 7, a blackout that cut power to thousands across Washington D.C. and Maryland — including the White House, the State Department and other government buildings — reignited concerns over the fragility of the power grid. "All of our critical infrastructure is fragile," said Adm. William Gortney, commander of NorthCom and the North American Aerospace Defense Command (NORAD) with responsibility for defending the U.S. against external attack and coordinating the military's efforts with civilian agencies. A power blackout "could be a mission kill for NORAD and NorthCom," Gortney said at the time, adding that the D.C. outage showed that "we have a lot of vulnerabilities out there."

Then on July 15, thousands of customers on the west coast had to endure a three-day blackout after weaknesses in the grid led to a power outage in downtown Long Beach, Calif. Less than two weeks later, some 30,000 people were once again left in the dark from apparently the same issue, blamed on aging infrastructure.

And in October, a pair of thunderstorms hit North Texas within four days of each other, knocking out power to more than 500,000 customers and once again putting aging infrastructure under the mircroscope.

Looking to the future, power analysts see promise in solar energy and other technologies as a means to prevent wide-scale outages. Instead of customers relying solely on a distant power plant, for example, a combination of solar panels and batteries could provide electricity in the event a line goes out.

In its report, Pew researchers argue that the stability of the grid will depend on greater investment in new technology, along with recognizing greater efficiencies from existing resources; for instance, using the heated exhaust of power plants to generate more electricity or to heat buildings. "Utilities are starting to figure these things out and make investments and test products," said Jessica Lubetsky, a researcher with Pew. "But there's a lot of work to be done, for sure."

How prepared are you for a power outage?

Homeowners are learning from experience: a recent Harris Poll found that two-thirds of people who had experienced a prolonged power outage were motivated by their time in the dark to better prepare. The survey, conducted last spring and sponsored by Briggs & Stratton, also found that one out of every four homeowners had lost power for 12 hours or longer at least once in the last two years — with approximately 66 percent confirming that they would alter their approach prior to the next outage.

At the very least, the Federal Emergency Management Agency recommends that families compile an emergency preparedness kit and implement a communication plan. Furthermore, another tip is to consider purchasing a portable generator or a home standby generator. During natural disasters such as hurricanes, it can take a long time for utility power to return to neighborhoods, as winds often damage trees and block roads, making it difficult to repair power lines. In these instances, generators can keep homes from enduing lengthy power interruptions.

Dicing up the generation of U.S. electricity

While coal and natural gas rank among the most common sources for U.S. electricity, coal is on the decline, according to a story in the Washington Post. And it's a trend the new Clean Power Plan is hoping to accelerate by requiring power plants to cut carbon pollution levels and rewarding states and companies that embrace clean sources of energy.

Local utility companies generally take advantage of the power sources most accessible to them in order to generate electricity, including coal mines, dammed rivers, new supplies of natural gas and nuclear plants. Here's a breakdown of how power was generated in the U.S. in 2015:

Coal-powered electric plants — There are 511 in the U.S., which generated 34 percent of the nation's electricity this year. Coal is most popular in the Midwest, Appalachia and the East Coast, but is also the primary source in Wyoming, Utah, Montana and Arizona. It produced the vast majority of the nation's electricity in the late 1980s and continues to be the chief source of electricity in 22 states.

Natural gas-powered electric plants — The nation's 1,740 plants generated 30 percent of electricity in 2015, driven in part by advances in and expansion of fracking. Natural gas is the predominant source of power in 15 states including all of the Gulf of Mexico states, Virginia, Georgia, New York, Massachusetts, Nevada and California.

Nuclear electric plants — Ninety-nine reactors at 63 nuclear plants generated 20 percent of the nation's electricity this year. Five new plants are now under construction following decades of pause after the initial push in the 1970s and 1980s driven by the first oil shock. Only South Carolina, Illinois, Pennsylvania, Connecticut and New Hampshire get the majority of their power from nuclear, and 20 states have no nuclear electricity generation at all.

Hydroelectric plants — The nation's 1,436 hydroelectric plants generated 7 percent of electricity this year, with Washington, Oregon and Idaho leading the way. Hydroelectricity delivers 48 percent or more of the power in five states, but less than 10 percent of the electricity in 40 states. Government-run plants generate most of the power.

Wind-powered electric plants — There are 843 wind-powered electric plants in the U.S., and while responsible for generating only 5 percent of the nation's electricity this year, wind is the fastest growing source. An ideal method in the Great Plains, where wind blows reliably across wide open spaces, it's no surprise that wind supplies Iowa and South Dakota with one third of their power, followed by Kansas, Vermont and North Dakota.

Solar-powered electric plants — The 772 U.S. plants generated only 1 percent of the nation's electricity this year. Not surprisingly, sun power is most often channeled in the Southwest, where the sun shines the most. While California gets 8 percent of its electricity from solar, Nevada gets 5 percent, and Vermont and Arizona get 4 percent each. There are 39 states with no solar generating plants at all.

Oil-powered electric plants — Although you'll find 1,098 oil-powered electric plants in the U.S., they generated only 1 percent of the nation's electricity this year. Following the rise of OPEC and the oil shocks and price increases of the 1970s, utilities switched to other fuels, leaving Hawaii as the only state that gets a healthy portion of its electricity from oil.

Send in the drones

You've probably heard how drones can provide highly skilled combat support to a war zone, hover above a celebrity wedding ceremony to nab top-secret photos, and even deliver packages to your doorstep, as companies such as Amazon have promised to do. Now the high-tech flying devices are preparing to compete with utility workers to perform some of their job duties — providing a safer, more efficient and less expensive alternative.

Earlier this year, Illinois-based **e**lectricity firm Commonwealth Edison announced plans to begin sending in drones to inspect power lines. The first utility in the U.S. to receive permission from the Federal Aviation Authority to do so, the company has been considering the devices since a 2011 spate of storms knocked out service to more than 900,000 of its customers, resulting in a restoration nightmare. Before repair crews could even be dispatched to affected areas, employees first had to drive or even walk the length of the power lines several times to document the parameters of every problem: where it occurred, what type of wire it was, the number of poles or transformers affected. Not surprisingly, this translated to a very long wait before customers had their lights and heat turned back on.

But now the utility plans to fly drones fitted with cameras along its power lines, many of which are located in rural areas and along roadways that are not readily accessible. The drones will not only record pictures and video of damage, but if supplemented with an infrared camera, they might even be able to pinpoint hot spots on the line where failures are more likely to occur.

Commonwealth Edison — and other utilities that follow suit — will be required to adhere to strict rules that have been laid out for other drone operators, such as keeping the craft away from airports and within the pilot's line of sight. Commonwealth has also agreed to alert local officials ahead of time when it plans to operate the drones.

The unmanned aerial system is faster and less risky than using humans to inspect power lines, and significantly less expensive than deploying helicopters to fly close to transmission lines. Furthermore, hovering not so far on the horizon is the possibility of outfitting drones with laser scanners, which could be used to find the best path through a forest to install a new power line. Special software can create a detailed model of the ground below that even includes individual trees and an estimate of when they might topple.

Last year, another public utility company, San Diego Gas and Electric (SDGE), also began experimenting with drones. With many of its power lines accessible only by helicopter, the utility hopes to rely on the new systems both for routine inspections and in the event of emergencies such as brush fires, as they provide a quicker and more efficient solution. In any event, in the coming years, drones will likely be soaring to a utility near you.

Marijuana grow houses triggering outages

Move over, modern data centers. While those facilities have traditionally captured headlines for their energy-hogging tendencies, there's a new culprit in town, at least in the Northwest: marijuana growing operations are taxing the grid, according to Portland, Oregon-based utility Pacific Power.

The cultivation houses' high energy demand was linked to seven blackouts since pot became legal in the state over the summer. As a result, Pacific Power is recommending that residents contemplating growing in their home hire a licensed electrician and inform the utility, a process they expect from any customers who intends to significantly increase their power load.

"What most people don't realize is that growing marijuana is a very intense power use," Roger Blank, the utility's director of safety, said in a statement. Using older, less-efficient standard lights to grow four plants is akin to running 29 refrigerators, he said. "Hire a licensed electrician," Blank recommended.

Following an investigation of the seven outages, Pacific Power billed those responsible an average of $5,000 each for the oversized loads, which overburdened circuits and damaged equipment. And Oregon is not the only utility dealing with the issue. The Northwest Power and Conservation Council believes regional demand from producers in Idaho, Montana, Oregon and Washington could reach almost 250 MW by 2035. And in Denver, Co., where marijuana was recently legalized, officials attributed 45 percent of the city's power growth to the pot industry.

Utility company invests in new game: spin the squirrel

Aging infrastructure. Terror plots. Ice storms. Excessive demand. Clearly, there's no shortage of threats facing today's power grid. But electric utilities across the nation are spending an increasing amount of energy and money battling a bushy-tailed, fuzzy-faced, nut-hiding nuisance responsible for causing thousands of power outages each year: the squirrel.

Yet Entergy Texas, Inc., may have uncovered an effective solution. As part of its ongoing service reliability program, the company proactively invested $25,000 to purchase round plastic spinners, which were installed on power lines leading into 36 at-risk substations throughout its service area. When squirrels scamper along a power line and encounter the device, it does what the name implies — "spinning" the squirrel off the power line and keeping it from entering the substation.

Other electric companies have stepped up their squirrel-repelling efforts with methods such as lining power poles with slippery materials to ward off curious claws and installing protective devices on electrically charged equipment. Despite utilities dropping millions of dollars on devices such as plastic animal guards, squirrels have routinely outsmarted the mechanisms, gnawing their way into substations and subsequently zapping electricity. A reliability manager for Dominion Virginia Power, which reported more than 4,700 animal-related outages this year, said the sheer proliferation of squirrels make protecting equipment especially challenging.

While Eaton tracked 89 squirrel-related blackouts in 2015, that number may be just the tip of the ice berg. Although experts acknowledge that storms tend to cause the longest and most widespread outages, the American Public Power Association — which represents municipal electric utilities and uses a "squirrel index" to track outages nationwide — says the critters remain among the most frequent cause of power cuts.

Couple milks opportunity during baaaad outage

The owners of the Door County Creamery found out who their friends were on August 2, after a severe thunderstorm packing winds of 60 mph, hail and heavy rain knocked out power at their Sister Bay goat dairy farm.

As trees fell on power lines, leaving 12,000 electric customers in the dark, Rachael and Jesse Johnson, owners of the Creamery, were left with no generator — and 53 goats that needed to be milked by hand.

Rachael and several employees quickly scanned their contacts lists. Before they could say “got milk?” more than 20 people had showed up to the couple’s farm, most of whom had zero milking experience. Following a quick tutorial that included proper hand sanitization methods and instructions to be "quiet and gentle and calm" with the animals, the great milking event of 2015 was off and running.

Ranging in age from 16 to 69, volunteer milkers included two girls from Germany, a man from Mexico, and a number of employees. "We actually had extra people, so we asked who doesn't want to milk," Rachael recalled, adding that everyone wished to participate. Using daylight and a battery-operated lighting system, the group spent three hours milking, resulting in an udder blackout success story for the goat farm.

Power outages can be hazardous to your health — and even your marriage

For many people, a power outage can trigger a host of inconveniences — being left in the cold (or the heat), unable to whip up a four-course meal, or perhaps catch the latest episode of The Walking Dead on cable. But for those with chronic conditions, a blackout can truly be life-threatening.

A study of health care impacts of natural disasters in the journal PLOS found that home health equipment can be quickly compromised by a loss of electricity. Patients with home equipment such as oxygen machines, dialysis and nebulizers for asthma are at high risk during extended outages, leading to spikes in visits to the emergency room, according to Dr. Janyce Sanford, chair of the department of emergency medicine at UAB. "Every patient ought to have a plan," she warns.

For instance, patients who use electricity-powered home dialysis should consider investing in a backup generator. And experts caution that those with chronic kidney disease must adhere to strict limits on food and drink, especially while living with no air conditioning. Sanford points out that heat can actually be a bigger problem than electricity loss if patients drink too much water trying to stay cool and exacerbate kidney problems.

And if blackouts aren’t hazardous to your health, they can be to your marriage. In Allahabad, India this year — where blackouts are extremely prevalent — a 32-year-old woman left her husband of seven years after he refused to eat dinner during power outages.

In her complaint, the woman reported that her husband would force her to stay awake until power resumed in order to serve him dinner, and that he resorted to violence if she disobeyed him. The woman ultimately took power into her own hands, leaving the family’s house with her three children, filing a complaint in a police station, and divorcing her husband.

Predicting blackouts: Location, location, location?

Last year, researchers at Johns Hopkins University theorized that where you live can predict the likelihood of experiencing hurricane-related power outages in the future. Relying on historical data and a range of potential future storm scenarios, researchers created a computer model to predict which cities were most likely to see the greatest increase in power outage risk. While scientists are uncertain of exactly how climate change will affect hurricanes of the future, the team examined a range of impacts to make their predictions, including changes in frequency, intensity and location.

The goal was to encourage cities to use the information to help plan ahead and reinforce their systems, taking into account factors such as infrastructure improvements and emergency preparedness. The top 10 cities that researchers deemed most likely to see the greatest increase in power outage risk from hurricanes were:

10. New Orleans, La.
9. Miami, Fla.
8. Providence, R.I.
7. Tampa, Fla.
6. Orlando, Fla.
5. Hartford, Conn.
4. Virginia Beach, Va.
3. Jacksonville, Fla.
2. Philadelphia, Penn.
1. New York, N.Y.

As part of its blackout tracker coverage, Eaton decided to follow these 10 cities in 2015 to see if the hypothesis panned out. For a historical snapshot, in last year's annual report we took a peek at the number of weather-related outages that we have tracked by state over the previous 6 ½ years. While the information wasn't specific to hurricanes, it did shed some light on the prevalence of storm-related outages. Interestingly, although three separate Florida cities were earmarked by researchers, the Sunshine State didn't even make Eaton's top 10 list — nor did Connecticut, Virginia or Rhode Island. In fact, only New York and Pennsylvania made it onto both lists.

The top 10 states Eaton tracked for weather outages between 2008 and 2014 were:

1. California, 525 outages
2. New York, 399 outages
3. Texas, 335 outages
4. Michigan, 328 outages
5. Pennsylvania, 294 outages
6. Ohio, 265 outages
7. Illinois, 251 outages
8. Washington, 226 outages
9. North Carolina, 225 outages (tie)
9. New Jersey, 225 outages (tie)

The data followed a similar pattern in 2015, with Florida, Rhode Island and Louisiana — encompassing six of the 10 cities identified as the riskiest — failing to even make the list of top 10 states for weather-related blackouts. Over the past year, Eaton compiled the following weather-related blackouts:

1. California, 96 outages
2. Texas, 72 outages
3. Michigan, 43 outages
4. Ohio, 42 outages
5. North Carolina, 41 outages
6. Washington, 35 outages
7. New York, 35 outages
8. Pennsylvania, 34 outages
9. Oklahoma, 33 outages
10. Connecticut, 33 outages

The top 10 most significant U.S. blackouts of 2015

From a utility-mandated cut in the midst of a heat wave, to aging infrastructure, to the unwelcome effects of El Niño, power outages were responsible for wreaking havoc in the lives of millions of electricity customers across the nation in 2015. Here, we round up some of the most devastating events:

1. **Gone with the wind.** Nearly 20,000 households in the Spokane area were forced to endure an entire week without heaters, lamps and TV sets after howling winds ripped apart power lines, trees and the electrical grid on Nov. 17. More than 180,000 customers lost power at the peak of the worst windstorm in the region's history, which packed gusts up to 70 mph that cracked trees and sent them crashing onto cars, killing three people.
2. **A storm more "super" than Sandy.** The East Coast was blasted by a summer storm on June 23, resulting in nearly 280,000 outages in Atlantic City Electric's eight-county South New Jersey territory. While the figure surpassed the 220,000 left in the dark by Hurricane Sandy a few years back, the severity of outages was thankfully not the same.
3. **Long outage for Long Beach.** The stench of smoke filled the air July 15 in downtown Long Beach, Calif., after a power outage caused an underground fire and a manhole cover to pop into the air. Emergency shelters had to be set up after electricity was out for three days. Less than two weeks later, some 30,000 people were once again left in the dark from apparently the same issue, blamed on aging infrastructure.
4. **Over-demand prompts utility to pull the plug**. Imagine enduring a weekend of record-breaking heat in the high 90s — then having the local utility intentionally shut off your power! That was the reality for some 115,000 San Diego customers (including the compiler of the Blackout Tracker data) on Sept. 20, after SDG&E was ordered by state regulators to drop 150 megawatts of load in their service territory immediately. No notice was given to customers before power was shut off for several hours, forcing many businesses to close, some of whom reported thousands of dollars in losses.
5. **Washington grinds to a halt.** It wasn't the Democrats or Republicans, but a massive April 7 blackout that cut power to thousands across Washington D.C. and Maryland, reigniting concerns over the fragility of the power grid. Utility officials said a piece of metal broke loose from a power line at a switching station, knocking out the supply to two power stations and causing a ripple effect. From the State Department to the White House, the blackout ranged from seconds to several hours. Museums on the National Mall were evacuated, while several federal buildings shut down and classes at the University of Maryland were cancelled.
6. **Strangers on a train.** The same summer squall that struck New Jersey on June 23 also pummeled the Philadelphia region, cutting power to 250,000 customers and stranding passengers on an Amtrak train for 4 1/2 hours — leaving them without food, water, air conditioning or restrooms.

7. **Substantial storm.** Severe weather caused massive outages in Birmingham, Ala., on July 14, knocking out power to 115,000 customers. Crews from other states were called in to assist in the restoration effort.
8. **Skating on thin ice.** On Nov. 28, some 110,000 Oklahoma City residents lost power after a frosty storm blasted the state. Elevated surfaces were coated with ice, leading power lines and tree limbs to sag and break.
9. **Blustery blackout.** High winds knocked out electricity to105,000 homes and business in Grand Rapids, Mich., on Christmas Eve. In the wake of the 60 mph winds, the utility brought in out-of-state crews to help restore power.
10. **No love for the power supply.** A Valentine's Day cold front that brought extreme wind conditions to Richmond, Va., was responsible for cutting power to 103,000 customers. Peak wind gusts were measured at over 50 mph in almost every Virginia local office.

The top 10 most unusual U.S. blackouts of 2015

From a litter bug to a literal bug, there was no shortage of odd outages last year. Here, we take a look at 10 of the most bizarre:

1. **Loosey-goosey.** A Canadian goose took a wrong turn in Wapiti, Wyo., on March 31, flying into a power line and knocking out electricity to 664 customers for three hours. A witness who was driving described seeing a flock of geese overhead, then a sudden bright light flashed and one fell out of the sky.
2. **A close "call."** Police say a fight over a cell phone sparked death threats, a carjacking, a crash and a power outage on March 25 in New Mexico. A man was reportedly in a rage over his father's refusal to activate his cell phone, so he grabbed a gun and chased his parents. When police arrived, the suspect fled and carjacked an SUV, then led police on a chase, eventually crashing and sheering a power pole in half.
3. **Crime leads to blackout — for customers, then suspect.** Thousands of residents lost power July 23 in Federal Way, Wash., after a suspect fleeing from police crashed his truck into a utility pole then fled on foot. He later jumped out of a third-story apartment window and was found seriously injured on the pavement below.
4. **Litter bug knocks out power then heads to slammer.** What began as an attempted traffic stop over littering left a Union City, Ohio high school in the dark on August 6 —and landed a man in county jail. The 41-year-old was arrested after leading police on a pursuit throughout the town after a passenger in the car was observed throwing a glass jar out a window. The car headed down an alley, where it struck a guide wire to a utility pole, causing a blackout.
5. **This blackout was a real drag.** Cigarettes don't just cause cancer and emphysema — they can even be responsible for power outages! On Sept. 3 in Gastonia, N.C., a 26-year-old woman was driving a car when she ran off the road and struck a power pole. Police reveal that the woman dropped her lit cigarette and was trying to pick it up off the floor when she crossed the center line and veered off the road. As a result, some 4,000 residents lost electricity for an hour.
6. **Turkey irony.** He survived being somebody's Thanksgiving feast, but couldn't escape a giant wallop of electricity. Just two days after the fowl-focused holiday, a turkey made its way into a North Platte, Neb., substation and caused a large-scale outage. More than 6,000 customers were left in the dark for about an hour —which wasn't too bad, when you consider the fate of the poor turkey.
7. **World series power loss (and we're not talking about batting).** An ill-timed outage interrupted Fox's Oct. 27 telecast of Game 1 of the World Series between the Kansas City Royals and New York Mets. Fox explained the outage, which occurred in the middle of the fourth inning, by saying its broadcast truck in Kansas City lost power due to "a rare electronics failure." The game was also halted for seven minutes because there was no video for replay. Play resumed after managers agreed to continue without replay.

8. **It's a bird, it's a plane, it's a ???** A blimp associated with the North American Aerospace Defense Command's surveillance of the East Coast became untethered from its mooring station in Maryland on Oct. 28 and drifted to Bloomsburg, Penn. Two F-16s scrambled to track the aerostat, but not before it created some hefty havoc. A cable connected to the low-flying blimp was dragging along the ground, causing it to strike power lines, which blacked out more than 20,000 homes.
9. **Drone disaster.** Not to be outdone in the category of outages-caused-by-airborne-devices, a man flew a drone into power lines in West Hollywood on Oct. 26, causing a power outage. The fire department had to close two westbound lanes of Sunset Boulevard due to the incident, while crews from Southern California Edison worked to restore power to 627 customers, including many businesses.
10. **Snug as a bug in a … transformer?** In Liberty, Texas, residents were bugged by a rise in outages during the month of April — literally. The city came under attack from thousands of Tent Caterpillars hatching from eggs in trees. All of those additional feet on the street resulted in numerous power outages, which occurred when the insects covered transformers.

Honorable mention: Taylor Swift shakes off blame for blackout. She may be guilty of calling out past lovers and mean girls in her songs, but it turns out that Taylor Swift *wasn't* to blame for a series of power outages that ultimately suspended the Washington Nationals and Los Angeles Dodgers game July 17 at Nationals Park. Despite some public jabs from MLB players, the game's postponement wasn't the fault of Swift, who almost had to jump off the stage when she experienced a technical issue during her concert at the venue days before. The power failure — which forced the game to be suspended with no outs in the sixth inning after a third cut knocked out a bank of lights along the third-base line — was caused by a faulty circuit breaker.

The year's biggest data center outages

The cost of data center power outages is on the rise, according to a recent analysis by the Ponemon Institute. The group, which polled 63 data center organizations in the U.S. that had experienced an outage in the past 12 months, estimates the full costs associated with unplanned outages at data centers within The 2016 Cost of Data Center Outages report. The benchmark study, originally published in 2010 then updated in 2013 and again in 2016, found that the price of downtime continues to climb, with the average outage cost rising 38 percent over the past five years. Among the publication's other key findings:

● The average total cost per minute of an unplanned outage increased from $5,617 in 2010 to $7,908 in 2013 to a current price tag of $8,851

● The average cost of a data center outage rose from $505,502 in 2010 to $690,204 in 2013 to $740,357 in the latest study, representing a 38 percent increase in the cost of downtime

● Maximum downtime costs are rising faster than average, increasing 81 percent since 2010 to a current high of $2,409,991

● UPS system failure, including UPS and batteries, is the No. 1 cause of unplanned data center outages, accounting for one-quarter of all such events

● Cybercrime represents the fastest growing cause of data center outages, accounting for 2 percent of outages in 2010, 18 percent in 2013 and now 22 percent of those polled in the latest downtime study

Below, in chronological order, are nine data center blackouts that occurred in the U.S. in 2015. While it's difficult to ascertain the exact financial impact of these outages, it's reasonable to expect that they were significant.

1. **DMV,** Jan. 31 — Washington D.C. The Virginia Department of Motor Vehicles (DMV) had to close its offices due to the outage, which was a result of a service failure of the state's IT service provider. Power was restored, but the disruption left many state agency systems offline.
2. **AVG**, March 10 — San Francisco, Calif. The online security firm had its data center brought to a standstill by the outage, affecting email security services customers in all regions.
3. **Office of Motor Vehicles**, May 21 — Baton Rouge, La. A fire caused a state data center outage that disrupted administrative processes and shut down department-wide email and Internet at locations across the state.
4. **Securus Technologies**, May 29 — Dallas, Texas. Weather resulted in a costly data center outage for the provider of civil and criminal justice technology solutions.
5. **Fujitsu**, August 22 — Sunnyvale, Calif. A major transformer failure impacted Fujitsu's data center and the services it delivers (including public and private cloud and other infrastructure services). The company would not confirm how many customers were impacted or how long the disruption lasted.
6. **Univ. of California**, Sept. 18 — Berkeley, Calif. A small fire led to the temporary shutdown of all main campus information services, including CalNet, bCourses and the primary campus website
7. **State of Massachusetts**, Oct. 28 — Chelsea, Mass. Scheduled maintenance at a state-owned data center caused an unexpected internal power outage that disrupted email services and many state websites, including the Registry of Motor Vehicles and the Department of Unemployment Assistance.
8. **PayPal,** Nov. 31 — The outage in one of the data centers of the online payment giant couldn't have come during a worse time, preventing customers from logging in or making purchases on the Sunday after Black Friday and day before Cyber Monday.
9. **The U.S. Patent and Trademark Office**, Dec. 22 — Arlington, Va. An equipment malfunction took down Web applications and caused filing, searching and payment systems used by examiners and the public to go dark.

What you can do to protect your business

In today's climate, 100% uptime is expected no matter what, making your #1 concern business continuity. When an unplanned outage happens, your focus shifts to resolving the issue and reducing data loss. What if you were able to monitor and control power so you can spot potential issues and resolve them before they escalate?

Eaton's PredictPulse™ remote monitoring service and Intelligent Power Manager (IPM) software help you do that, plus so much more. When used together, they give you the support of Eaton's technical alarm experts who keep tabs on your power devices 24x7 and alert you to any anomalies, along with the ability to monitor, manage and control your power devices even when you're away from the office. If there's an extended power event, IPM also helps maximize the runtime of critical equipment and ensure data integrity. This all keeps downtime to a minimum—and makes your life a little easier.

Are you looking to protect your home? Check out Eaton's home generator sizing tool. We offer a complete line of backup power generators that will provide you with reliability and worry-free systems to protect your home during power outages.

Overview of 2015 national power outage data

This section provides aggregate data for the U.S. and includes all the data found in the subsequent state section.

Outage summary

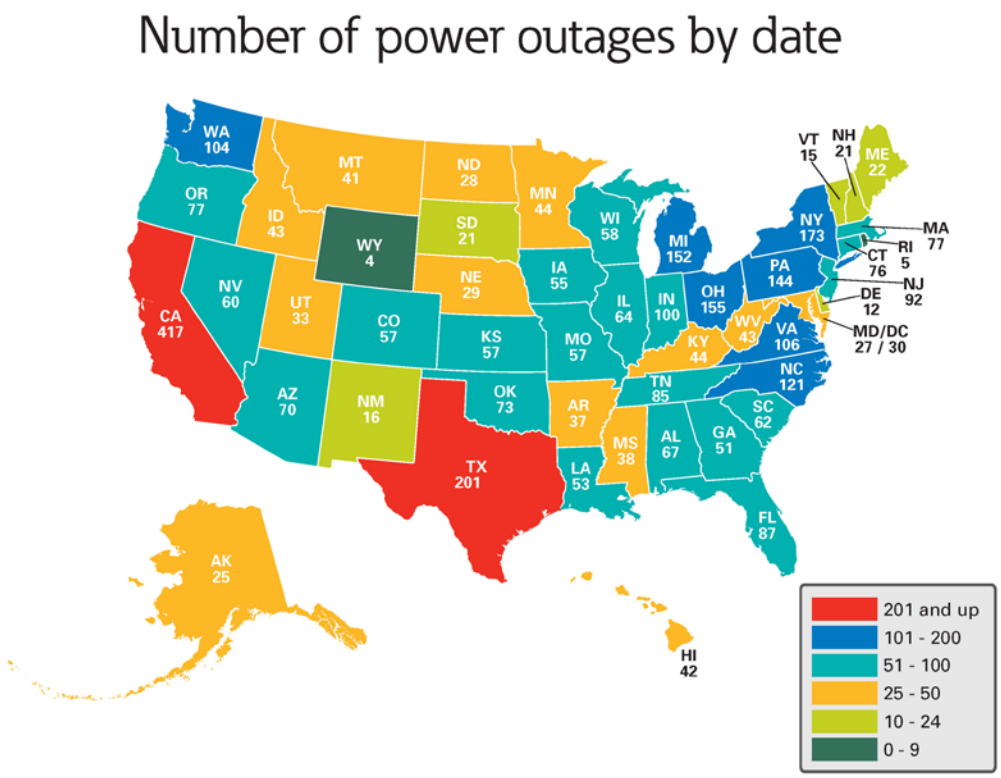
Total number of people affected by outages *(This is the sum of the number of people affected by reported power outages in the USA for 2015.)*	13,263,473
Total duration of outages *(This is the sum of the durations of the reported power outages.)*	175,821 minutes (approximately 2,930 hours or 122 days)
Total number of outages *(The sum of the number of reported power outages.)*	3,571
Average number of people affected per outage *(This number is determined by dividing the "Total number of people affected by outages" by the number of outages that reported the number of people affected. Not all reports of outages included number of people affected. The number of outages used for this calculation can be found in the note following this table.)*	3,714
Average duration of outage *(This number is determined by dividing the "Total duration of outages" by the number of outages that reported durations. Not all reports of outages included the duration. The number of outages used for this calculation can be found in the note following this table.)*	49 minutes

Notes: Total number of people affected (and average) is based on 2,384 (66%) of the total reported outages. Total duration of outages (and average) is based on 774 (22%) of the total reported outages. These are the number of outages that had reports that included data for number of people affected and duration, respectively.

Top ten states with most reported outages

2015	2014	2013
1. California (417)	1. California (537)	1. California (464)
2. Texas (201)	2. Texas (178)	2. Texas (159)
3. New York (173)	3. Michigan (164)	3. Michigan (153)
4. Ohio (155)	4. Pennsylvania (148)	4. Pennsylvania (144)
5. Michigan (152)	4. New York (148)	5. Ohio (136)
6. Pennsylvania (144)	5. Ohio (143)	6. New York (125)
7. North Carolina (121)	6. New Jersey (105)	7. Virginia (117)
8. Virginia (106)	7. Washington (104)	8. New Jersey (116)
9. Washington (104)	8. Illinois (102)	9. Washington (104)
10. Indiana (100)	9. North Carolina (100)	10. Massachusetts (98)

Number of reported power outages by state



Top states for outages caused by weather/falling trees

2015 (1,069 total outages)	2014 (1081 total outages)	2013 (966 total outages)	2012 (953 total outages)
1. California (96)	1. California (81)	1. California (65)	1. California (90)
2. Texas (72)	2. Texas (57)	2. Michigan (60)	2. New York (58)
3. Michigan (43)	3. Pennsylvania (52)	3. Texas (47)	3. Texas (52)
4. Ohio (42)	4. Michigan (49)	4. New York (41)	4. New Jersey (48)
5. North Carolina (41)	5. Ohio (47)	4. Ohio (41)	5. Pennsylvania (44)
6. Washington (35) New York (35)	6. New York (44)	4. Virginia (41)	6. Washington (38)
7. Pennsylvania (34)	7. North Carolina (41)	5. Pennsylvania (38)	7. Michigan (36)
8. Oklahoma (33) Connecticut (33)	8. Georgia (35)	6. Illinois (30)	8. Oregon (32)
	9. Virginia (32) Wisconsin (32)	6. New Jersey (30)	8. Virginia (32)
		7. Missouri (27) Wisconsin (27) North Carolina (27)	9. North Carolina (29) Ohio (29)

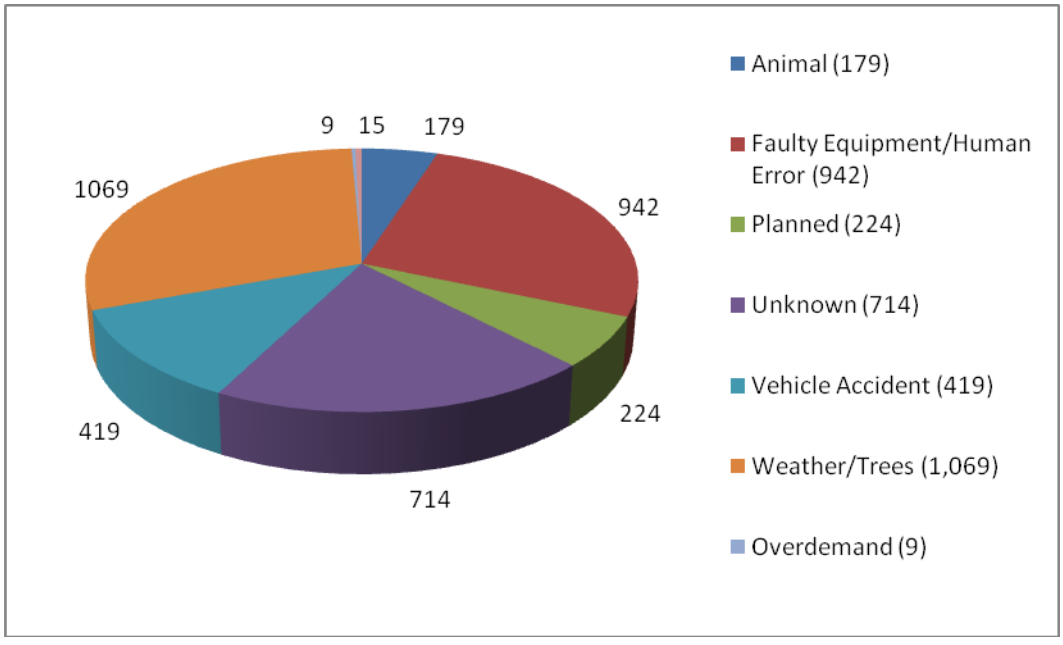
Top states for outages caused by vehicle accident

2015 (419 total outages)	2014 (356 total outages)	2013 (354 total outages)	2012 (246 total outages)
1. California (55)	1. California (55)	1. California (53)	1. California (46)
2. North Carolina (29)	2. Texas (20)	2. Texas (23)	2. Pennsylvania (14)
3. Texas (28)	3. Virginia (17)	3. New York (21)	3. Missouri (9)
4. Pennsylvania (23)	4. Pennsylvania (14)	4. Pennsylvania (21)	3. North Carolina (9)
5. Ohio (18)	4. Michigan (14)	5. Ohio (16)	3. New Jersey (9)
6. New Jersey (15)	5. Ohio (13)	5. Virginia (16)	3. Ohio (9)
7. Florida (13)	6. Florida (12)	6. New Jersey (15)	3. Texas (9)
7. Michigan (13)	7. Oregon (11)	7. Massachusetts (12)	3. Virginia (9)
8. New York (12) Tennessee (12)	8. Oklahoma (11) New Jersey (11) Indiana (11) New York (11)	8. Alabama (11) Arizona (11) North Carolina (11)	4. Arizona (7) Michigan (7) New York (7)

Top states for outages caused by faulty equipment/human error

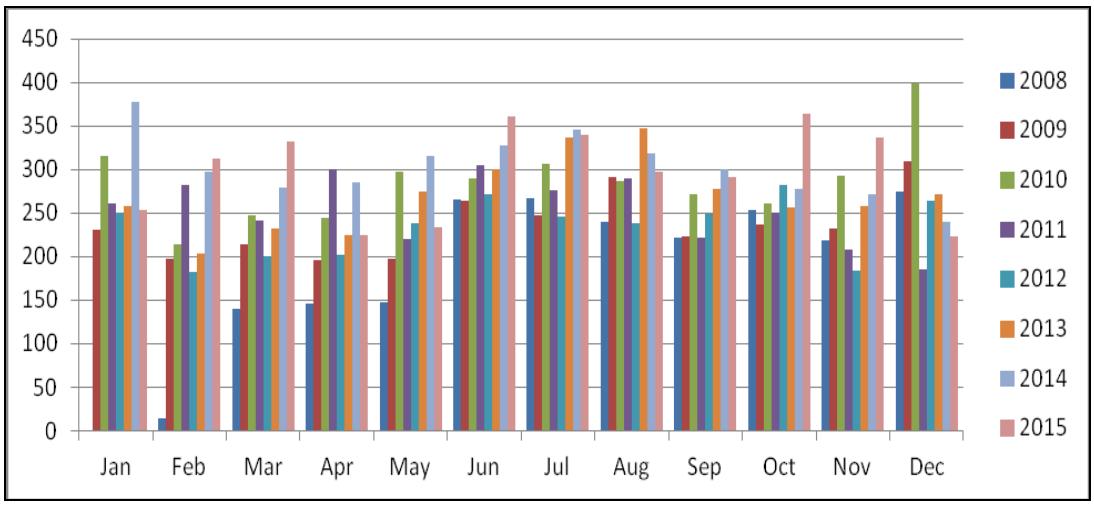
2015 (942 total outages)	2014 (1,026 total outages)	2013 (921 total outages)	2012 (791 total outages)
1. California (133)	1. California (202)	1. California (159)	1. California (197)
2. New York (55)	2. Michigan (51)	2. Pennsylvania (42)	2. Michigan (41)
3. Ohio (52)	3. New York (45)	3. New Jersey (41)	3. Texas (40)
4. Texas (49)	4. Pennsylvania (42)	4. Ohio (37)	4. Massachusetts (38)
5. Michigan (43)	5. Texas (39)	5. Texas (36)	5. New Jersey (34)
6. Pennsylvania (42)	6. Ohio (38)	6. Massachusetts (35)	6. New York (30)
7. Virginia (38)	7. New Jersey (33)	7. Michigan (35)	7. Ohio (28)
8. New Jersey (31)	8. Washington (32)	8. New York (32)	8. Pennsylvania (26)
9. North Carolina (26)	9. Massachusetts (28)	8. Washington (32)	9. Washington (25)
10. Oregon (21) Colorado (21)	10. Illinois (26)	9. Virginia (30)	10. Wisconsin (21)

Reported power outages by cause

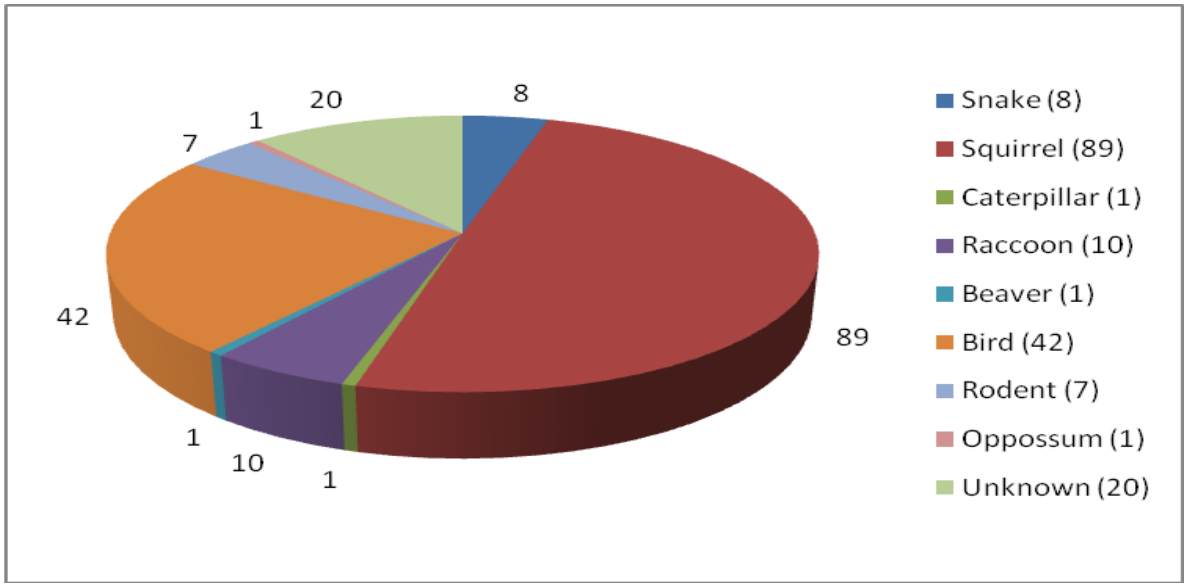


Note: Each power outage was grouped into one of eight possible causes. The number adjacent to the pie piece is the number of outages attributable to that cause.

Reported power outages by month



Reported power outages by animal type



Notes: Number following animal type in the legend indicates number of reported outages caused by that animal. The bird category includes the following types: Crow, woodpecker, raven, crane, goose, hawk, pigeon, gull, turkey, buzzard and osprey.

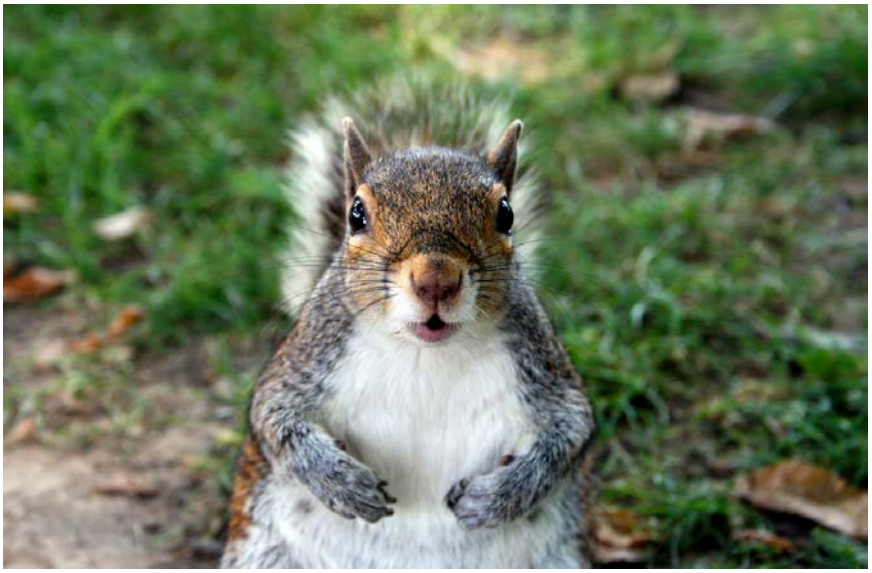
Top states for outages caused by animals

2015 (179 total outages)	**2014** (150 total outages)	**2013** (206 total outages)	**2012** (202 total outages)
1. Indiana (10)	1. California (13)	1. California (19)	1. California (28)
2. California (9)	2. Texas (11)	2. Texas (14)	2. Michigan (13)
3. Washington (8)	3. Ohio (9)	2. Virginia (14)	3. Arizona (10)
3. Michigan (8)	3. Oregon (9)	3. Ohio (11)	3. Missouri (10)
4. Florida (7)	4. Michigan (9)	4. Tennessee (10)	4. Indiana (9)
4. Massachusetts (7)	5. Alaska (6)	5. Oregon (9)	4. New York (9)
4. Texas (7)	6. Missouri (5)	5. North Carolina (9)	4. Ohio (9)
5. Iowa, New York, South Carolina, Tennessee, Virginia (6)	7. Wisconsin (5)	6. Michigan (7)	4. Wisconsin (9)
		7. Colorado, Indiana, Florida, Louisiana, South Carolina (6)	5. New Jersey (8)
			6. Texas (7)

Animal magnetism

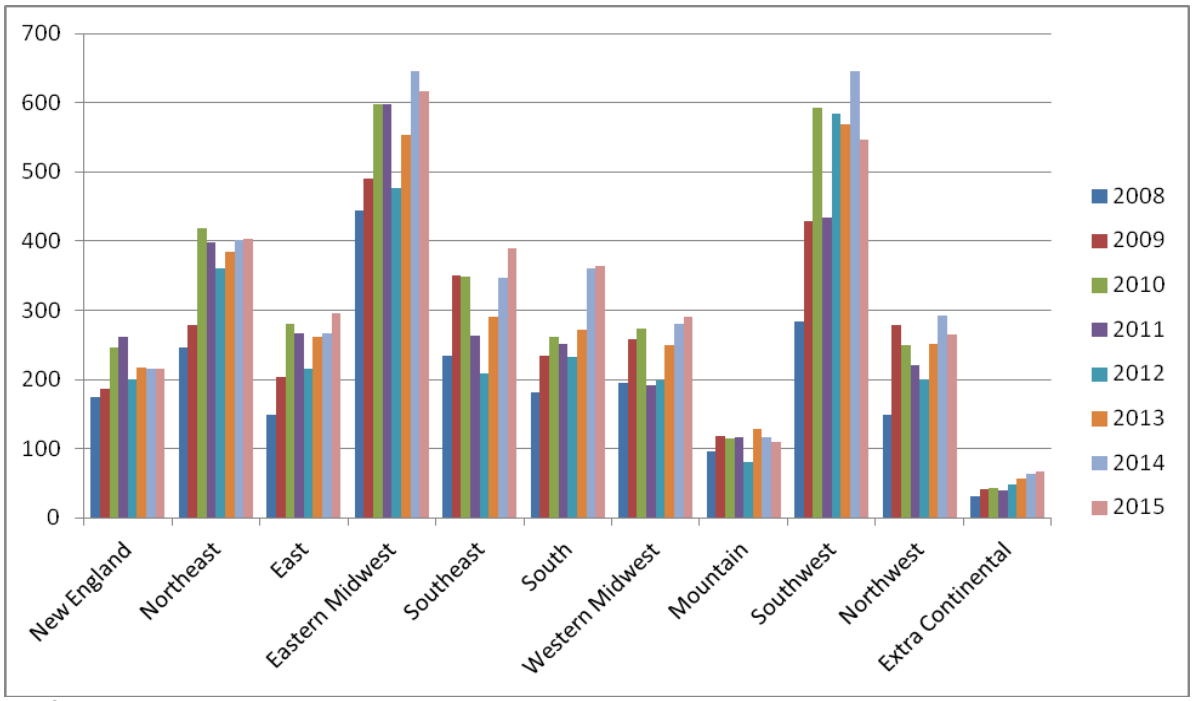
There's something about utility equipment that seems to draw out more critters than a Disney movie. Indeed, Eaton tracked 179 outages attributed to animal activity in 2015, with culprits including squirrels, snakes, birds, a raccoon, a beaver and even caterpillars.

When an animal's body comes in contact with a piece of energized equipment, it creates a short circuit. The path of electricity is diverted, traveling through the animal's body in search of a ground source. When the path is interrupted, special equipment senses this change and stops the flow of electricity, causing a power outage.



Power outage data by state

Reported power outages by region



Regions:
New England: Connecticut, Massachusetts, Rhode Island, Vermont, New Hampshire, Maine
Northeast: New York, Pennsylvania, New Jersey
East: Virginia, North Carolina, Maryland (includes Washington DC), Delaware
Eastern Midwest: Wisconsin, Illinois, West Virginia, Ohio, Michigan, Kentucky, Indiana
Southeast: Tennessee, Georgia, Alabama, Mississippi, South Carolina, Florida
South: Texas, Louisiana, Arkansas, Oklahoma
Western Midwest: South Dakota, North Dakota, Nebraska, Minnesota, Missouri, Kansas, Iowa
Mountain: Colorado, Wyoming, Utah, New Mexico
Southwest: Nevada, California, Arizona
Northwest: Washington, Oregon, Idaho, Montana
Extra Continental: Alaska, Hawaii

State data overview

This section of the report provides an analysis of the power outages by state. There are four parts to each analysis.

1. The first part is an outage summary. The results are computed in the same manner as those in the outage summary found in the national power outage data in the previous part of this report. Only data pertaining to the particular state is used.
2. The second part of the analysis on each state is the outage fact. This is simply an interesting fact concerning a particular outage (or outages) in a state.
3. The third part of the analysis is a chart of the power outages by cause. This is the same type of chart that can be found in the national power outage data in the previous part of this report. Only data pertaining to the particular state is used.
4. The last part of each state section is the number of power outages by month. This is the same type of chart that can be found in the national power outage data in the previous part of this report. Only data pertaining to the particular state is used. From this chart it may be possible to determine particular times of the year when power outages are more common.
5. Data collection began February 16, 2008.

Alabama

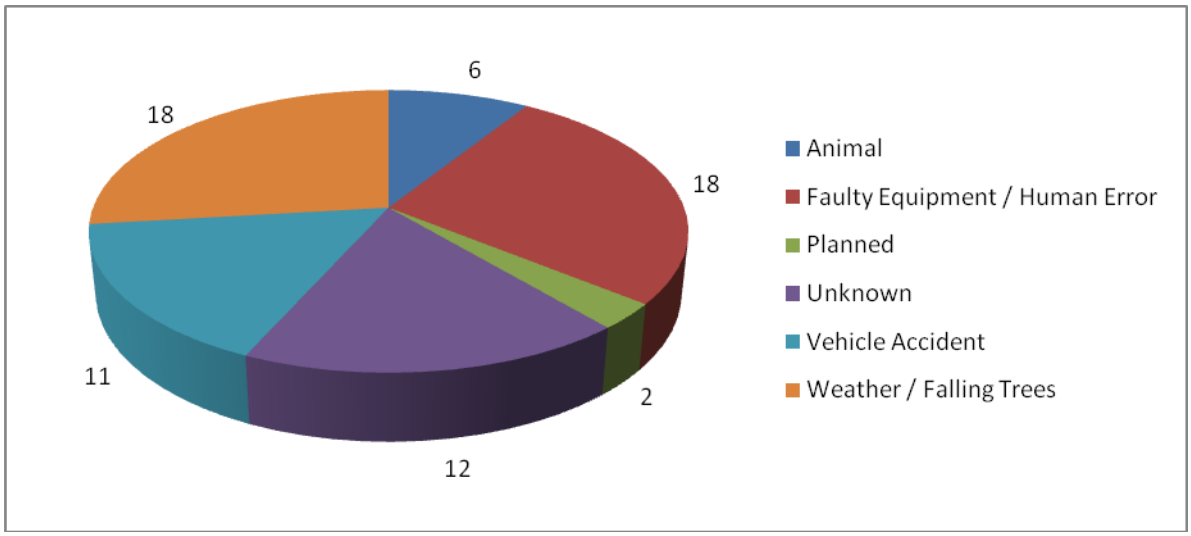
Outage summary

Total number of people affected by outages	378,090
Total duration of outages	1,355 minutes (nearly 23 hours)
Total number of outages	67
State ranking (number of outages)	18
Average number of people affected per outage	5,643
Average duration of outage	20 minutes

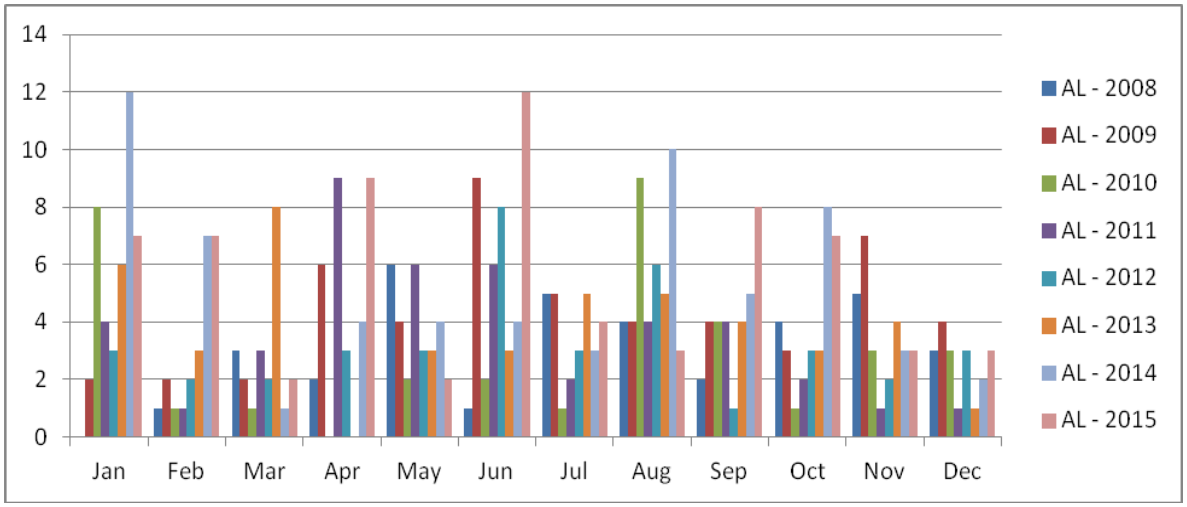
Note: Total number of people affected (and average) based on 28 (42%) of the total reported outages.
Total duration of outages (and average) based on 12 (18%) of the total reported outages.

Outage fact: On Oct. 18 in Athens, an outage was caused by an opossum that got into a breaker and ultimately fried itself, causing a malfunction at French's Mill Substation.

Reported power outages by cause



Reported power outages by month



Alaska

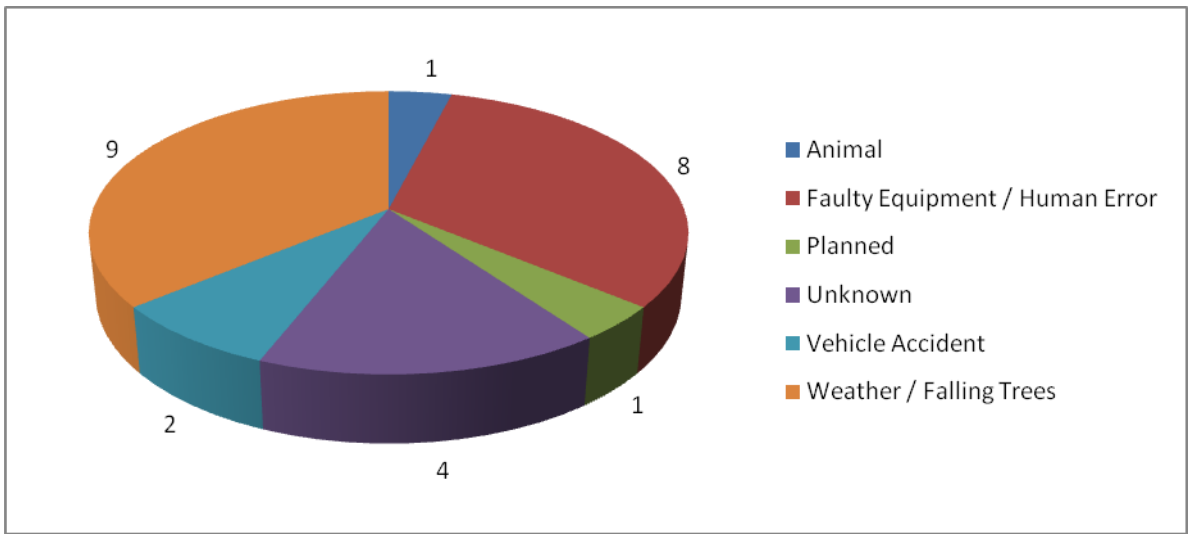
Outage summary

Total number of people affected by outages	70,468
Total duration of outages	960 minutes (16 hours)
Total number of outages	25
State ranking (number of outages)	38
Average number of people affected per outage	2,819
Average duration of outage	38 minutes

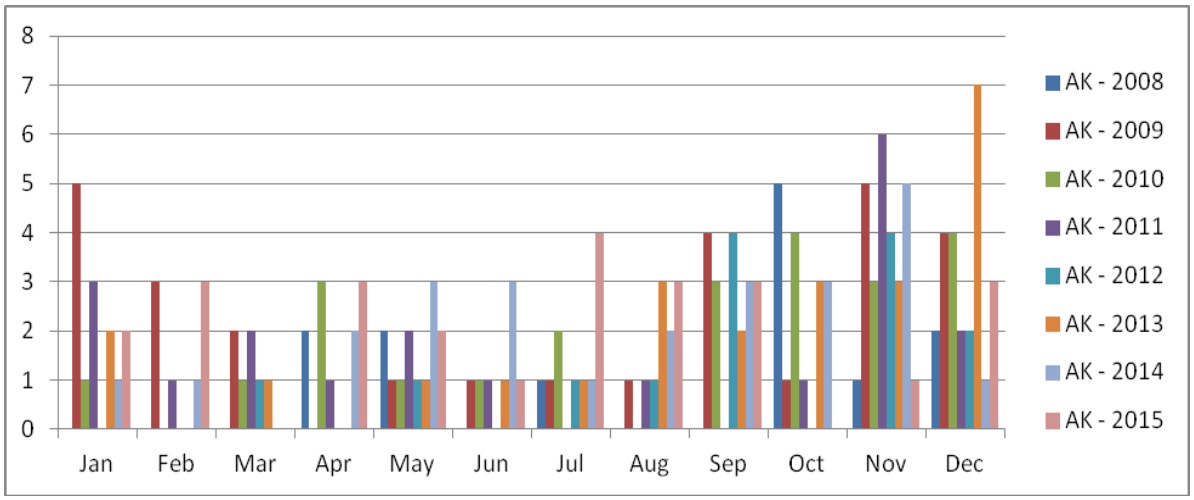
Note: Total number of people affected (and average) based on 12 (48%) of the total reported outages.
Total duration of outages (and average) based on 6 (24%) of the total reported outages.

Outage fact: On April 16, a lightning strike knocked out power to 21,000 Wasilla residents.

Reported power outages by cause



Reported power outages by month



Arizona

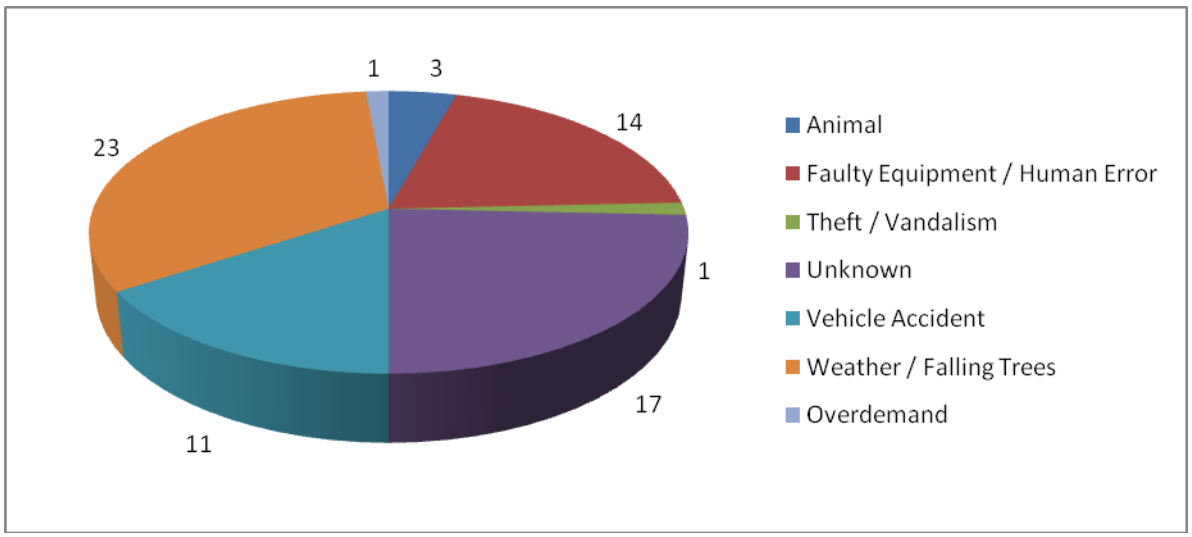
Outage summary

Total number of people affected by outages	267,984
Total duration of outages	6,230 minutes (more than 4 days)
Total number of outages	70
State ranking (number of outages)	17
Average number of people affected per outage	3,828
Average duration of outage	89 minutes

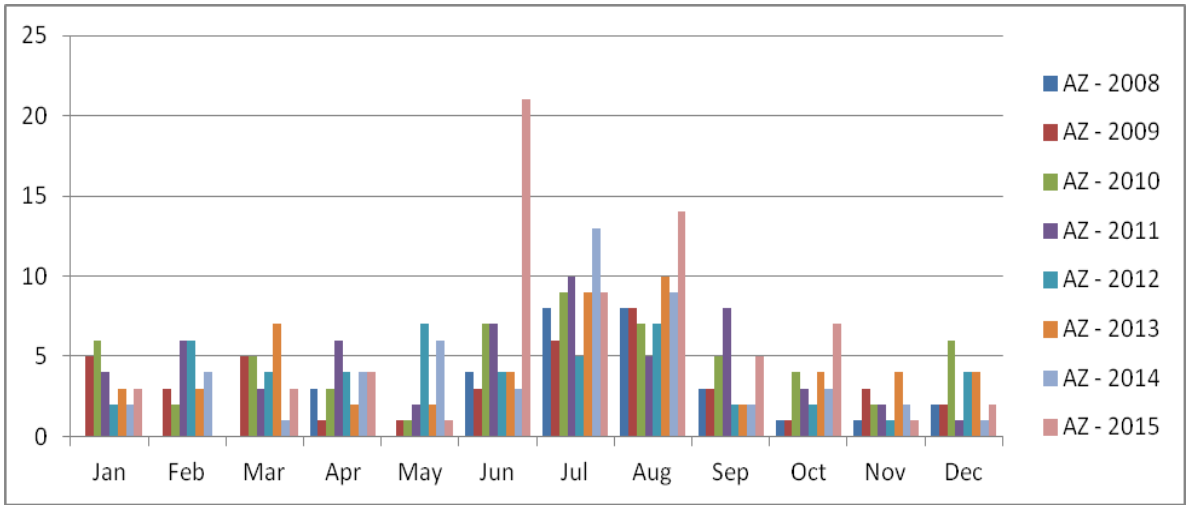
Note: Total number of people affected (and average) based on 48 (68%) of the total reported outages.
Total duration of outages (and average) based on 22 (31%) of the total reported outages.

Outage fact: A grader tractor struck a guide wire connected to a pole in Yuma on June 2, causing power lines to fall and sparking a fire in a harvested wheat field.

Reported power outages by cause



Reported power outages by month



Arkansas

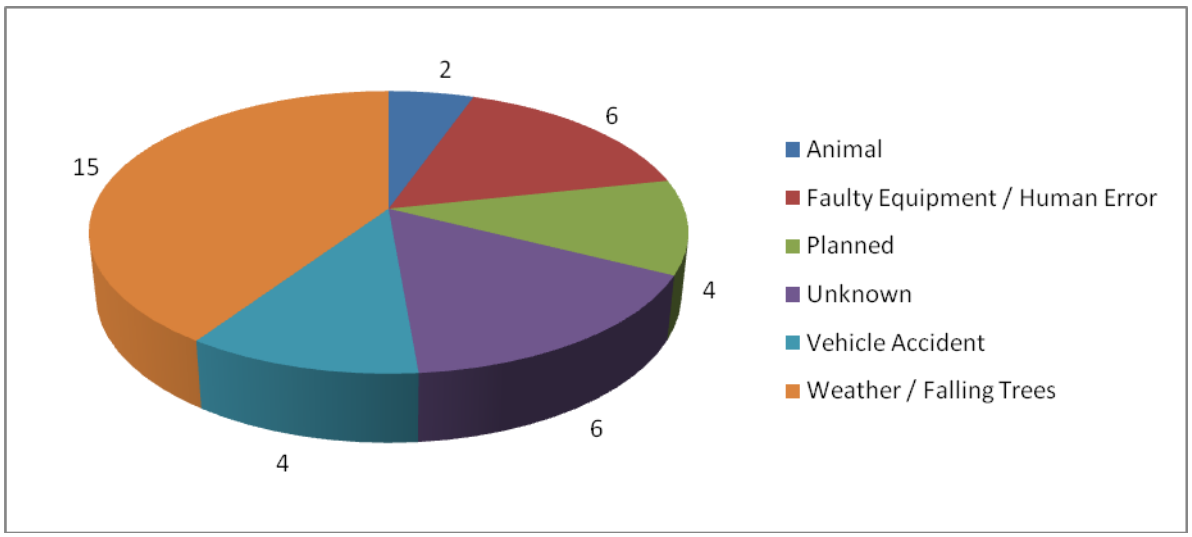
Outage summary

Total number of people affected by outages	160,074
Total duration of outages	1,370 minutes (nearly 23 hours)
Total number of outages	37
State ranking (number of outages)	32
Average number of people affected per outage	4,326
Average duration of outage	37 minutes

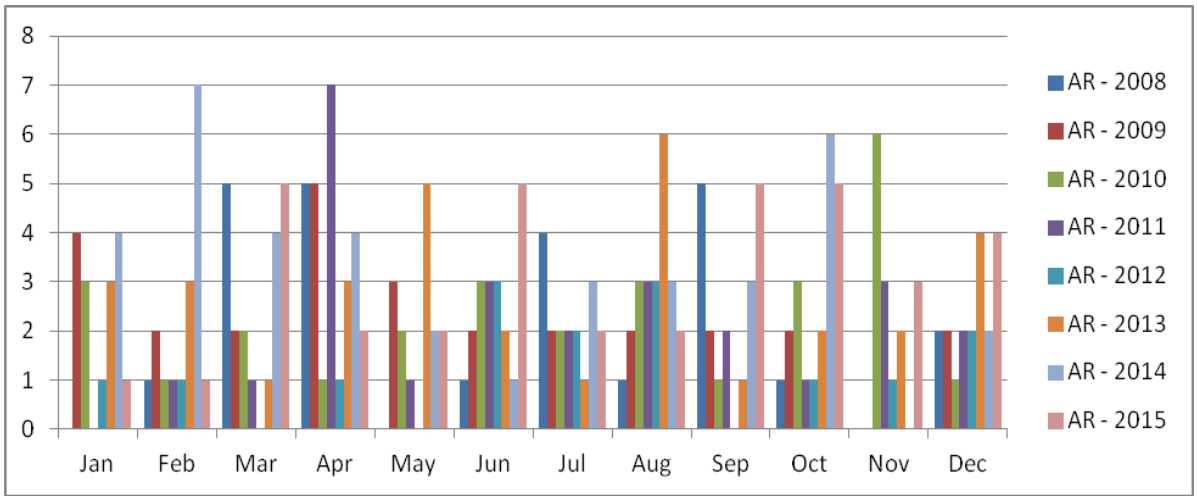
Note: Total number of people affected (and average) based on 20 (54%) of the total reported outages. Total duration of outages (and average) based on 7 (19%) of the total reported outages.

Outage fact: A rat closed a circuit that should have been open in a Little Rock substation, knocking out power to 1,000 customers on June 8.

Reported power outages by cause



Reported power outages by month



California

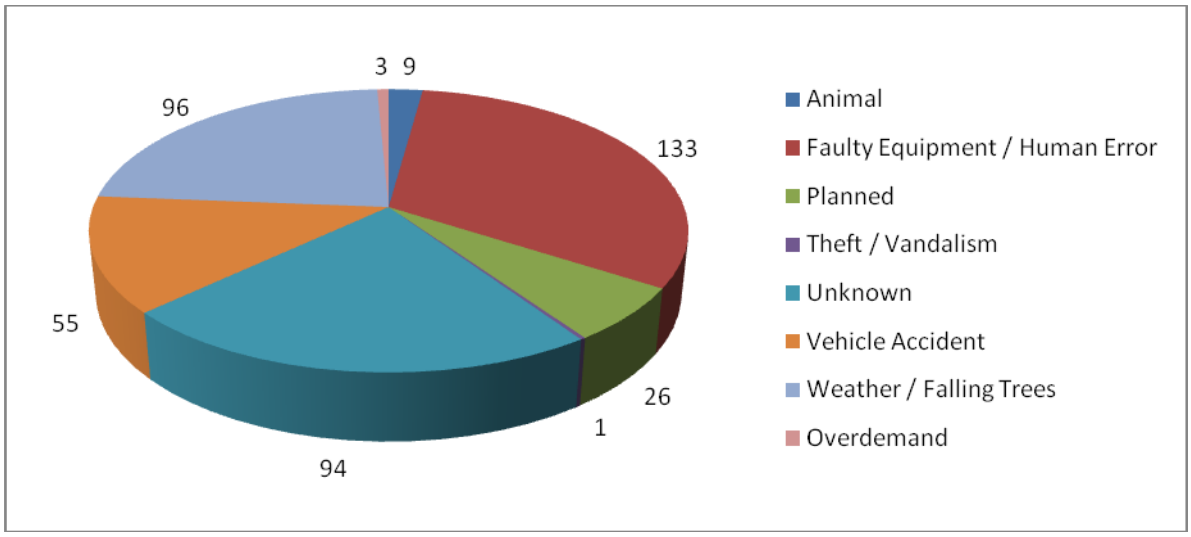
Outage summary

Total number of people affected by outages	1,421,248
Total duration of outages	29,955 minutes (nearly 21 days)
Total number of outages	417
State ranking (number of outages)	1
Average number of people affected per outage	3,408
Average duration of outage	72 minutes

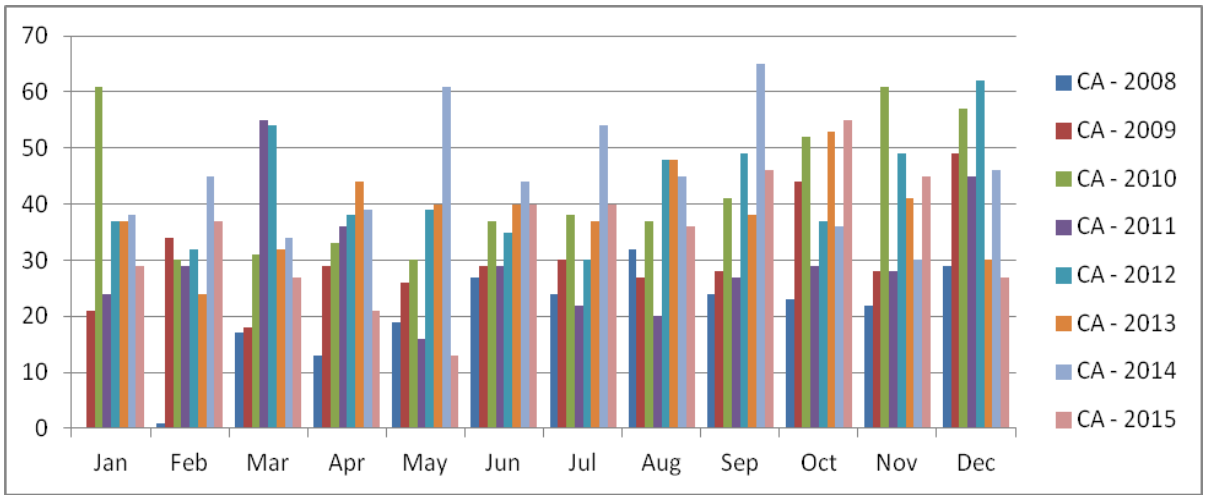
Note: Total number of people affected (and average) based on 302 (72%) of the total reported outages. Total duration of outages (and average) based on 77 (18%) of the total reported outages.

Outage fact: On August 20, a fleeing parolee who authorities say was involved in a domestic disturbance crashed his SUV in Weimar, damaging a power pole and causing an electrical outage to 1,434 customers.

Reported power outages by cause



Reported power outages by month



Colorado

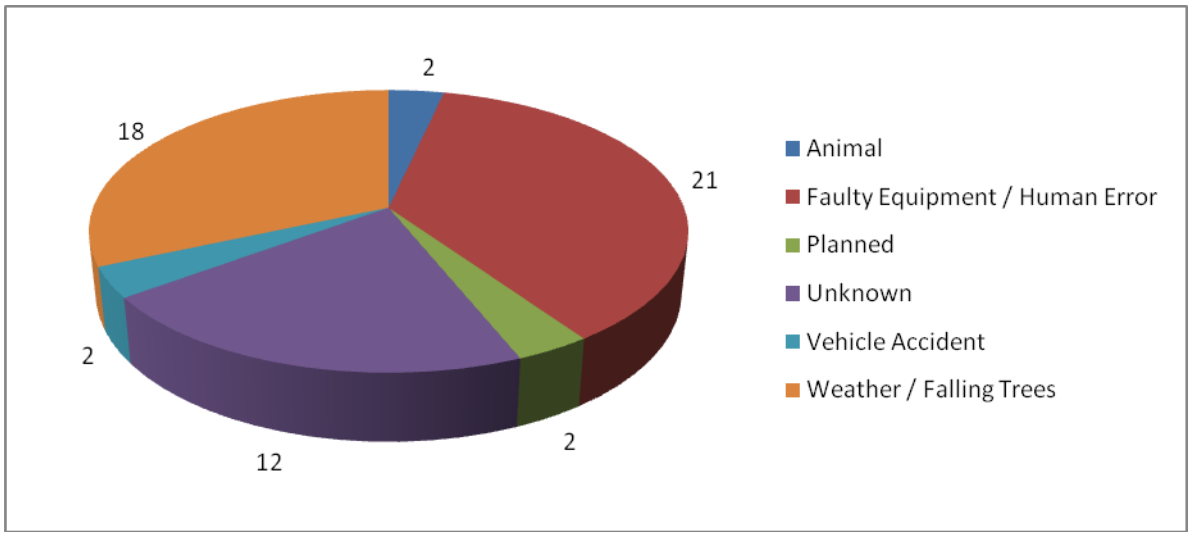
Outage summary

Total number of people affected by outages	156,215
Total duration of outages	2,075 minutes (nearly 23 hours)
Total number of outages	57
State ranking (number of outages)	23 (tie)
Average number of people affected per outage	2,741
Average duration of outage	36 minutes

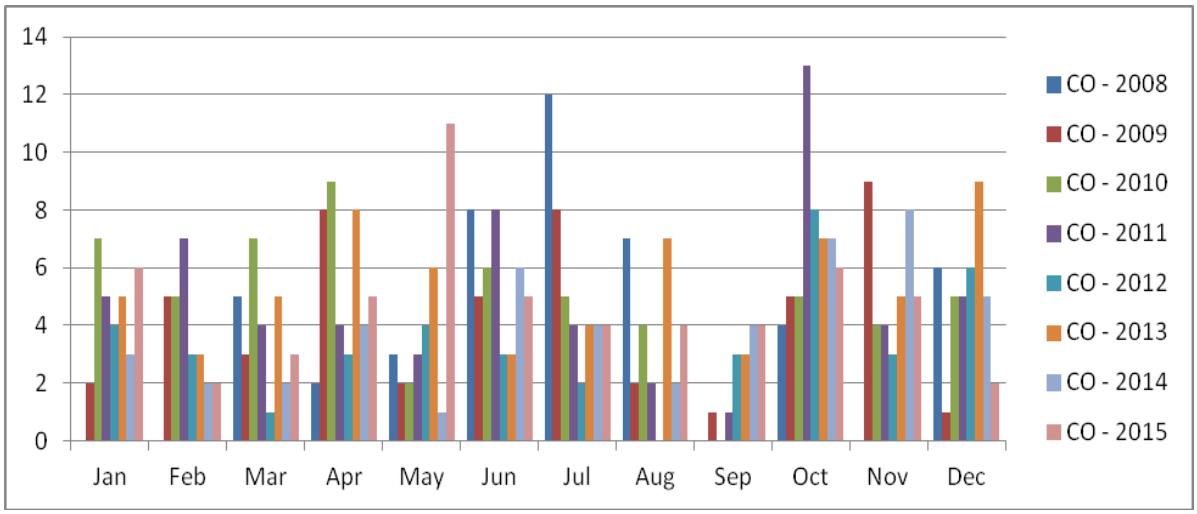
Note: Total number of people affected (and average) based on 33 (58%) of the total reported outages.
Total duration of outages (and average) based on 16 (28%) of the total reported outages.

Outage fact: An excavator hit a power line in a construction area of Colorado Springs Feb. 10, causing a blackout and sparking a small grass fire.

Reported power outages by cause



Reported power outages by month



Connecticut

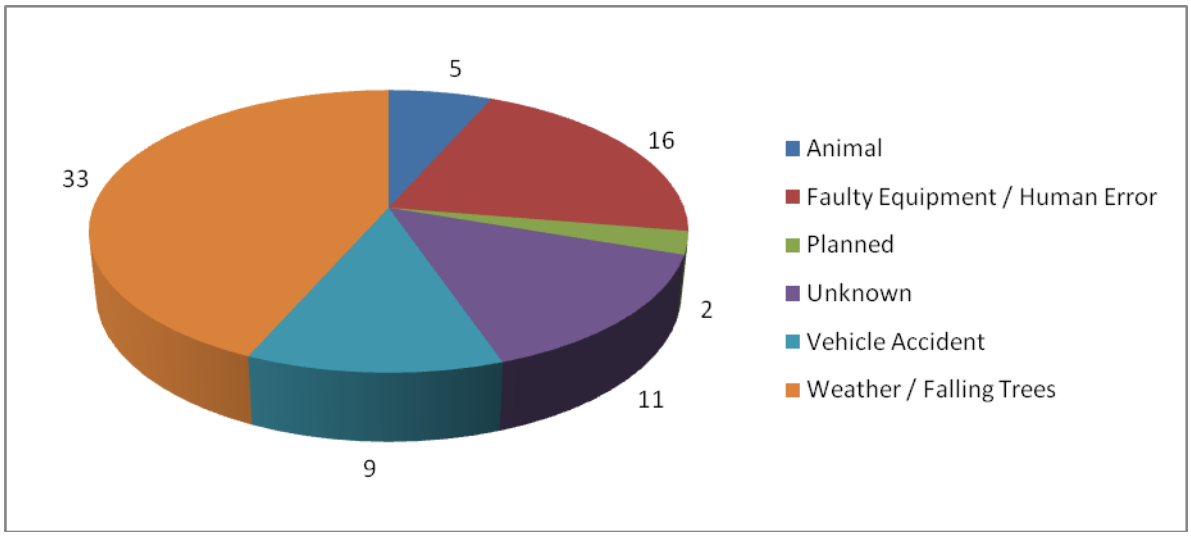
Outage summary

Total number of people affected by outages	193,794
Total duration of outages	2,975 minutes (nearly 50 hours)
Total number of outages	76
State ranking (number of outages)	15
Average number of people affected per outage	2,550
Average duration of outage	minutes

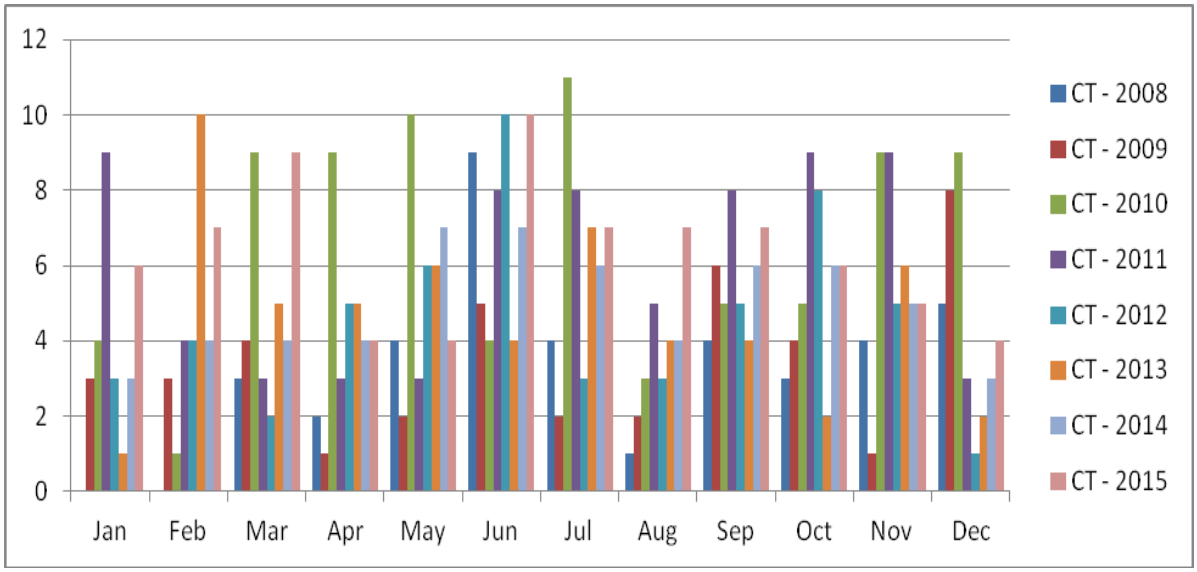
Note: Total number of people affected (and average) based on 57 (75%) of the total reported outages.
Total duration of outages (and average) based on 8 (11%) of the total reported outages.

Outage fact: On May 7 in Putnam, a teenage driver hit a power pole, causing significant damage to the pole and causing wires to topple, which then sparked a brush fire.

Reported power outages by cause



Reported power outages by month



Delaware

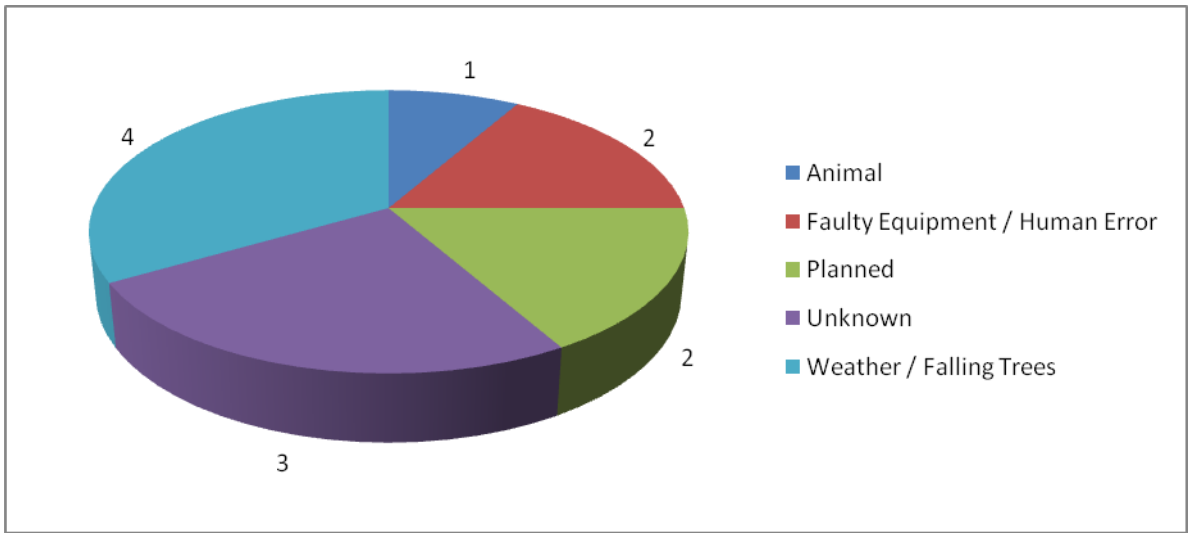
Outage summary

Total number of people affected by outages	93,520
Total duration of outages	300 minutes (5 hours)
Total number of outages	12
State ranking (number of outages)	43
Average number of people affected per outage	7,793
Average duration of outage	25 minutes

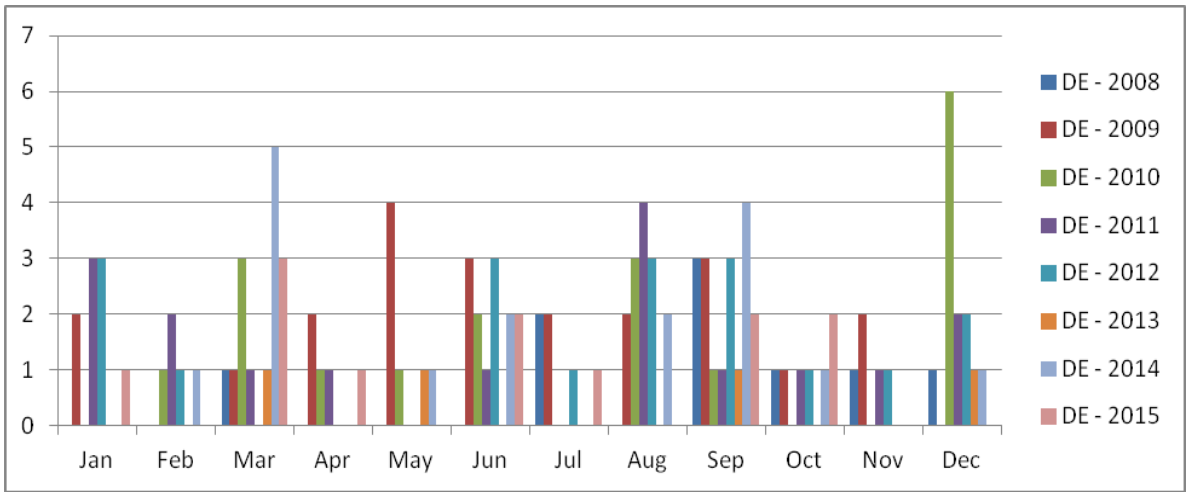
Note: Total number of people affected (and average) based on 8 (67%) of the total reported outages. Total duration of outages (and average) based on 3 (25%) of the total reported outages.

Outage fact: On March 7, a bird's nest was linked to a power outage in Wicomico County. Wide areas between Salisbury and Berlin were affected, and police had to direct traffic at several intersections.

Reported power outages by cause



Reported power outages by month



Florida

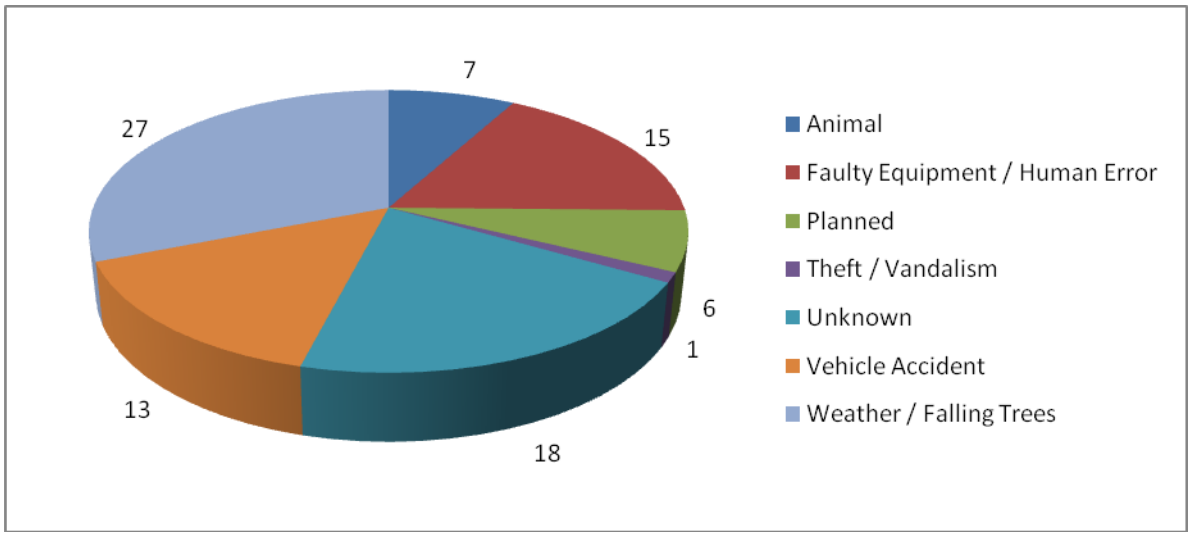
Outage summary

Total number of people affected by outages	202,350
Total duration of outages	2,373 minutes (nearly 26 hours)
Total number of outages	87
State ranking (number of outages)	12
Average number of people affected per outage	2,326
Average duration of outage	27 minutes

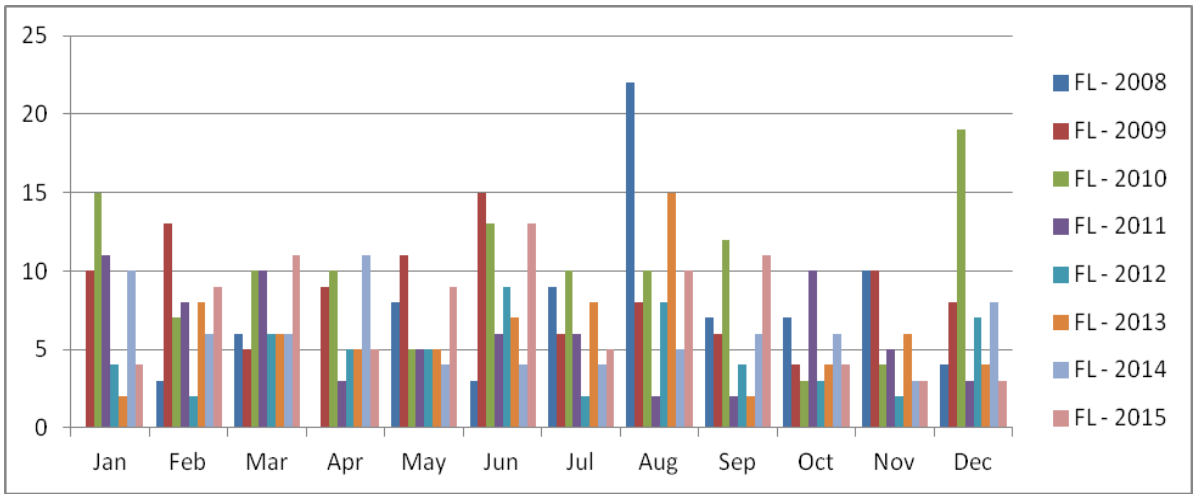
Note: Total number of people affected (and average) based on 54 (62%) of the total reported outages. Total duration of outages (and average) based on 16 (18%) of the total reported outages.

Outage fact: A snake crawled across a transformer tie-breaker in Clay County Sept. 15, causing an hour-long power outage to 5,000 customers.

Reported power outages by cause



Reported power outages by month



Georgia

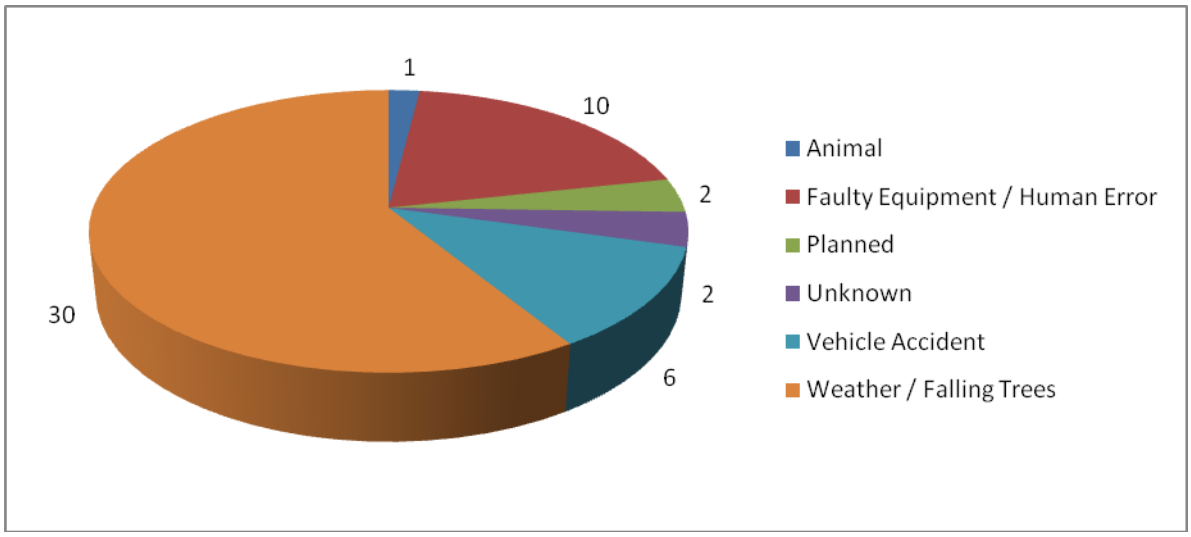
Outage summary

Total number of people affected by outages	334,703
Total duration of outages	5,750 minutes (4 days)
Total number of outages	51
State ranking (number of outages)	26
Average number of people affected per outage	6,563
Average duration of outage	113 minutes

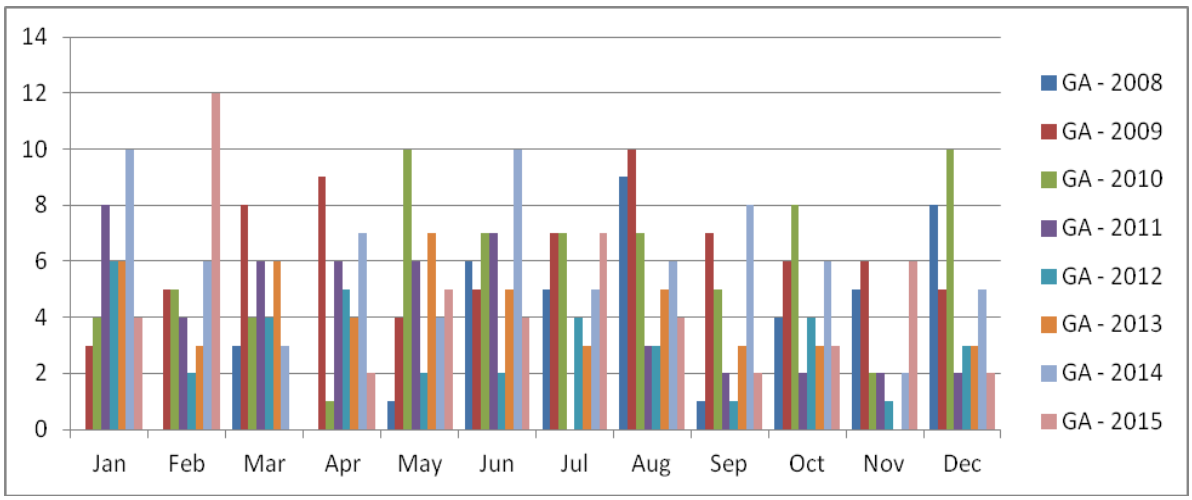
Note: Total number of people affected (and average) based on 54 (55%) of the total reported outages. Total duration of outages (and average) based on 10 (20%) of the total reported outages.

Outage fact: More than 16,000 Habersham residents were left in the dark Oct. 4 after a devastating mix of wind and rain impacted the area, causing long-lasting power outages.

Reported power outages by cause



Reported power outages by month



Hawaii

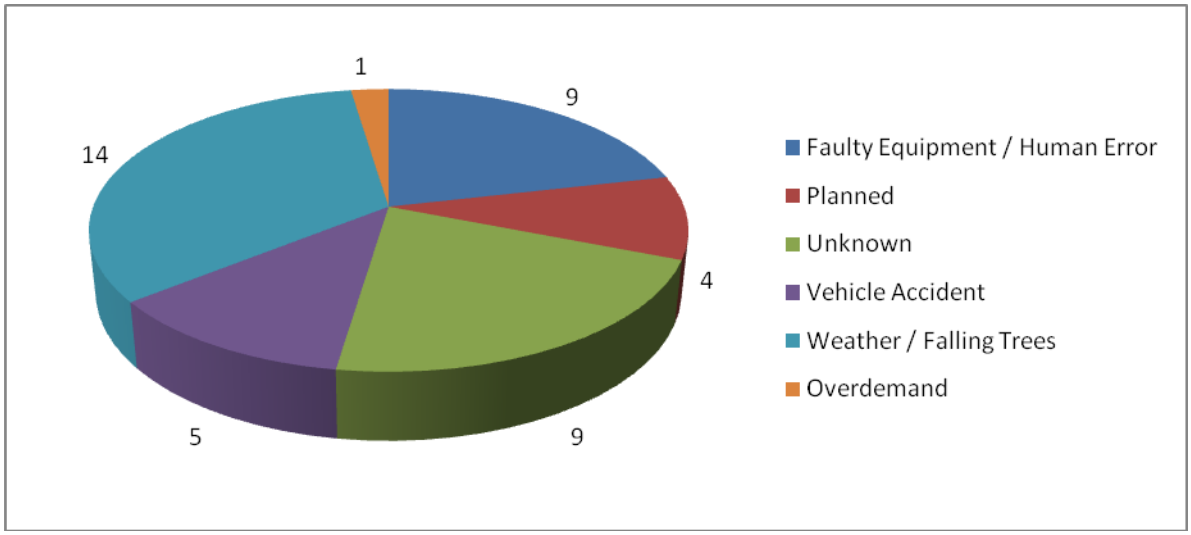
Outage summary

Total number of people affected by outages	152,294
Total duration of outages	2,844 minutes (nearly 2 days)
Total number of outages	42
State ranking (number of outages)	29
Average number of people affected per outage	3,626
Average duration of outage	68 minutes

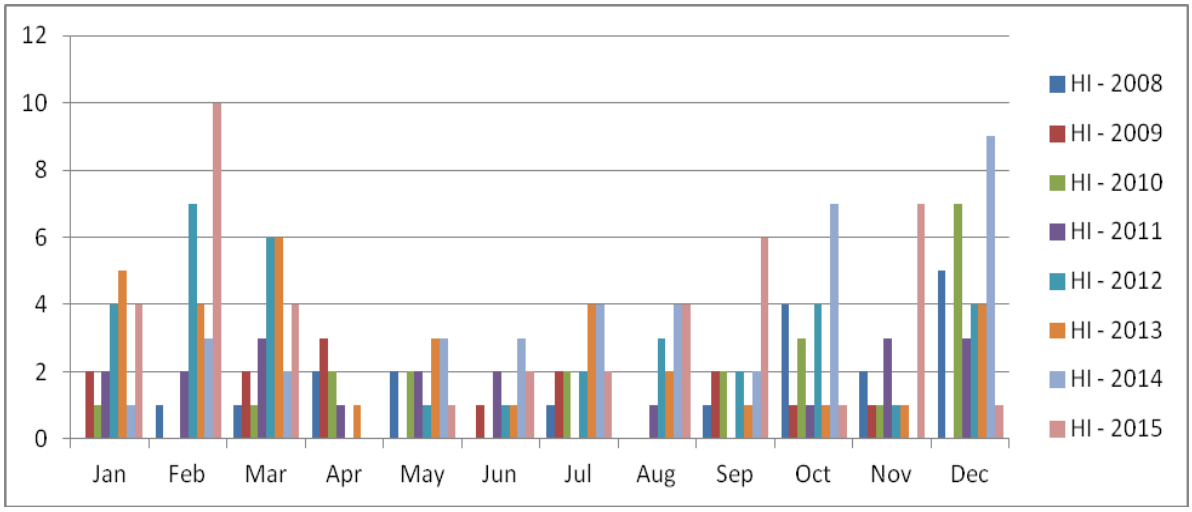
Note: Total number of people affected (and average) based on 23 (55%) of the total reported outages. Total duration of outages (and average) based on 15 (36%) of the total reported outages.

Outage fact: Some 57,000 residents had their power cut on July 22 after the unexpected shutdown of Oahu's largest generator prompted the utility to launch emergency outages across the island.

Reported power outages by cause



Reported power outages by month



Idaho

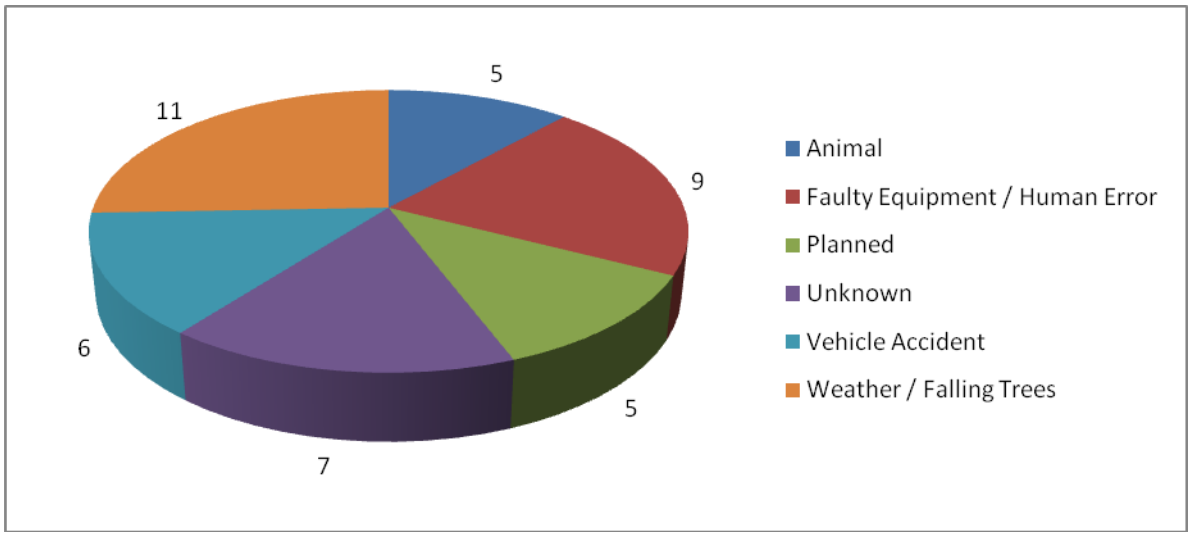
Outage summary

Total number of people affected by outages	101,434
Total duration of outages	2,753 minutes (nearly 2 days)
Total number of outages	43
State ranking (number of outages)	28 (tie)
Average number of people affected per outage	2,359
Average duration of outage	64 minutes

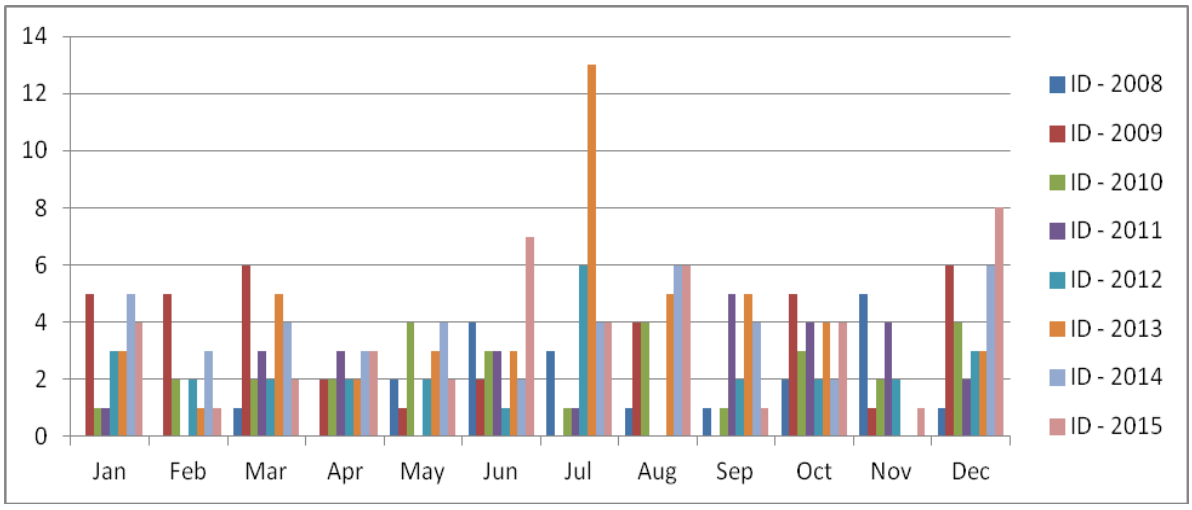
Note: Total number of people affected (and average) based on 32 (74%) of the total reported outages. Total duration of outages (and average) based on 13 (30%) of the total reported outages.

Outage fact: On May 22 in Aberdeen, a plane severed power lines, resulting in an outage to 1,000 customers. The pilot's name was forwarded to the Federal Aviation Administration.

Reported power outages by cause



Reported power outages by month



Illinois

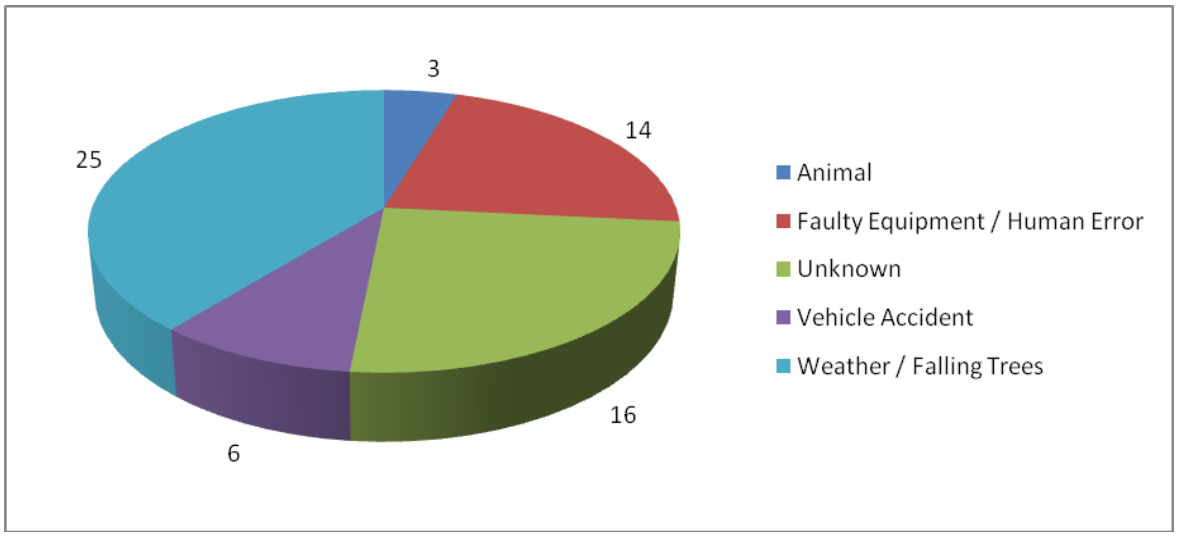
Outage summary

Total number of people affected by outages	291,610
Total duration of outages	724 minutes (12 hours)
Total number of outages	64
State ranking (number of outages)	19
Average number of people affected per outage	4,556
Average duration of outage	11 minutes

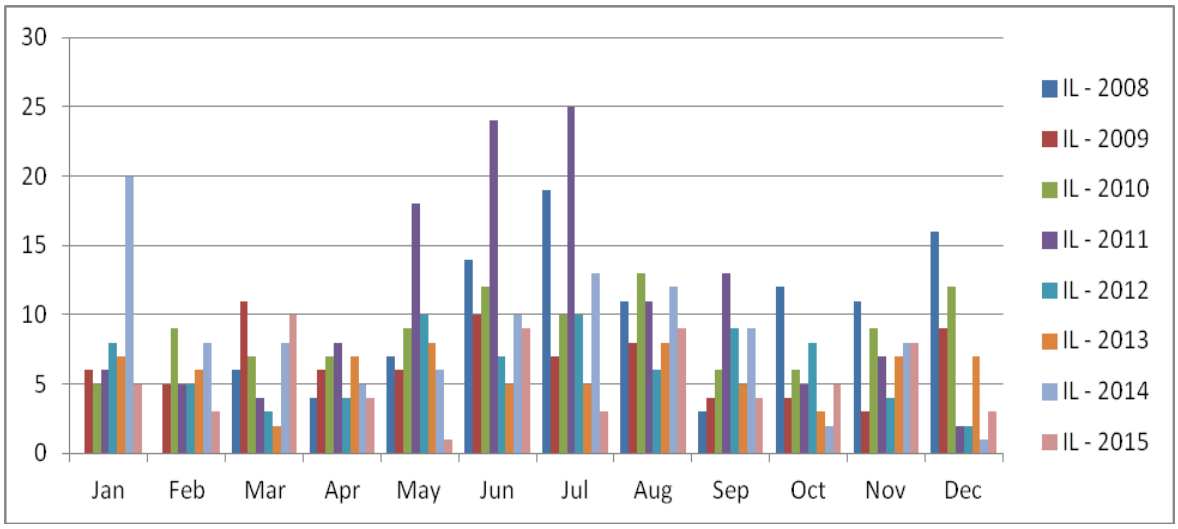
Note: Total number of people affected (and average) based on 45 (70%) of the total reported outages. Total duration of outages (and average) based on 4 (6%) of the total reported outages.

Outage fact: An investigation concluded that a Feb. 1 outage during Super Bowl XLIX in the Southern Illinois viewing area was caused by a “dirty" power supply from the utility provider.

Reported power outages by cause



Reported power outages by month



Indiana

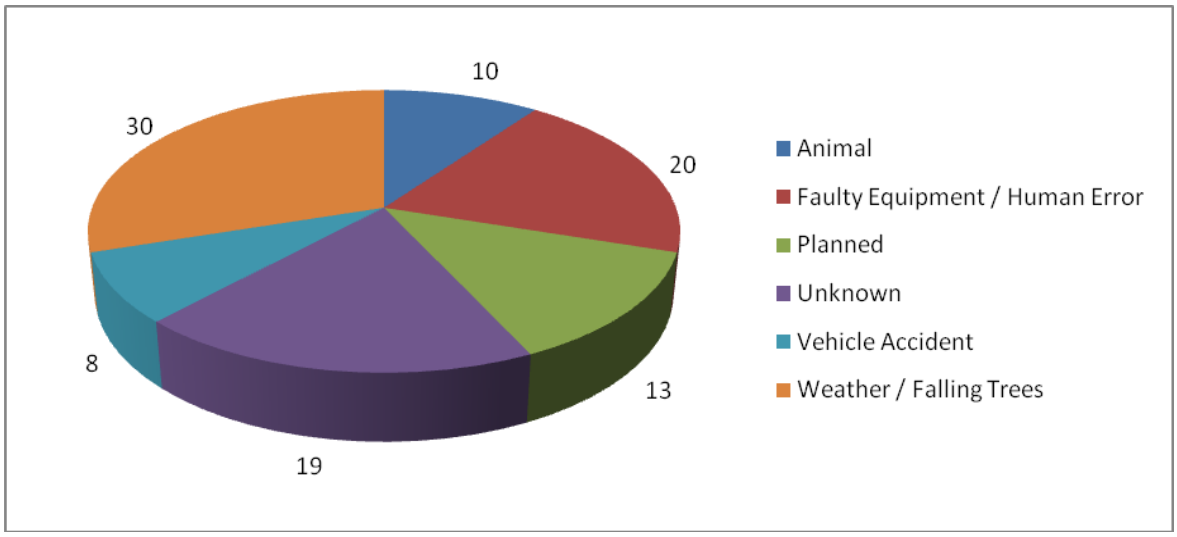
Outage summary

Total number of people affected by outages	191,340
Total duration of outages	3,694 minutes (nearly 32 hours)
Total number of outages	100
State ranking (number of outages)	10
Average number of people affected per outage	1,913
Average duration of outage	37 minutes

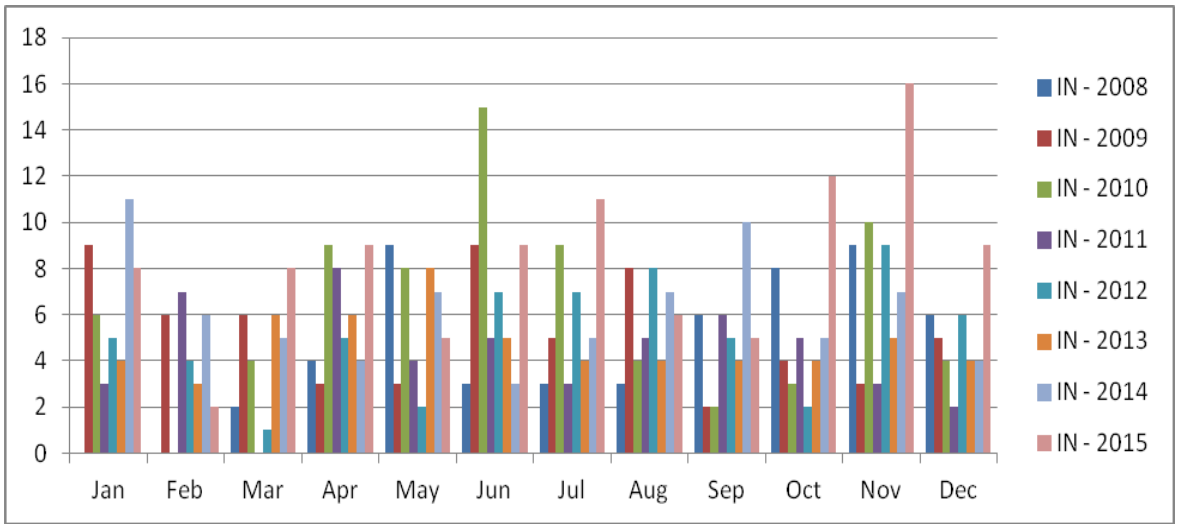
Note: Total number of people affected (and average) based on 65 (65%) of the total reported outages. Total duration of outages (and average) based on 23 (23%) of the total reported outages.

Outage fact: On Nov. 17, a raccoon caused equipment problems at a transformer west of Muncie, resulting in a loss of power to more than 4,800 homes and business.

Reported power outages by cause



Reported power outages by month



Iowa

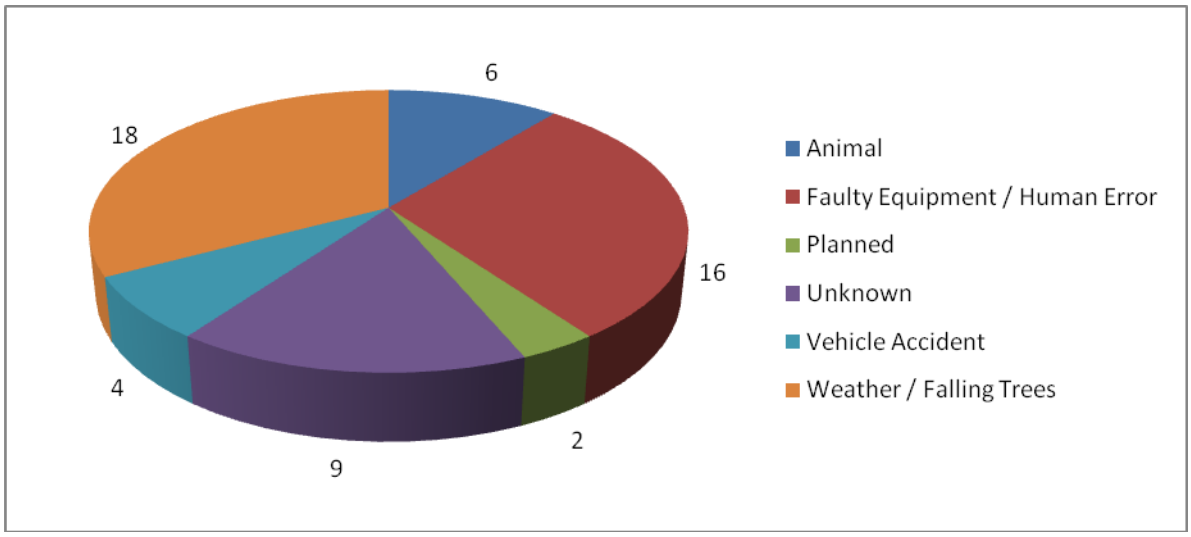
Outage summary

Total number of people affected by outages	95,529
Total duration of outages	2,172 minutes (36 hours)
Total number of outages	55
State ranking (number of outages)	24
Average number of people affected per outage	1,737
Average duration of outage	39 minutes

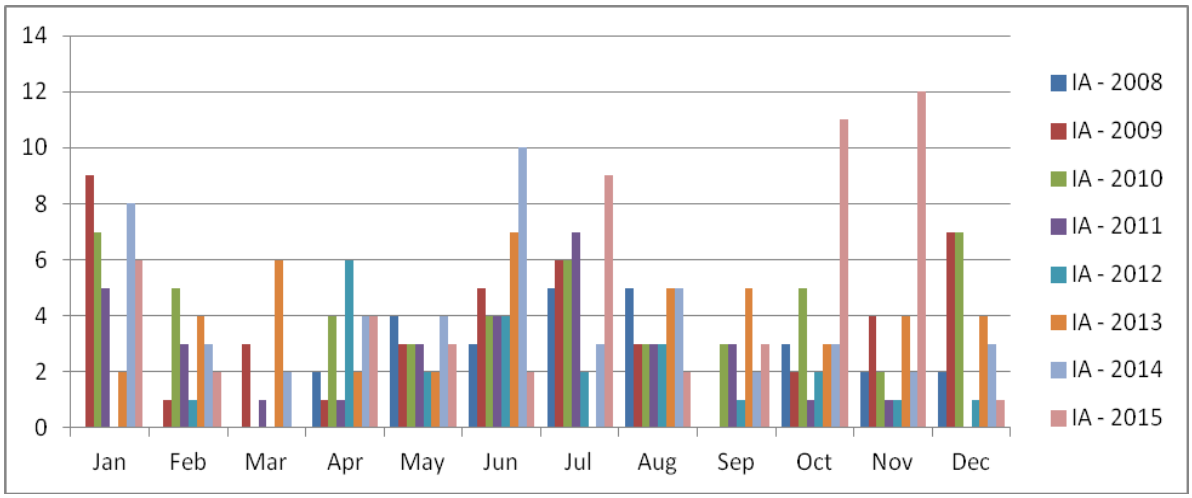
Note: Total number of people affected (and average) based on 40 (73%) of the total reported outages. Total duration of outages (and average) based on 13 (24%) of the total reported outages.

Outage fact: A tornado caused devastation and more than 19,000 power outages in Clinton on April 9.

Reported power outages by cause



Reported power outages by month



Kansas

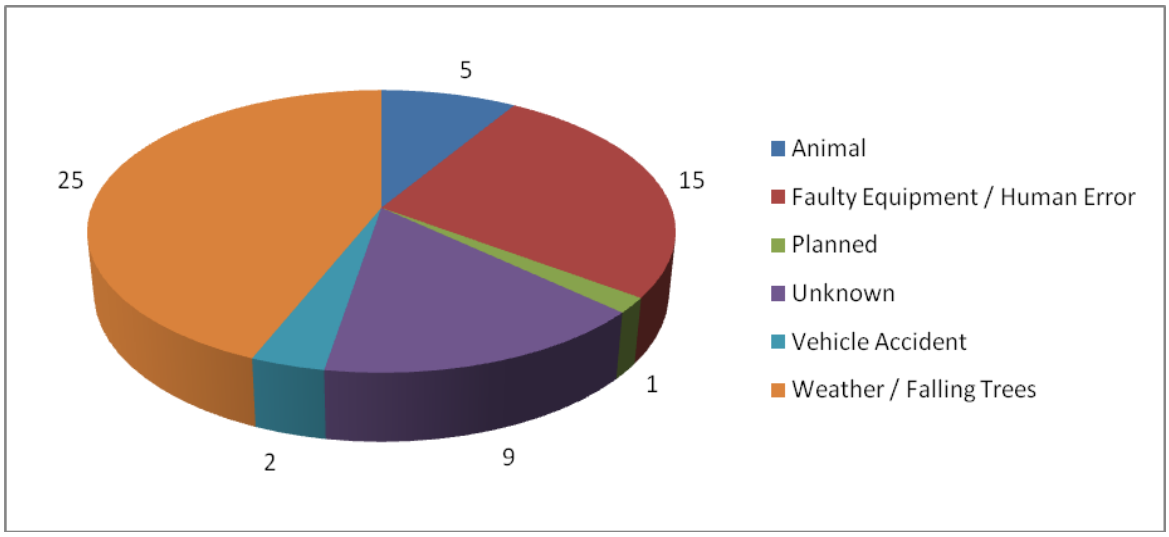
Outage summary

Total number of people affected by outages	135,292
Total duration of outages	666 minutes (11 hours)
Total number of outages	57
State ranking (number of outages)	23 (tie)
Average number of people affected per outage	2,374
Average duration of outage	12 minutes

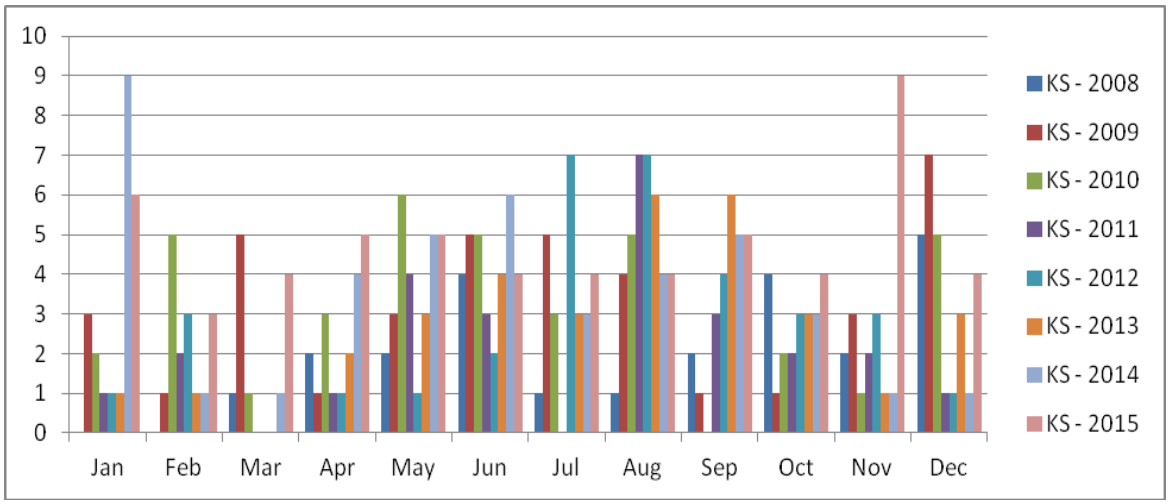
Note: Total number of people affected (and average) based on 43 (75%) of the total reported outages. Total duration of outages (and average) based on 8 (14%) of the total reported outages.

Outage fact: On Oct. 1, an electrical circuit feeding the Kansas University campus failed, leaving students in the dark. KU had to restore power slowly, so as not to overload its equipment.

Reported power outages by cause



Reported power outages by month



Kentucky

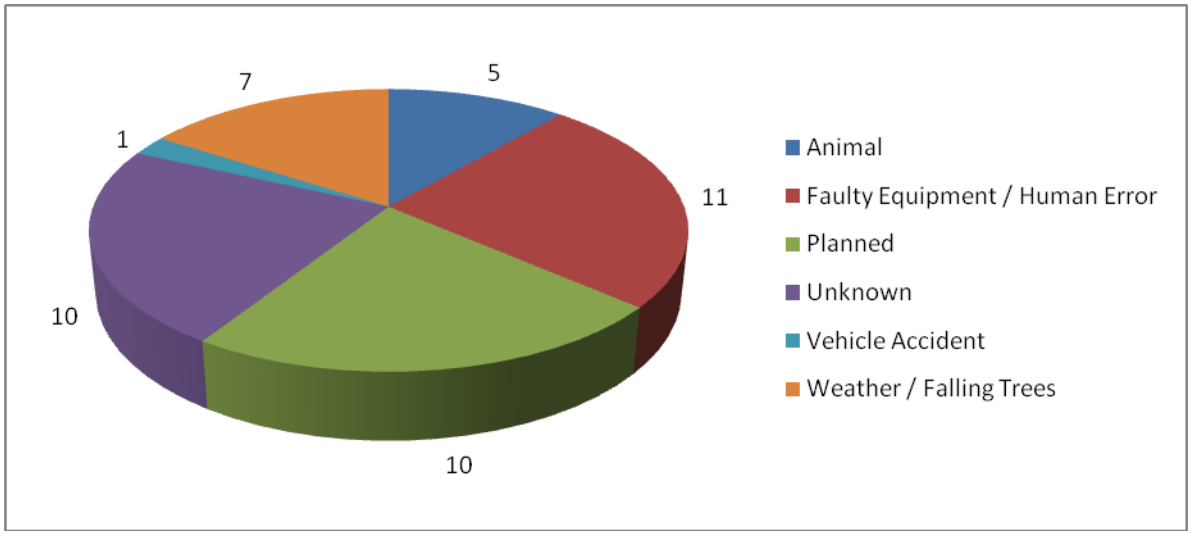
Outage summary

Total number of people affected by outages	117,833
Total duration of outages	4,300 minutes (almost 3 days)
Total number of outages	44
State ranking (number of outages)	27 (tie)
Average number of people affected per outage	2,678
Average duration of outage	98 minutes

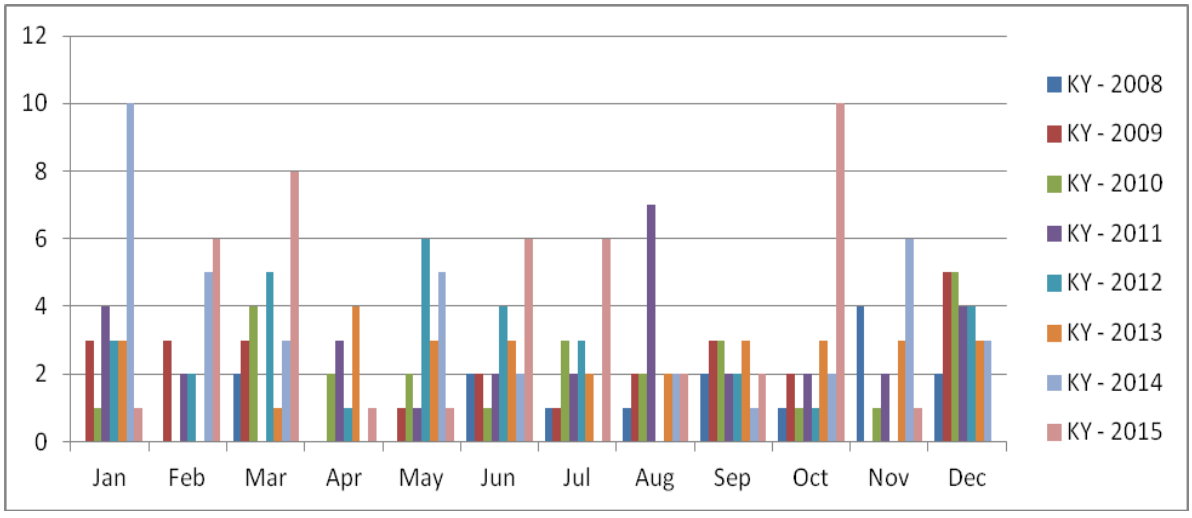
Note: Total number of people affected (and average) based on 28 (64%) of the total reported outages. Total duration of outages (and average) based on 17 (39%) of the total reported outages.

Outage fact: On July 12, more than 2,000 Louisville customers lost power as cars were stranded, homes flooded, and streets impassable after flash flooding triggered by a round of torrential rain.

Reported power outages by cause



Reported power outages by month



Louisiana

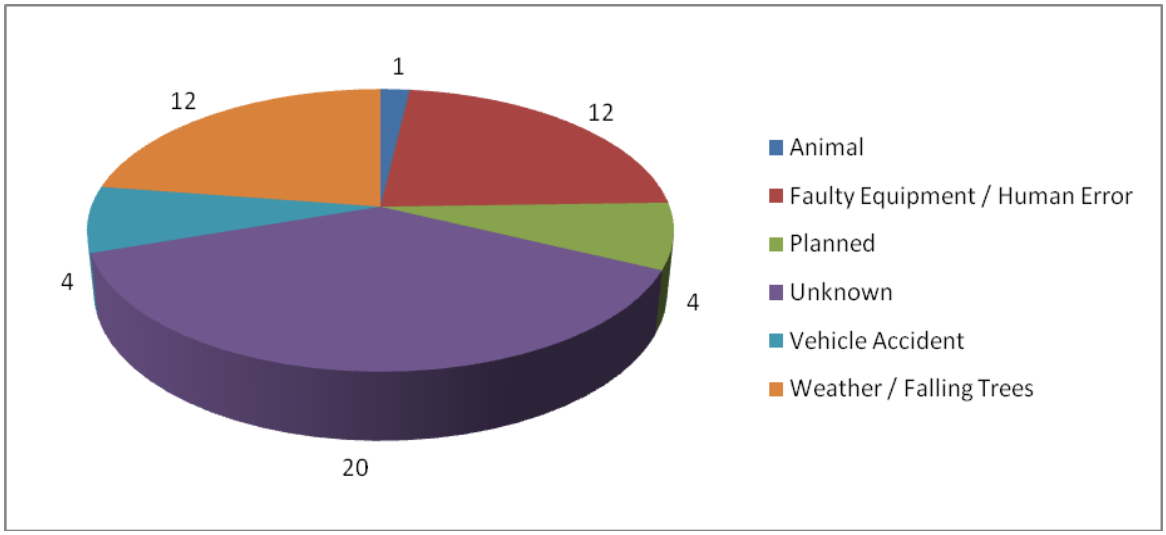
Outage summary

Total number of people affected by outages	139,886
Total duration of outages	1,545 minutes (nearly 26 hours)
Total number of outages	53
State ranking (number of outages)	25
Average number of people affected per outage	2,639
Average duration of outage	29 minutes

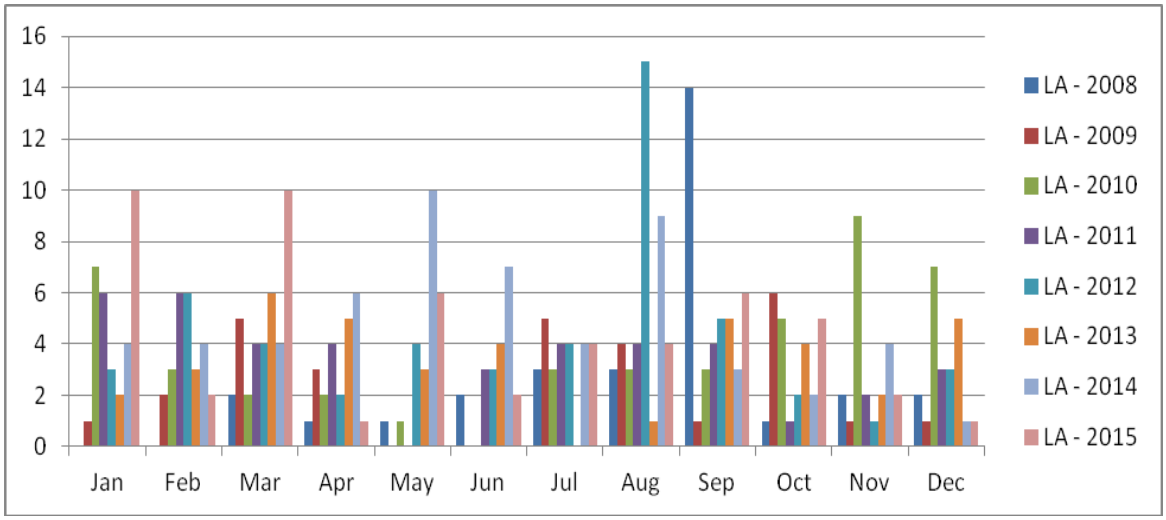
Note: Total number of people affected (and average) based on 36 (68%) of the total reported outages. Total duration of outages (and average) based on 13 (25%) of the total reported outages.

Outage fact: On Jan. 8, another mysterious outage blacked out 12,000 New Orleans homes and businesses. Just like the infamous Super Bowl blackout a few years ago, the utility seemed to be as much in the dark about its origin as its customers.

Reported power outages by cause



Reported power outages by month



Maine

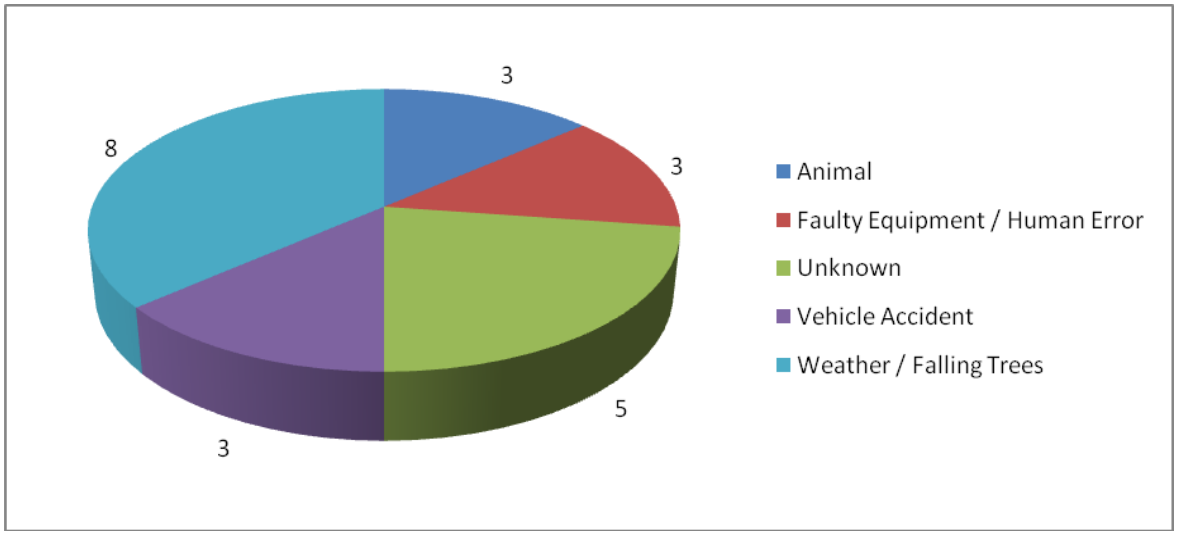
Outage summary

Total number of people affected by outages	38,937
Total duration of outages	627 minutes (10 1/2 hours)
Total number of outages	22
State ranking (number of outages)	39
Average number of people affected per outage	1,770
Average duration of outage	29

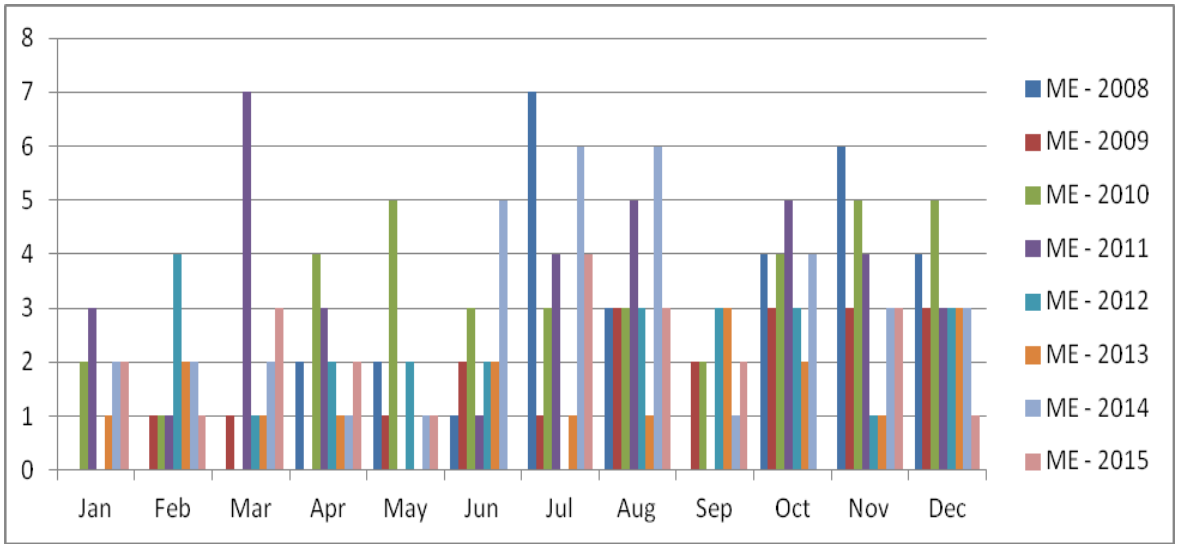
Note: Total number of people affected (and average) based on 14 (64%) of the total reported outages. Total duration of outages (and average) based on 5 (23%) of the total reported outages.

Outage fact: On August 4, 7,700 people across Maine lost power when a series of thunderstorms brought rain, powerful winds, lightning and hail as large as tennis balls that damaged car windshields in some areas.

Reported power outages by cause



Reported power outages by month



Maryland / Washington, DC

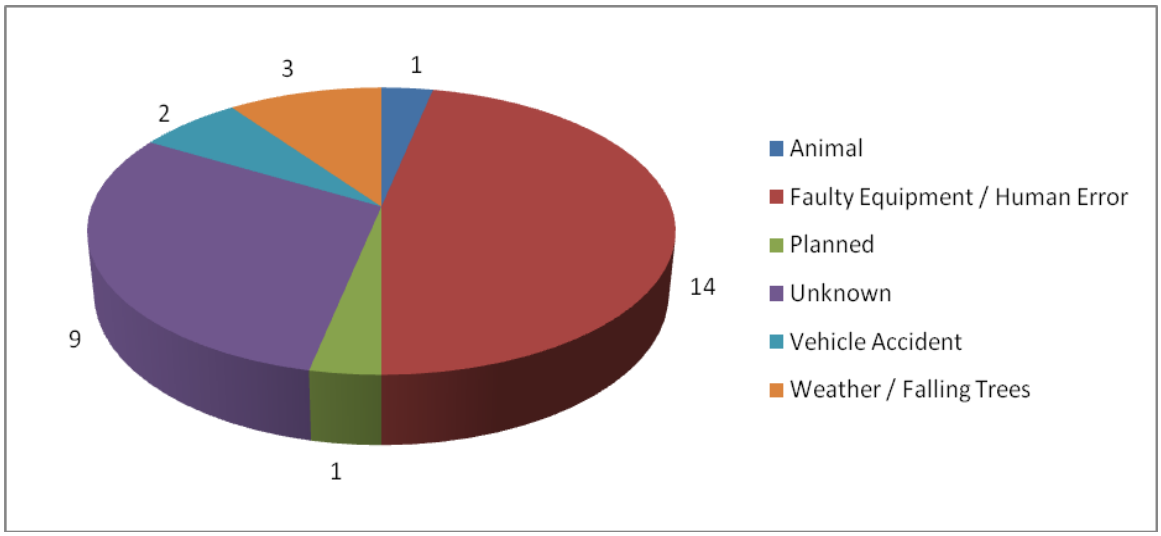
Outage summary

Total number of people affected by outages	145,593
Total duration of outages	2252 minutes (37 1/2 hours)
Total number of outages	57
State ranking (number of outages)	37 and 34, respectively
Average number of people affected per outage	5,308
Average duration of outage	82 minutes

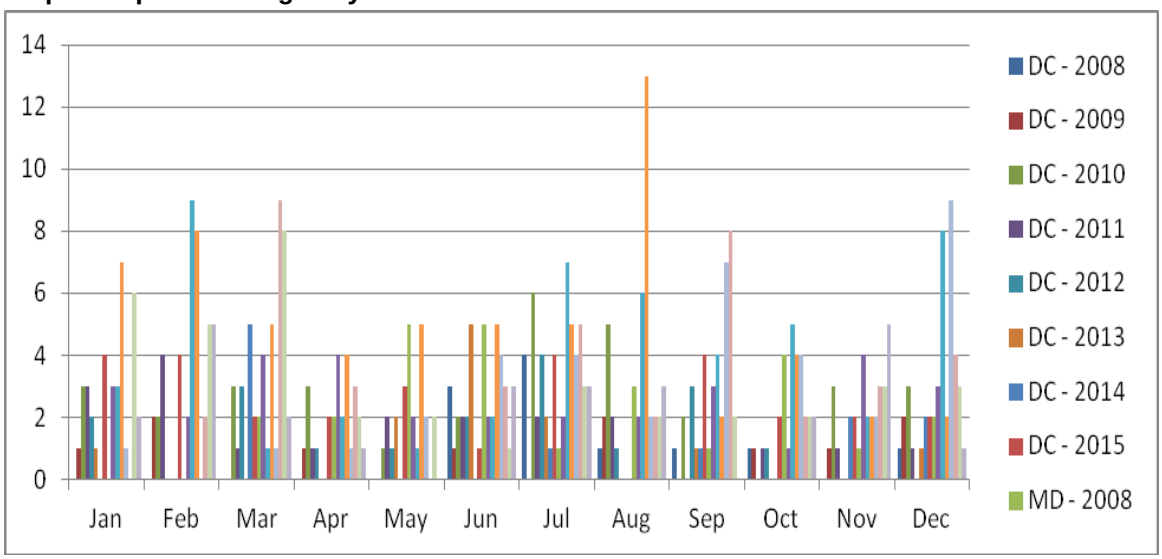
Note: Total number of people affected (and average) based on 30 (53%) of the total reported outages. Total duration of outages (and average) based on 9 (16%) of the total reported outages.

Outage fact: On July 22, a crew cutting grass near DC Metro's Grosvenor station hit a wire, causing a power line to dangle over the rail tracks and get hit by an oncoming train. More than 1,400 customers in the area were blacked out.

Reported power outages by cause



Reported power outages by month



Massachusetts

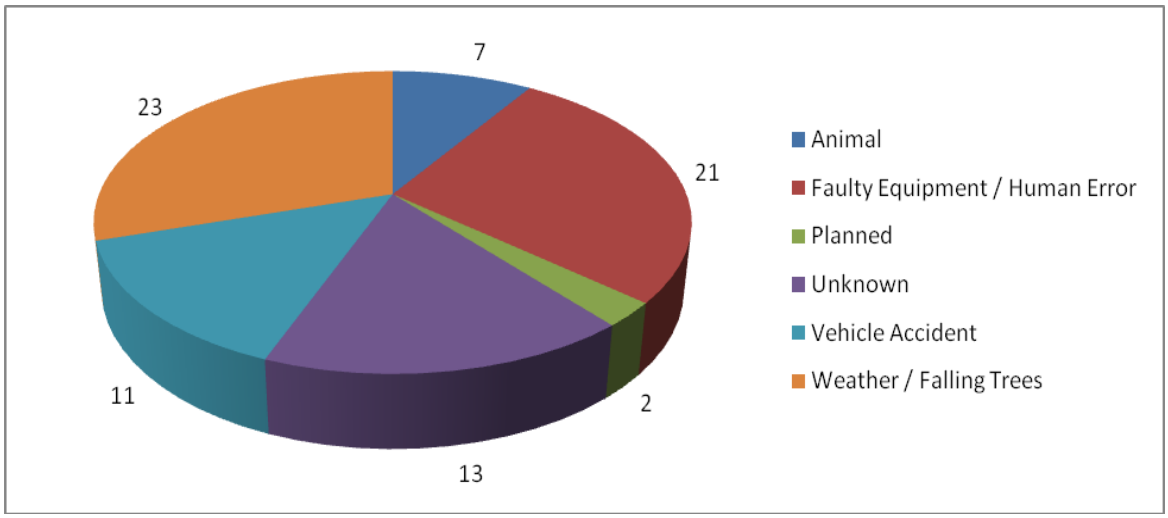
Outage summary

Total number of people affected by outages	150,698
Total duration of outages	2,837 minutes (47 hours)
Total number of outages	77
State ranking (number of outages)	14 (tie)
Average number of people affected per outage	1,957
Average duration of outage	37 minutes

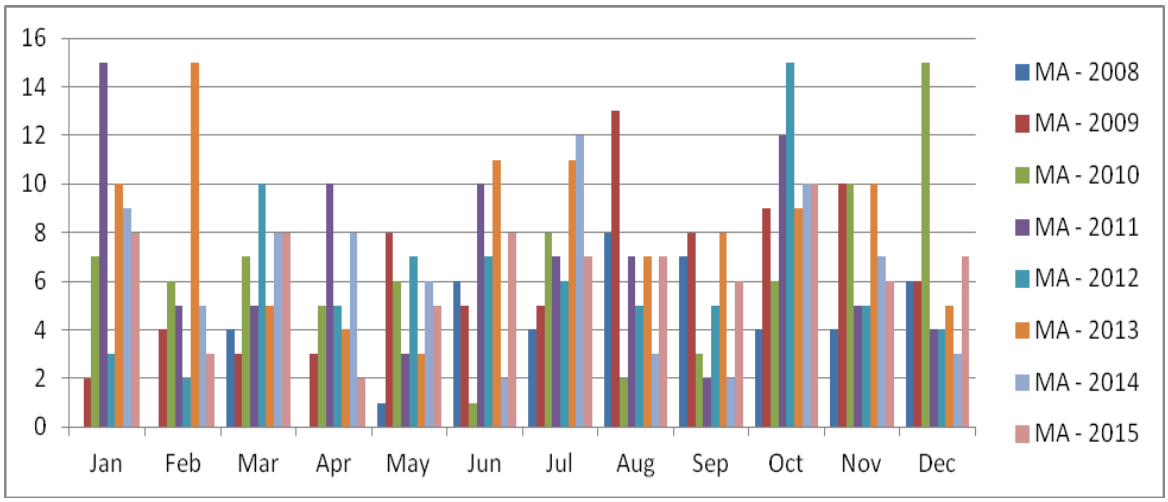
Note: Total number of people affected (and average) based on 46 (60%) of the total reported outages. Total duration of outages (and average) based on 19 (25%) of the total reported outages.

Outage fact: A squirrel that got into an electrical substation cut power to 7,000 Athol customers on July 9, leaving them in the dark for almost 3 hours.

Reported power outages by cause



Reported power outages by month



Michigan

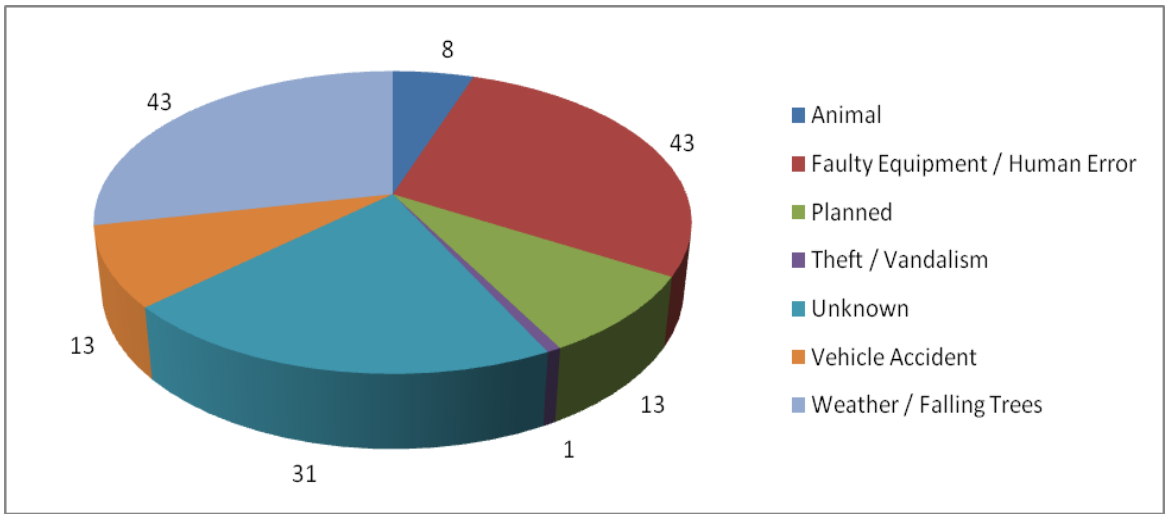
Outage summary

Total number of people affected by outages	843,717
Total duration of outages	4,890 minutes (more than 3 days)
Total number of outages	152
State ranking (number of outages)	5
Average number of people affected per outage	5,551
Average duration of outage	33 minutes

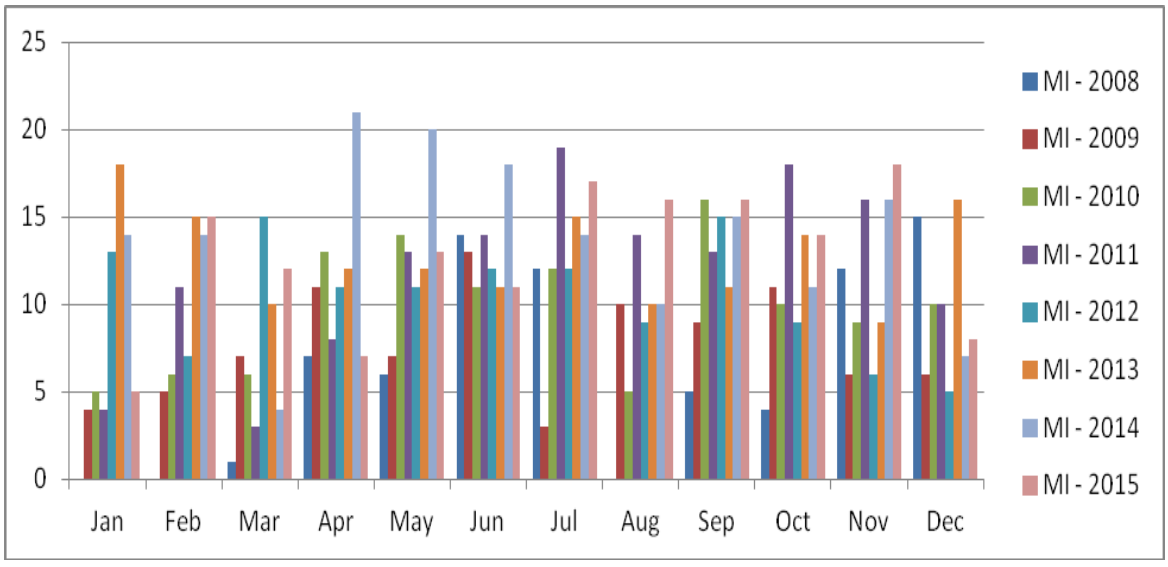
Note: Total number of people affected (and average) based on 107 (70%) of the total reported outages. Total duration of outages (and average) based on 27 (18%) of the total reported outages.

Outage fact: A burst of freezing rain downed power lines in Cadillac on March 25, cutting power to 7,000 customers across three counties.

Reported power outages by cause



Reported power outages by month



Minnesota

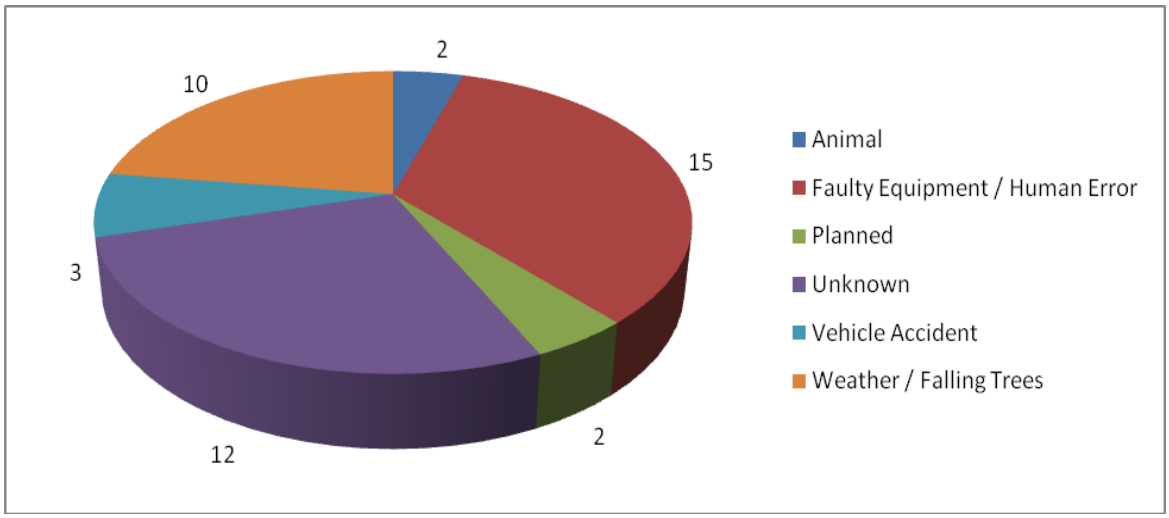
Outage summary

Total number of people affected by outages	332,222
Total duration of outages	1,451 minutes (more than 1 day)
Total number of outages	44
State ranking (number of outages)	27 (tie)
Average number of people affected per outage	7,551
Average duration of outage	33 minutes

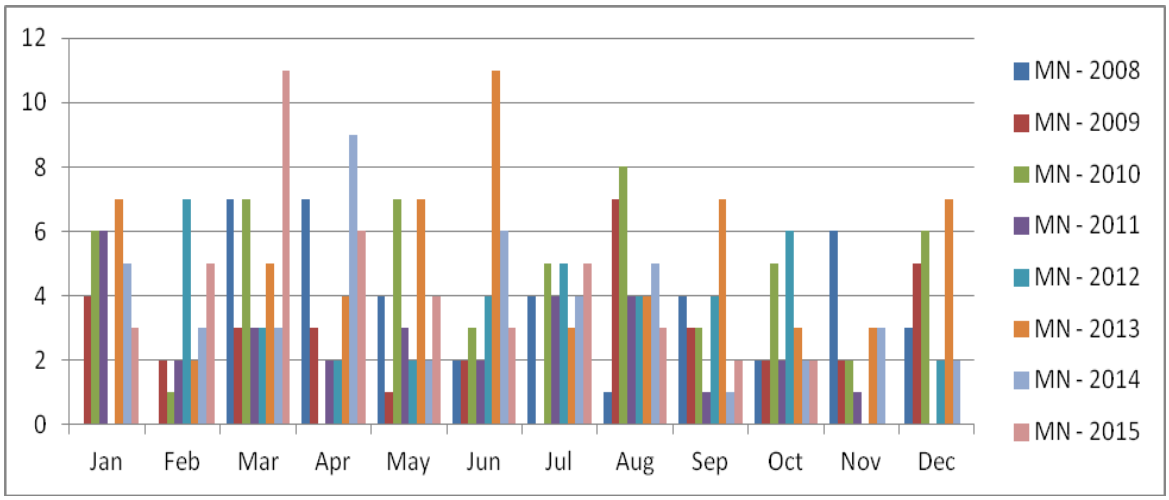
Note: Total number of people affected (and average) based on 32 (73%) of the total reported outages. Total duration of outages (and average) based on 17 (39%) of the total reported outages.

Outage fact: A goose flew into a power line in Mankato July 16, knocking out power to 2,743 customers for half an hour.

Reported power outages by cause



Reported power outages by month



Mississippi

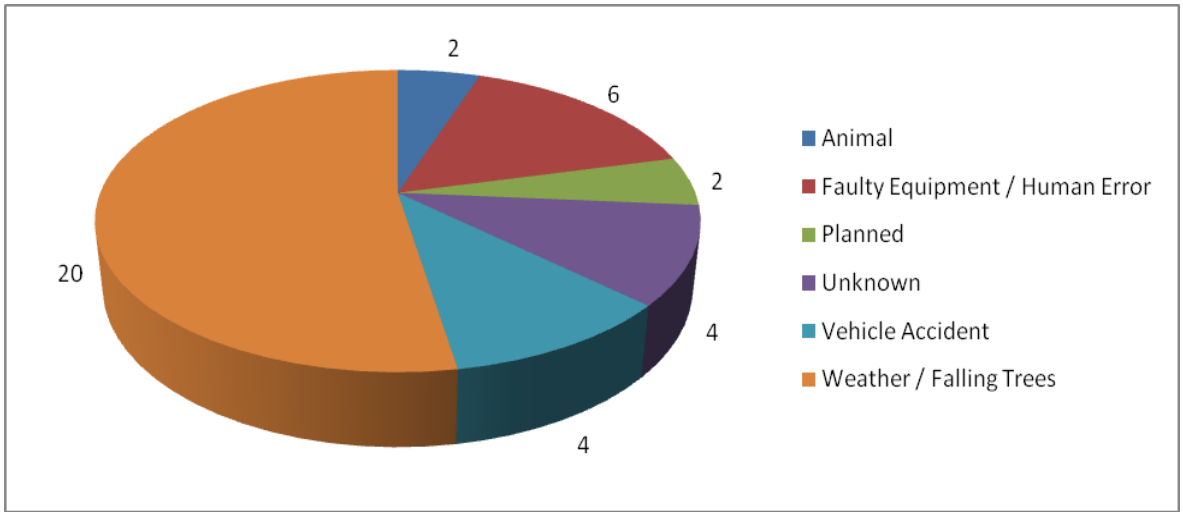
Outage summary

Total number of people affected by outages	59,326
Total duration of outages	1,353 minutes (22 ½ hours)
Total number of outages	38
State ranking (number of outages)	31
Average number of people affected per outage	1,561
Average duration of outage	36 minutes

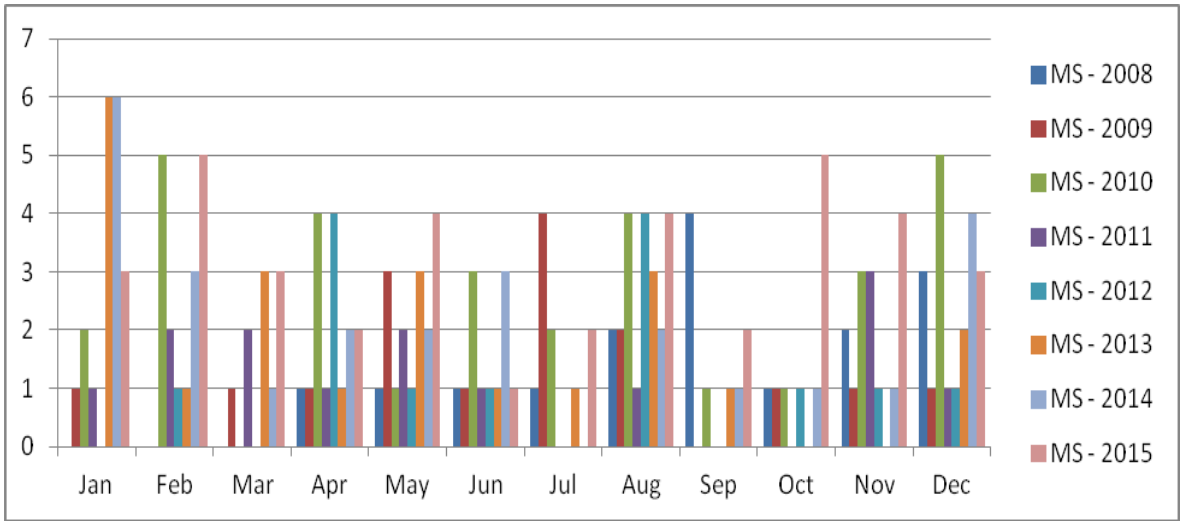
Note: Total number of people affected (and average) based on 17 (45%) of the total reported outages. Total duration of outages (and average) based on 9 (24%) of the total reported outages.

Outage fact: On Jan. 3, an 18-wheeler caught a power line in West Hattiesburg, causing the pole to snap and cutting off electricity for 3 hours to businesses including Buffalo Wild Wings and Home Depot.

Reported power outages by cause



Reported power outages by month



Missouri

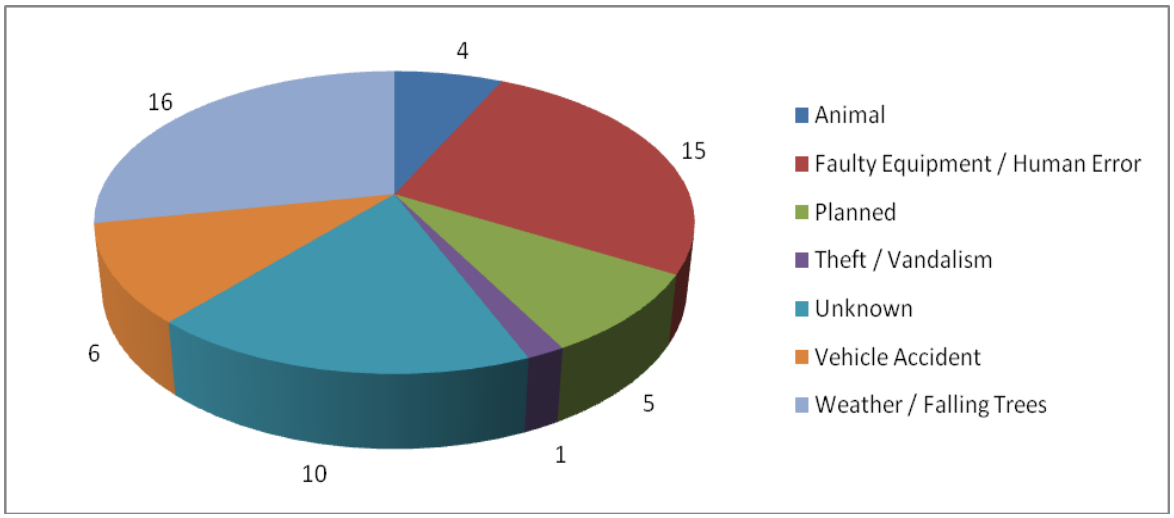
Outage summary

Total number of people affected by outages	214,297
Total duration of outages	2,084 minutes (nearly 35 hours)
Total number of outages	57
State ranking (number of outages)	23 (tie)
Average number of people affected per outage	3,760
Average duration of outage	37 minutes

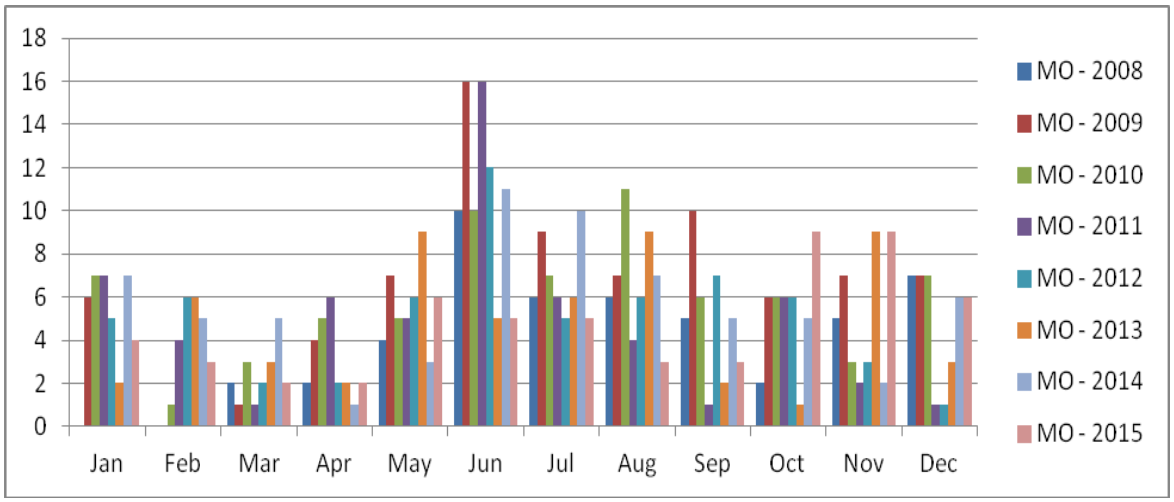
Note: Total number of people affected (and average) based on 31 (54%) of the total reported outages. Total duration of outages (and average) based on 13 (23%) of the total reported outages.

Outage fact: On June 8, copper thieves cut through a fence overnight in Mount Vernon, stealing about 50 feet of copper clad steel cable and causing an hour-long outage to 2,000 customers.

Reported power outages by cause



Reported power outages by month



Montana

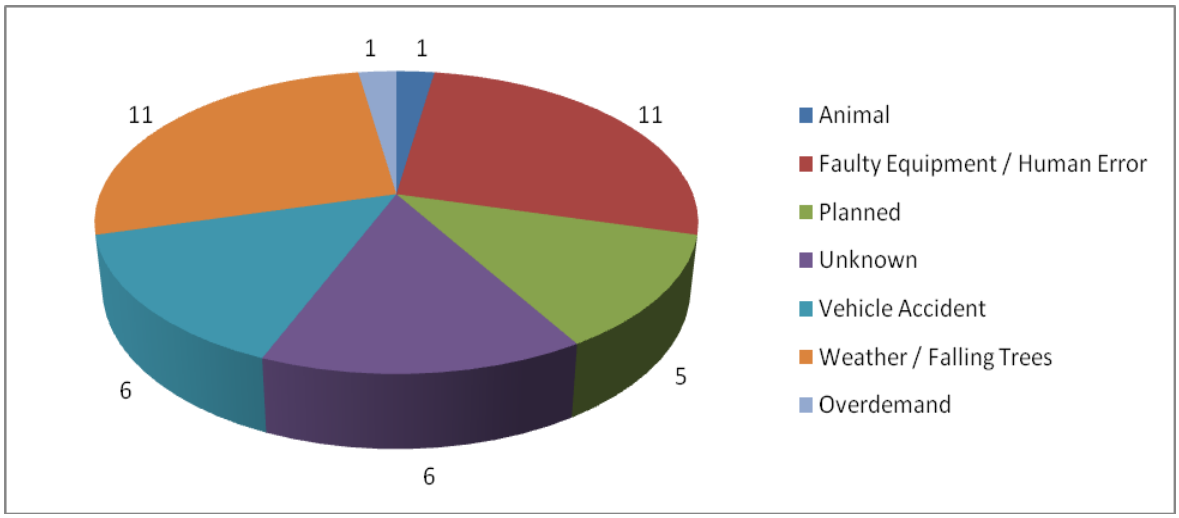
Outage summary

Total number of people affected by outages	110,850
Total duration of outages	2,480 minutes (more than 41 hours)
Total number of outages	41
State ranking (number of outages)	30
Average number of people affected per outage	2,704
Average duration of outage	60 minutes

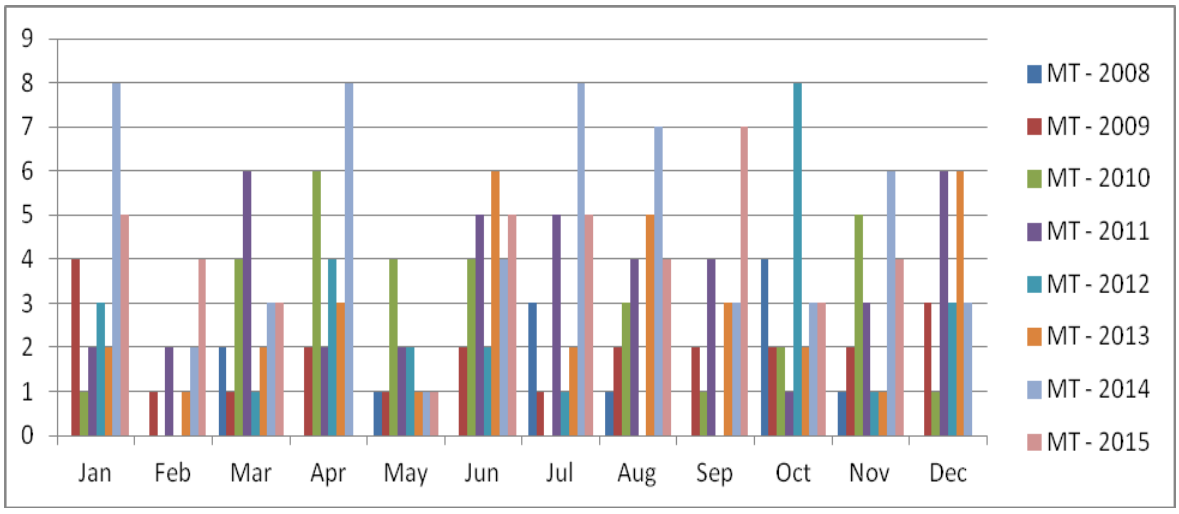
Note: Total number of people affected (and average) based on 24 (59%) of the total reported outages. Total duration of outages (and average) based on 16 (39%) of the total reported outages.

Outage fact: On July 16, an oil train derailed and struck a power line in Culbertson. Power was turned off in the area as a precaution after several of the tankers were found to be leaking oil.

Reported power outages by cause



Reported power outages by month



Nebraska

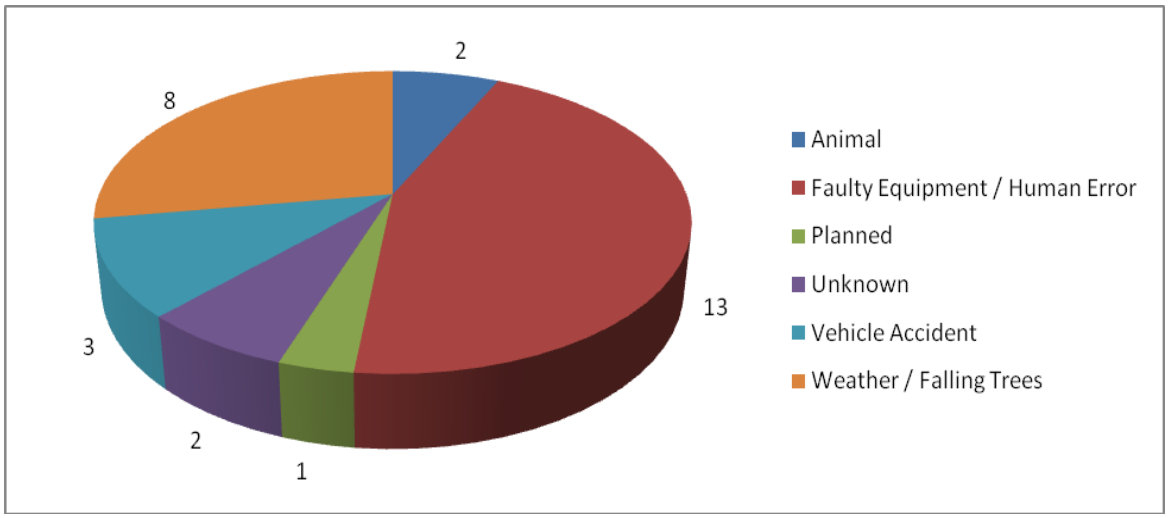
Outage summary

Total number of people affected by outages	73,383
Total duration of outages	793 minutes (13 hours)
Total number of outages	29
State ranking (number of outages)	35
Average number of people affected per outage	2,530
Average duration of outage	27 minutes

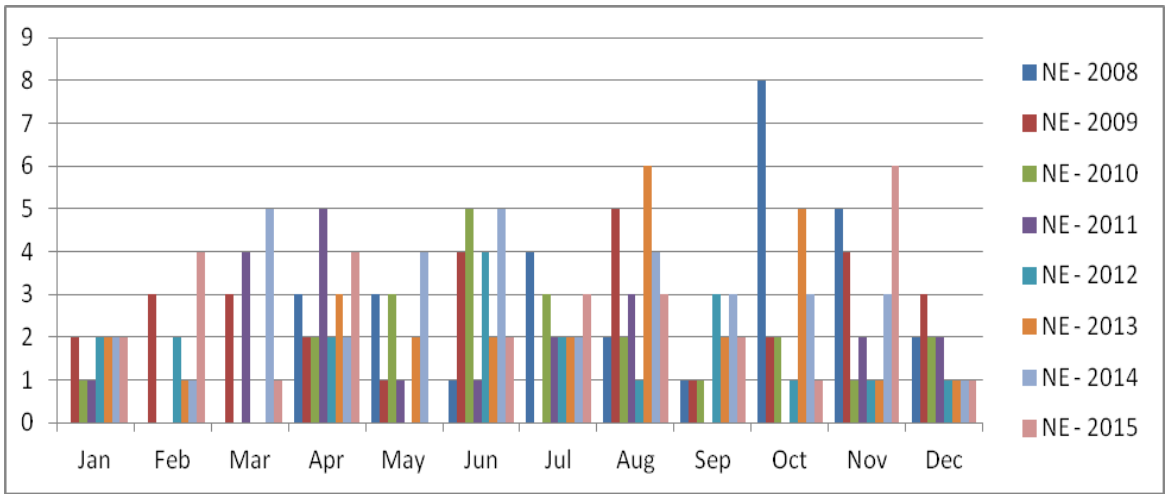
Note: Total number of people affected (and average) based on 18 (62%) of the total reported outages. Total duration of outages (and average) based on 8 (28%) of the total reported outages.

Outage fact: A turkey in a North Platte substation cut power to 6,000 customers on Nov. 28. He narrowly survived being a Thanksgiving feast days earlier, only to be electrocuted by equipment.

Reported power outages by cause



Reported power outages by month



Nevada

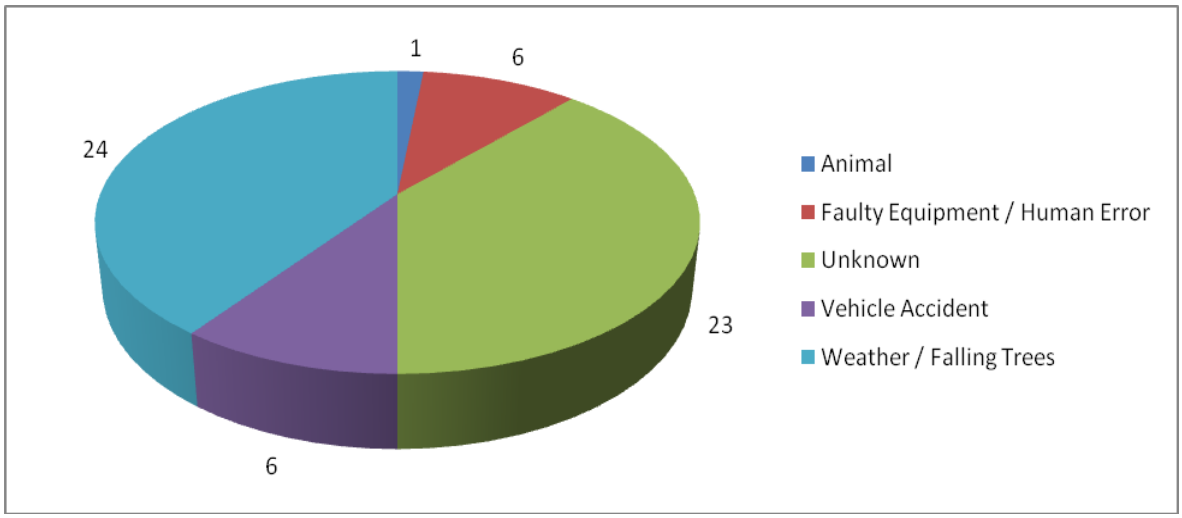
Outage summary

Total number of people affected by outages	190,418
Total duration of outages	547 minutes (9 hours)
Total number of outages	60
State ranking (number of outages)	21
Average number of people affected per outage	3,174
Average duration of outage	9 minutes

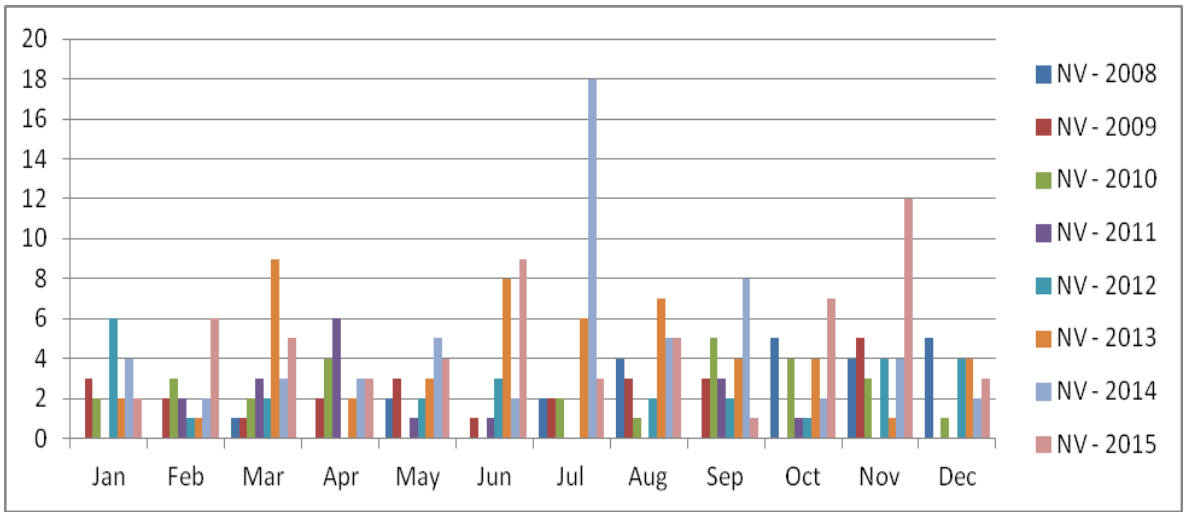
Note: Total number of people affected (and average) based on 47 (78%) of the total reported outages. Total duration of outages (and average) based on 5 (8%) of the total reported outages.

Outage fact: On Dec. 10, a 70-foot Douglas fir fell onto wires in Elko, breaking two poles, dislodging a transformer and causing a third pole to lean. Nearly 200 customers lost power.

Reported power outages by cause



Reported power outages by month



New Hampshire

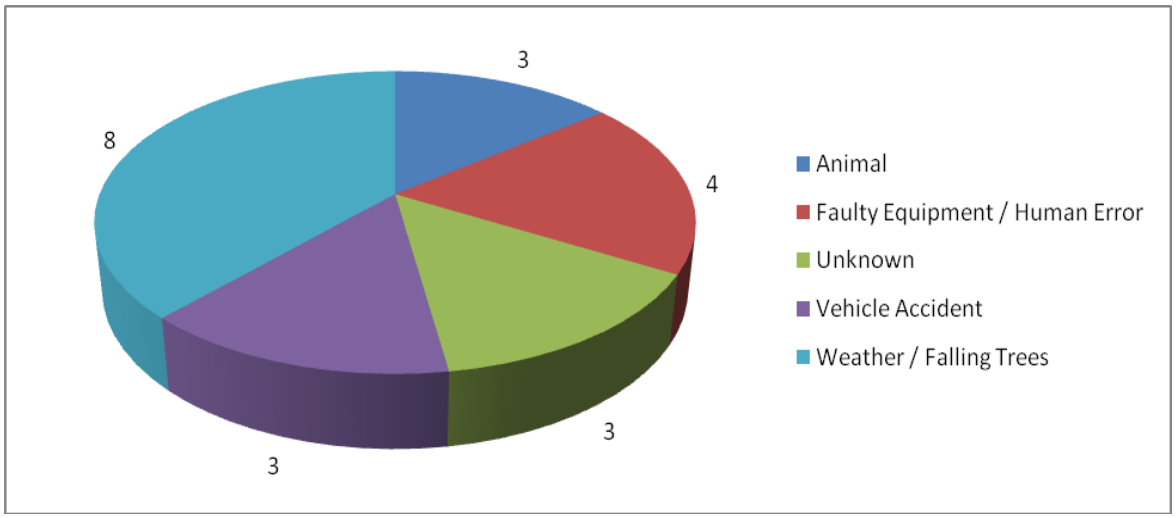
Outage summary

Total number of people affected by outages	89,727
Total duration of outages	503 minutes (more than 8 hours)
Total number of outages	21
State ranking (number of outages)	40 (tie)
Average number of people affected per outage	4,273
Average duration of outage	24 minutes

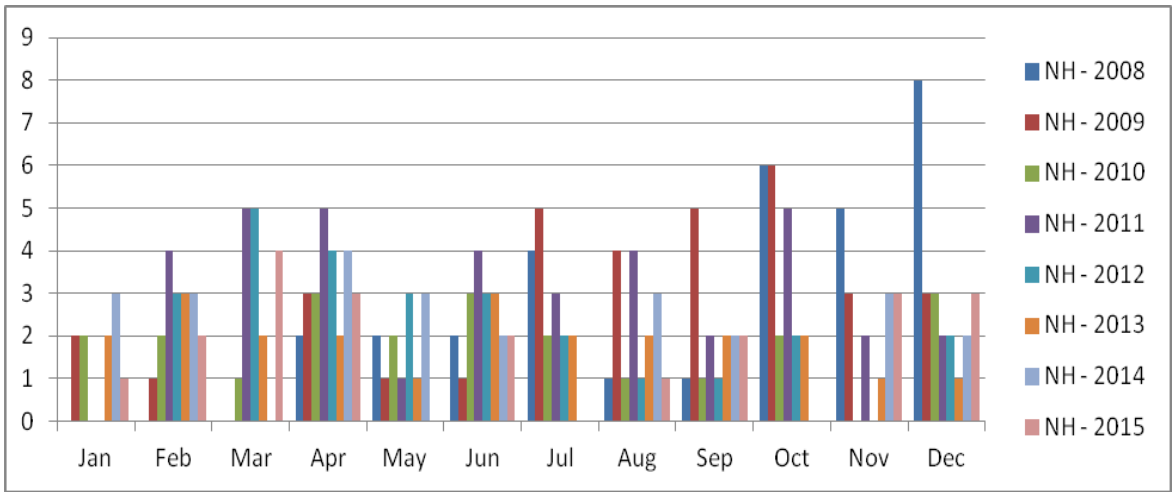
Note: Total number of people affected (and average) based on 16 (76%) of the total reported outages. Total duration of outages (and average) based on 5 (24%) of the total reported outages.

Outage fact: A hawk landed on a transmission line In Concord Dec. 5, cutting power to 13,000 customers.

Reported power outages by cause



Reported power outages by month



New Jersey

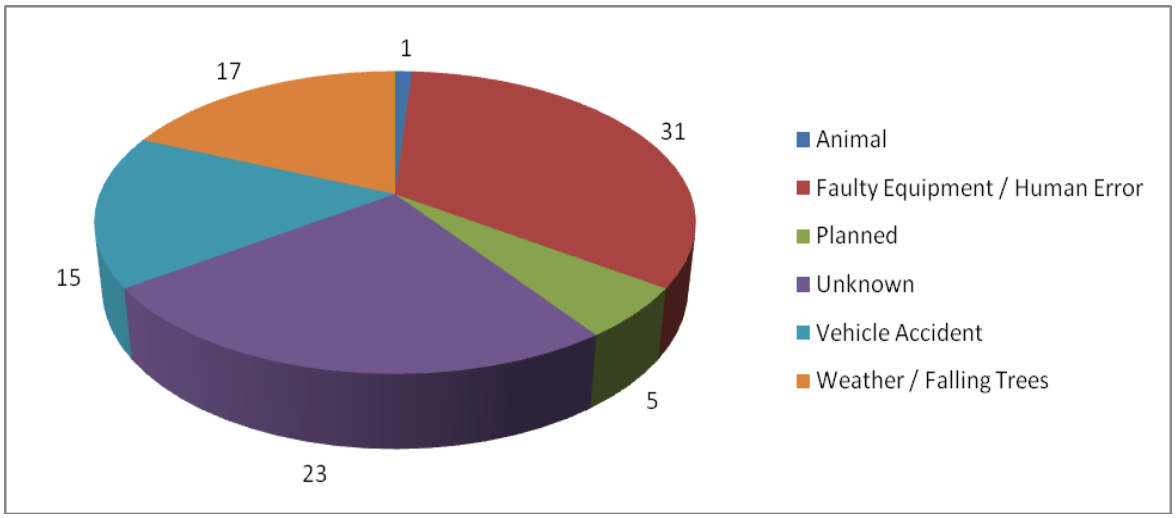
Outage summary

Total number of people affected by outages	524,463
Total duration of outages	1,875 minutes (more than 31 hours)
Total number of outages	92
State ranking (number of outages)	11
Average number of people affected per outage	5,701
Average duration of outage	20 minutes

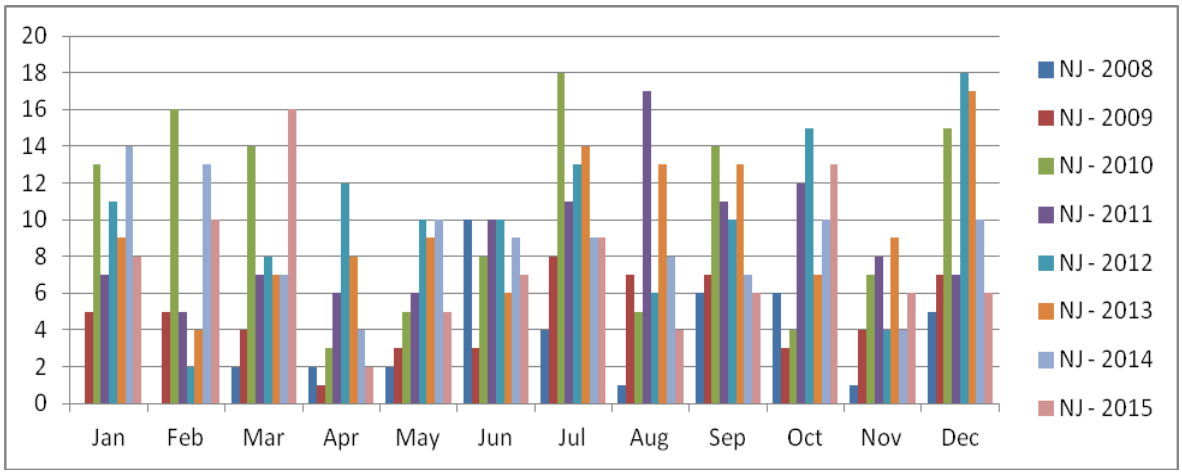
Note: Total number of people affected (and average) based on 64 (70%) of the total reported outages. Total duration of outages (and average) based on 15 (16%) of the total reported outages.

Outage fact: A Jan. 31 house fire in Wildwood caused hundreds of thousands of dollars worth of damage and disrupted power for 7,000 residents.

Reported power outages by cause



Reported power outages by month



New Mexico

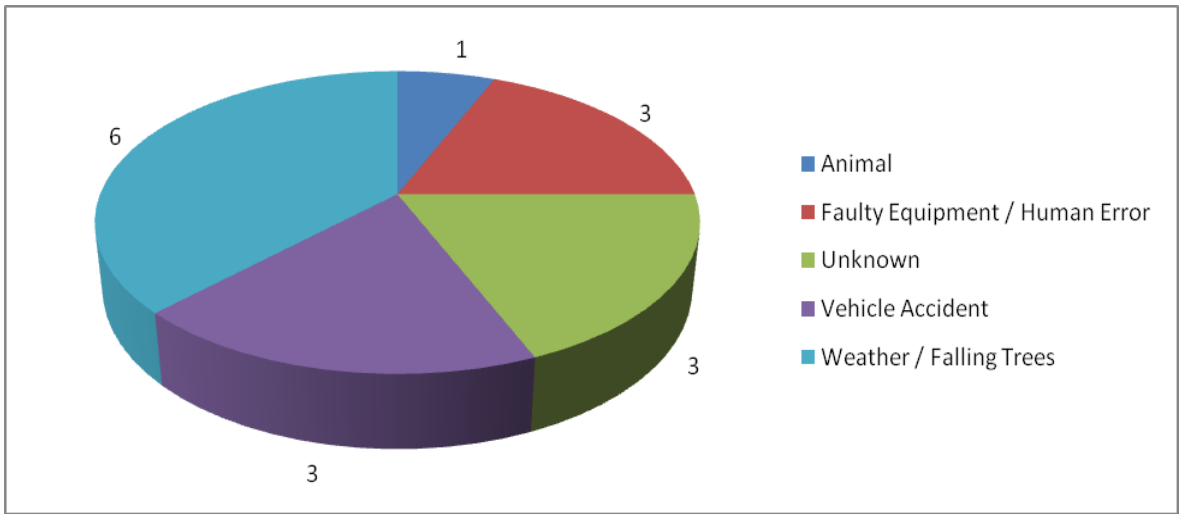
Outage summary

Total number of people affected by outages	45,726
Total duration of outages	390 minutes (6 ½ hours)
Total number of outages	16
State ranking (number of outages)	41
Average number of people affected per outage	2,858
Average duration of outage	24 minutes

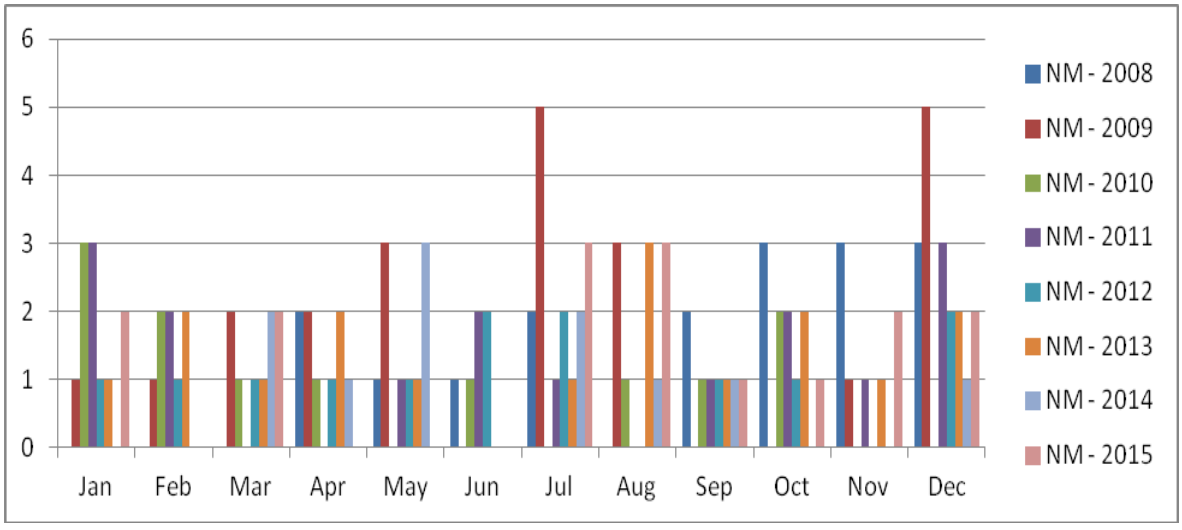
Note: Total number of people affected (and average) based on 12 (75%) of the total reported outages. Total duration of outages (and average) based on 3 (19%) of the total reported outages.

Outage fact: A contractor struck an underground power line in Albuquerque on March 24, blacking out 115 homes for more than 2 hours.

Reported power outages by cause



Reported power outages by month



New York

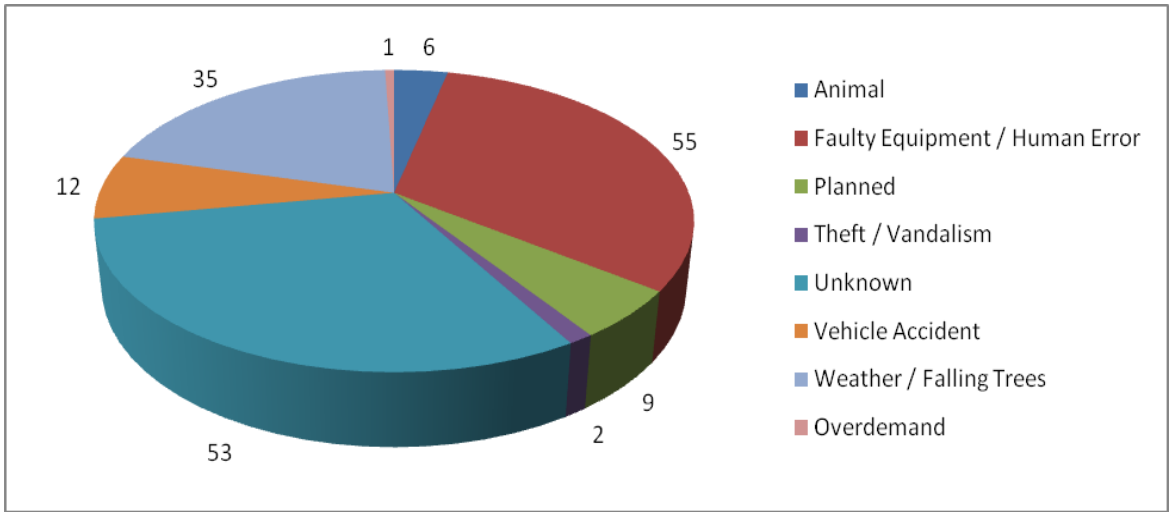
Outage summary

Total number of people affected by outages	356,628
Total duration of outages	12,011 minutes (8 1/3 days)
Total number of outages	173
State ranking (number of outages)	3
Average number of people affected per outage	2,061
Average duration of outage	69 minutes

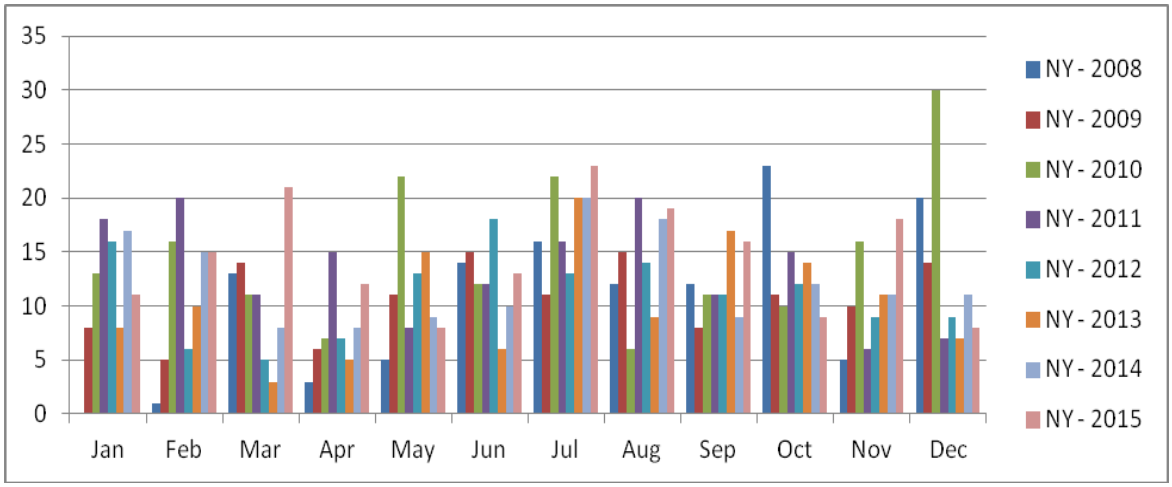
Note: Total number of people affected (and average) based on 100 (58%) of the total reported outages. Total duration of outages (and average) based on 37 (21%) of the total reported outages.

Outage fact: A gull that chewed through a wire knocked out electricity to 112 Silver Beach customers on Feb. 19. A staff ornithologist with the American Museum of Natural History speculated that the bird was seeking a snack.

Reported power outages by cause



Reported power outages by month



North Carolina

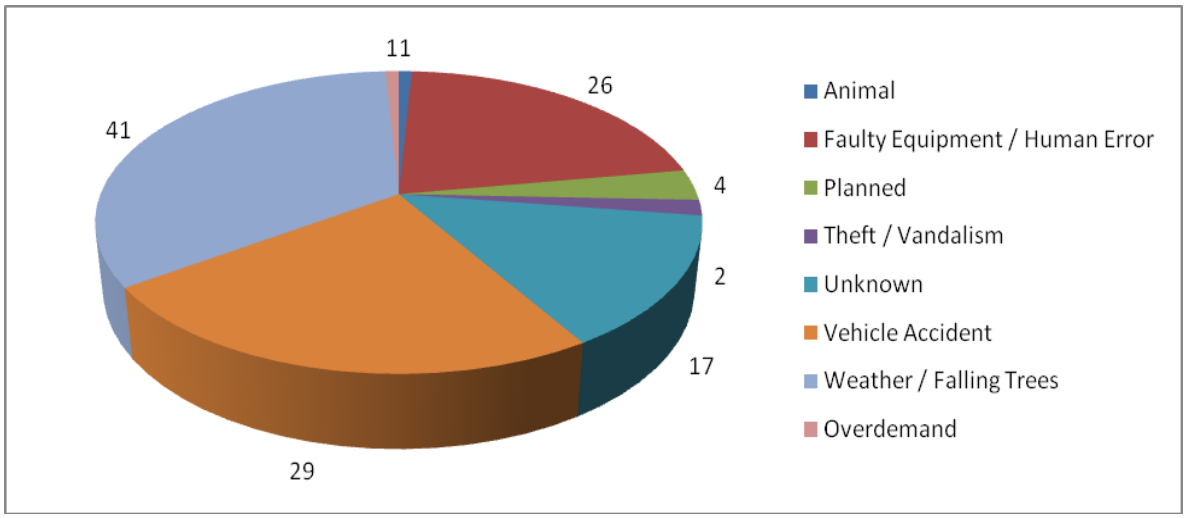
Outage summary

Total number of people affected by outages	568,943
Total duration of outages	4,701 minutes (3 1/4 days)
Total number of outages	121
State ranking (number of outages)	7
Average number of people affected per outage	4,702
Average duration of outage	39 minutes

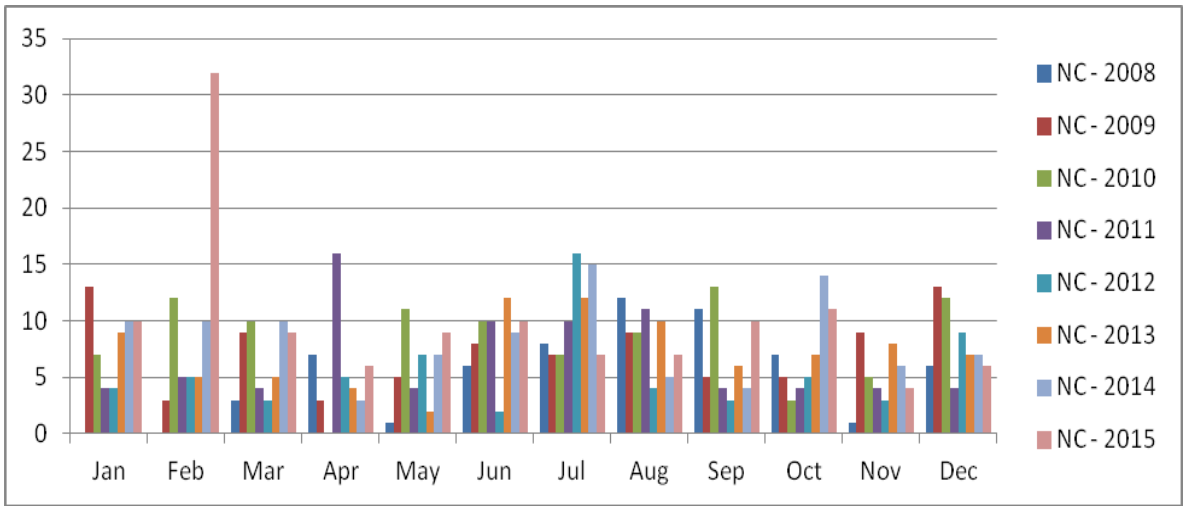
Note: Total number of people affected (and average) based on 85 (70%) of the total reported outages. Total duration of outages (and average) based on 23 (19%) of the total reported outages.

Outage fact: A crop duster clipped a utility line in Columbus County April 14, knocking out power to 3,000 customers for 3 hours.

Reported power outages by cause



Reported power outages by month



North Dakota

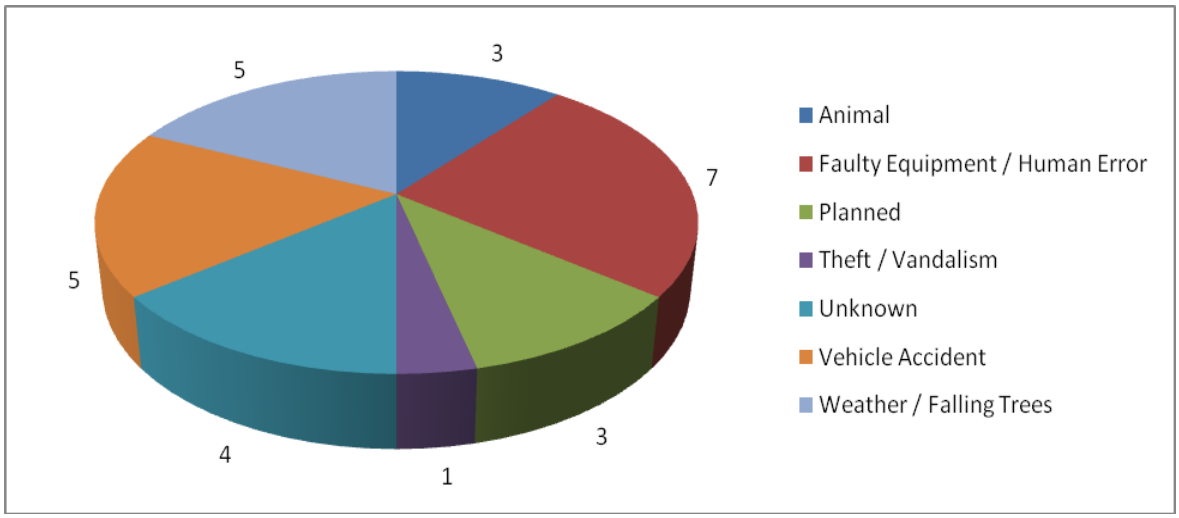
Outage summary

Total number of people affected by outages	41,661
Total duration of outages	1,018 minutes (17 hours)
Total number of outages	28
State ranking (number of outages)	36
Average number of people affected per outage	1,488
Average duration of outage	36 minutes

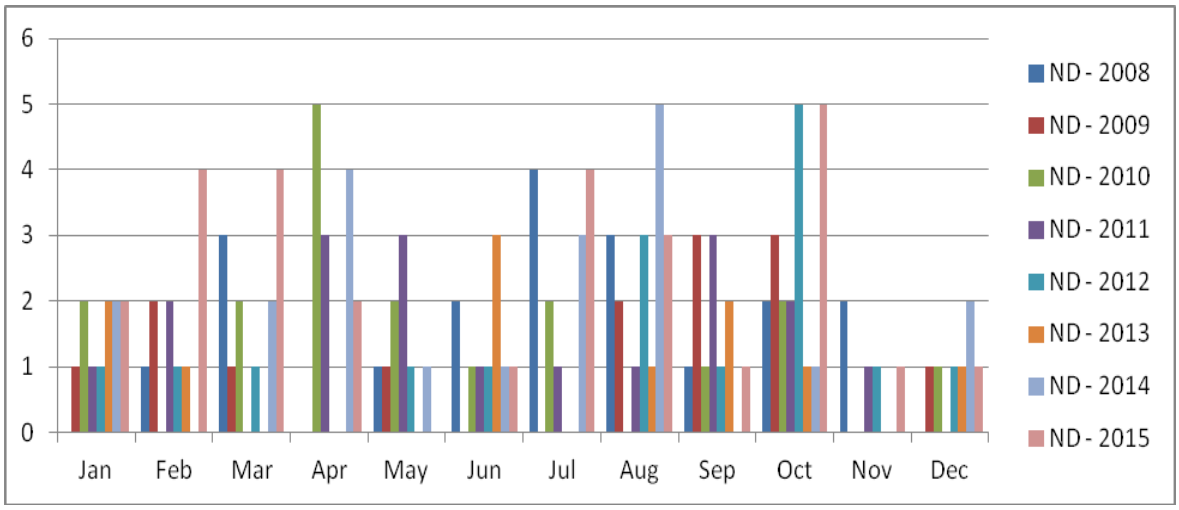
Note: Total number of people affected (and average) based on 18 (64%) of the total reported outages. Total duration of outages (and average) based on 13 (46%) of the total reported outages.

Outage fact: Dust accumulation on power lines was blamed for an April 19 outage that cut electricity to 7,000 Fargo customers.

Reported power outages by cause



Reported power outages by month



Ohio

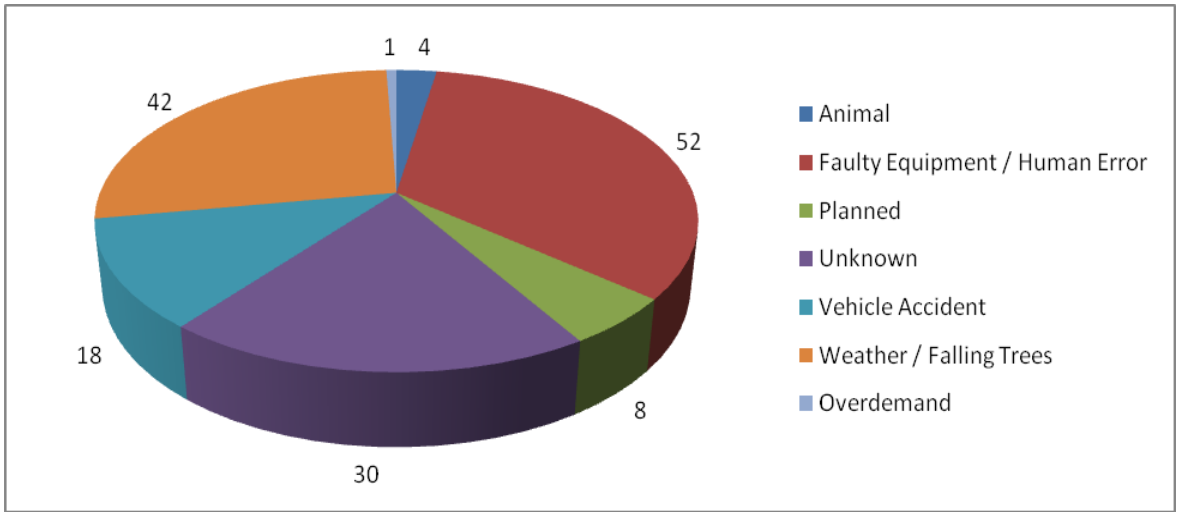
Outage summary

Total number of people affected by outages	536,070
Total duration of outages	6,495 minutes (4 1/2 days)
Total number of outages	155
State ranking (number of outages)	4
Average number of people affected per outage	3,459
Average duration of outage	42 minutes

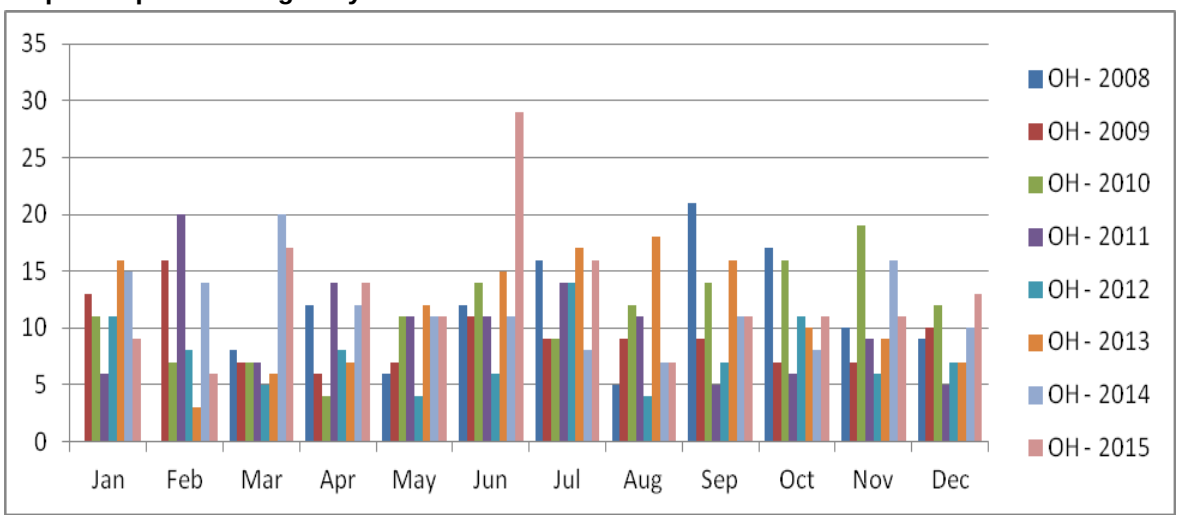
Note: Total number of people affected (and average) based on 105 (68%) of the total reported outages. Total duration of outages (and average) based on 35 (23%) of the total reported outages.

Outage fact: An Oct. 18 demolition mishap resulted in a West Carrollton outage after workers taking down a building accidentally made contact with power lines, knocking out electricity to more than 1,700 residents.

Reported power outages by cause



Reported power outages by month



Oklahoma

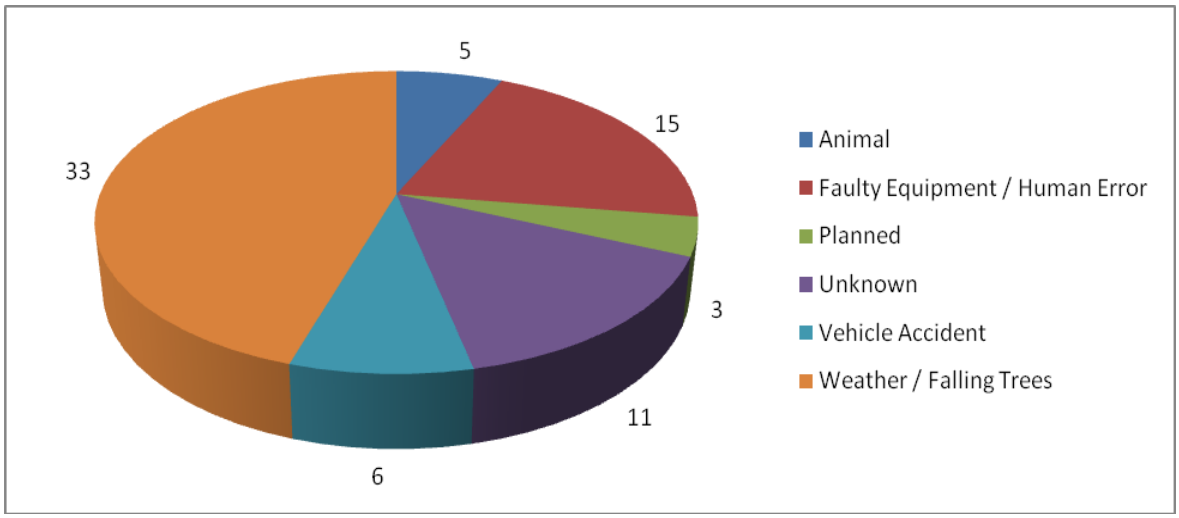
Outage summary

Total number of people affected by outages	410,083
Total duration of outages	1,899 minutes (1 1/3 days)
Total number of outages	73
State ranking (number of outages)	16
Average number of people affected per outage	5,618
Average duration of outage	26 minutes

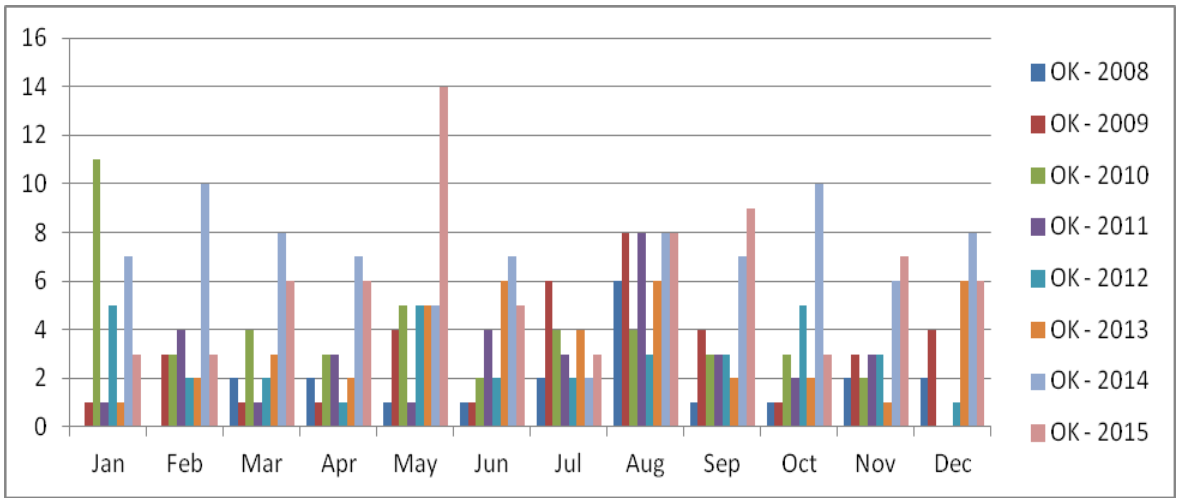
Note: Total number of people affected (and average) based on 53 (73%) of the total reported outages. Total duration of outages (and average) based on 15 (21%) of the total reported outages.

Outage fact: An ice storm blasted the state on Nov. 28, causing power lines to snag and snap as some 110,000 Oklahoma City residents were left in the dark.

Reported power outages by cause



Reported power outages by month



Oregon

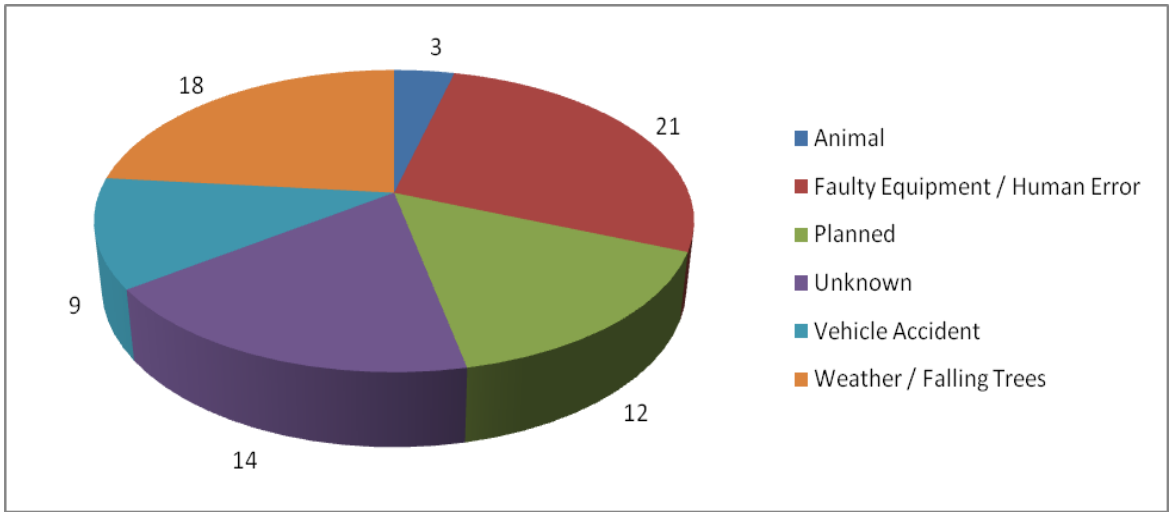
Outage summary

Total number of people affected by outages	223,527
Total duration of outages	7,017 minutes (nearly 5 days)
Total number of outages	77
State ranking (number of outages)	14 (tie)
Average number of people affected per outage	2,903
Average duration of outage	91 minutes

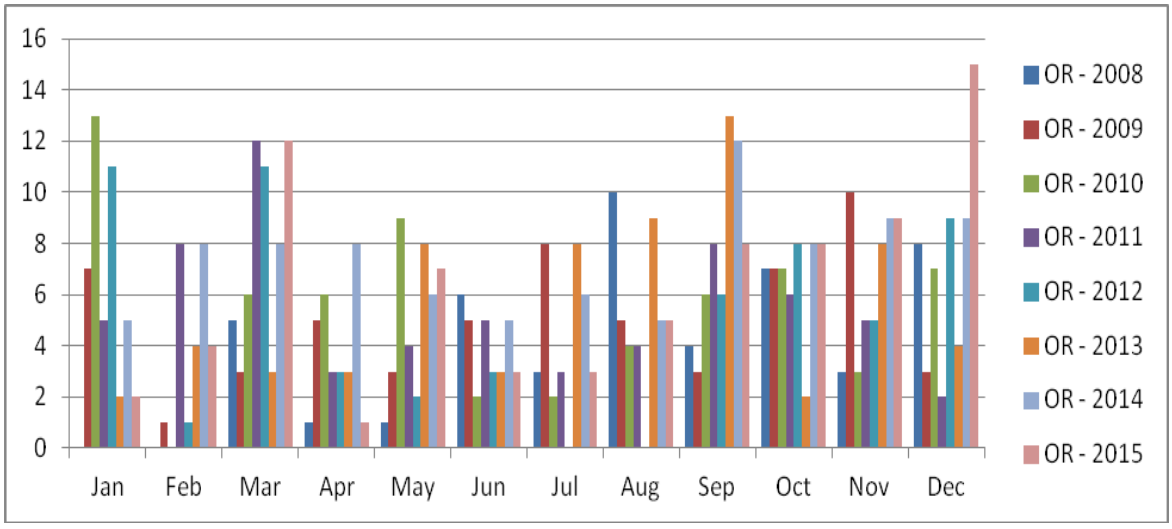
Note: Total number of people affected (and average) based on 55 (71%) of the total reported outages. Total duration of outages (and average) based on 28 (36%) of the total reported outages.

Outage fact: A driver who reportedly fell asleep at the wheel on May 12 hit a Gresham power pole, which fell. Tension on the power lines had a ripple effect on surrounding power poles, causing others to bend and one to break.

Reported power outages by cause



Reported power outages by month



Pennsylvania

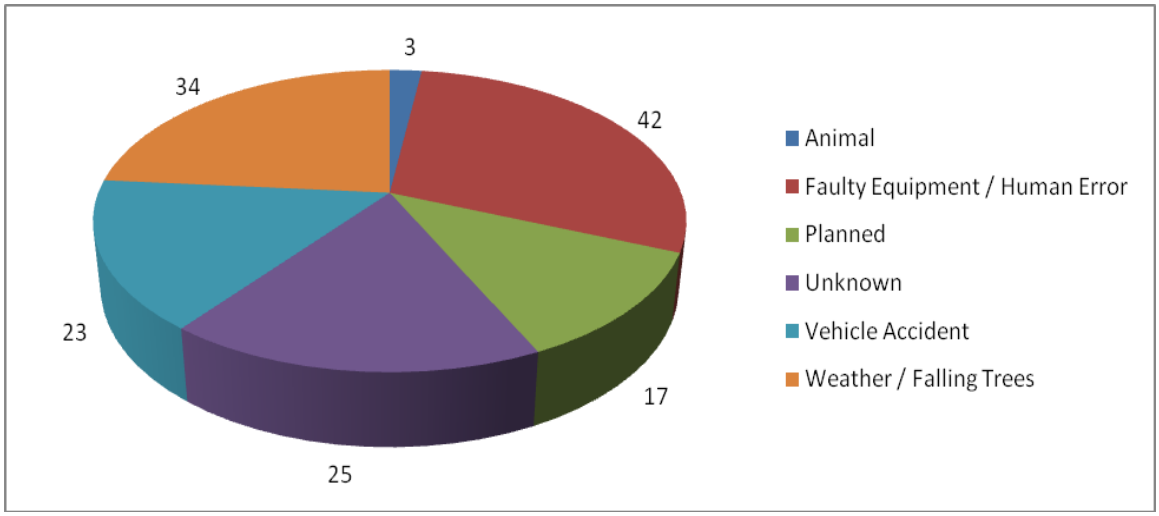
Outage summary

Total number of people affected by outages	527,818
Total duration of outages	4,260 minutes (nearly 3 days)
Total number of outages	144
State ranking (number of outages)	6
Average number of people affected per outage	3,665
Average duration of outage	30 minutes

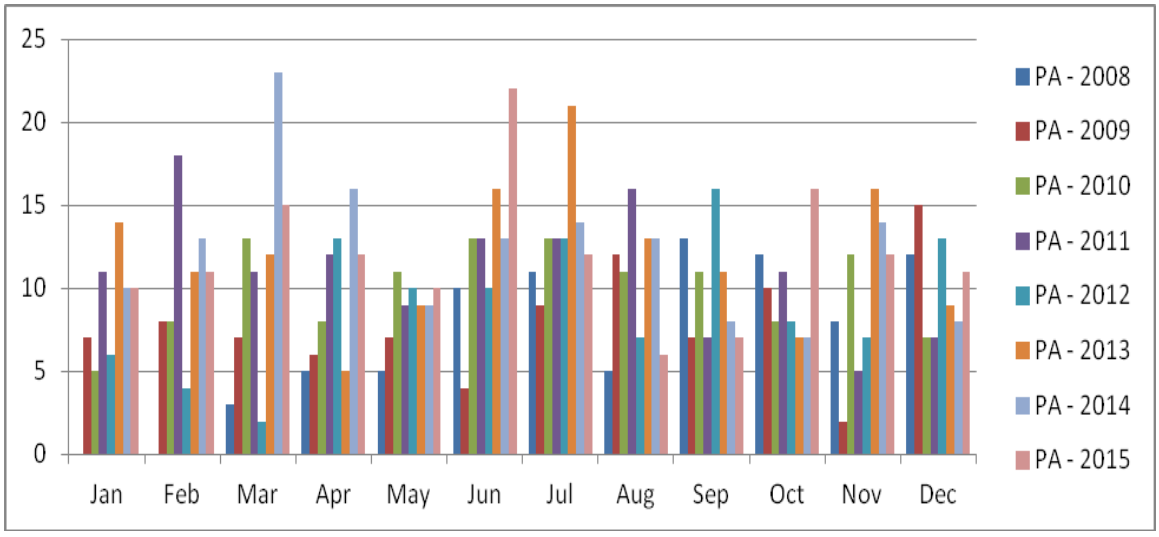
Note: Total number of people affected (and average) based on 87 (60%) of the total reported outages. Total duration of outages (and average) based on 28 (19%) of the total reported outages.

Outage fact: A man firing a rifle sparked a March 9 blaze at a Hempfield substation that knocked out power for 8,500 customers for about two hours. The bullet struck a pole connected to the substation.

Reported power outages by cause



Reported power outages by month



Rhode Island

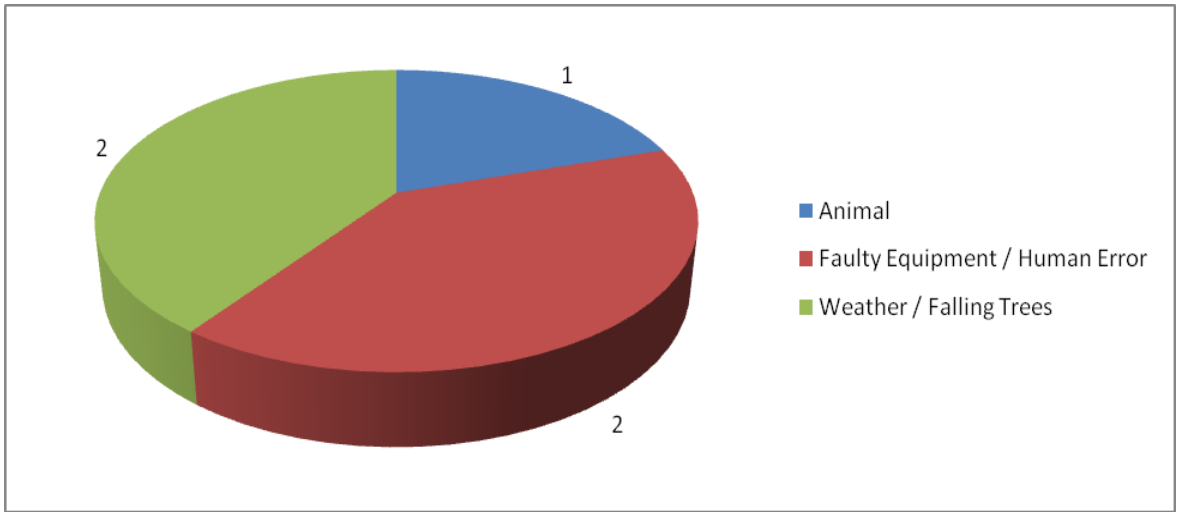
Outage summary

Total number of people affected by outages	14,200
Total duration of outages	390 minutes
Total number of outages	5
State ranking (number of outages)	44
Average number of people affected per outage	2,840
Average duration of outage	78 minutes

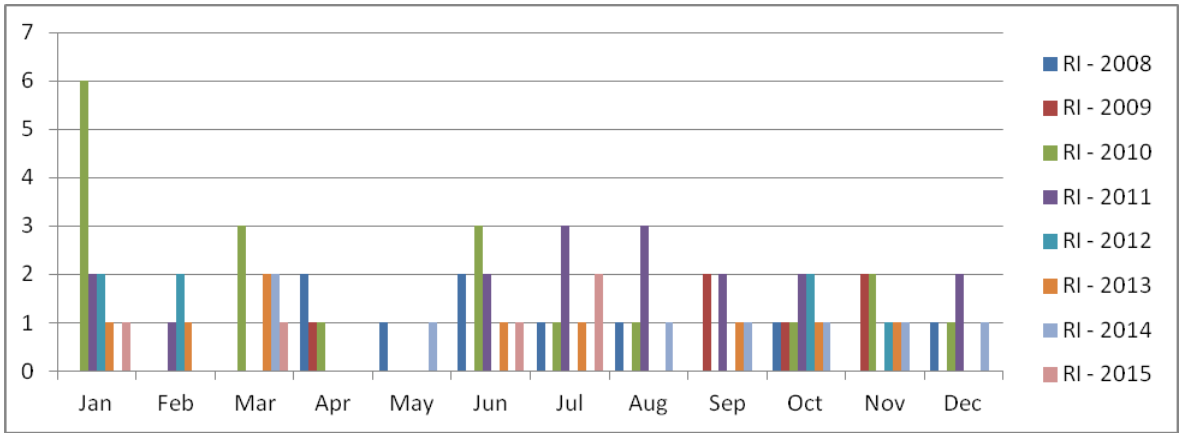
Note: Total number of people affected (and average) based on 3 (60%) of the total reported outages. Total duration of outages (and average) based on 2 (40%) of the total reported outages.

Outage fact: Animal contact, likely a bird, caused an outage in Woonsocket June 16 that affected 3,000 customers.

Reported power outages by cause



Reported power outages by month



South Carolina

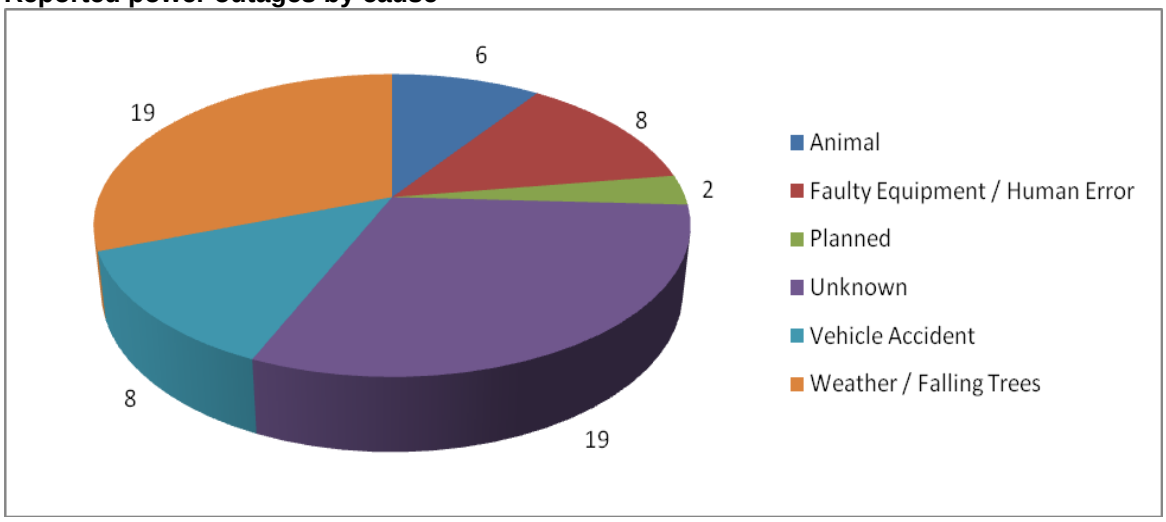
Outage summary

Total number of people affected by outages	195,180
Total duration of outages	863 minutes (more than 14 hours)
Total number of outages	62
State ranking (number of outages)	20
Average number of people affected per outage	3,148
Average duration of outage	14 minutes

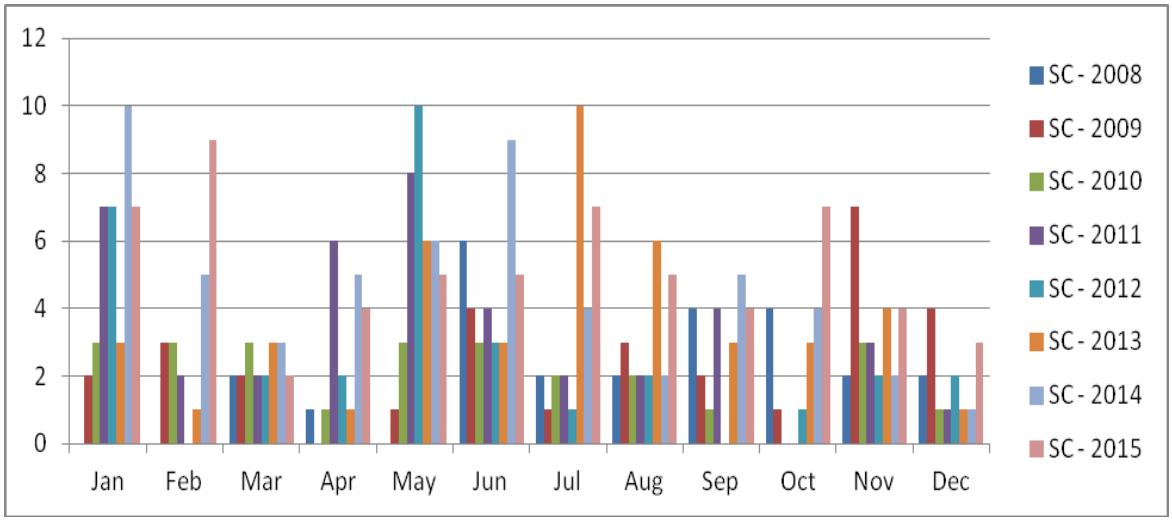
Note: Total number of people affected (and average) based on 48 (77%) of the total reported outages.Total duration of outages (and average) based on 6 (10%) of the total reported outages.

Outage fact: A flock of buzzards landed on and blew out a Greenwood County transmission tie station Nov. 24, resulting in three service substations experiencing transmission failures that affected 4,400 customers.

Reported power outages by cause



Reported power outages by month



South Dakota

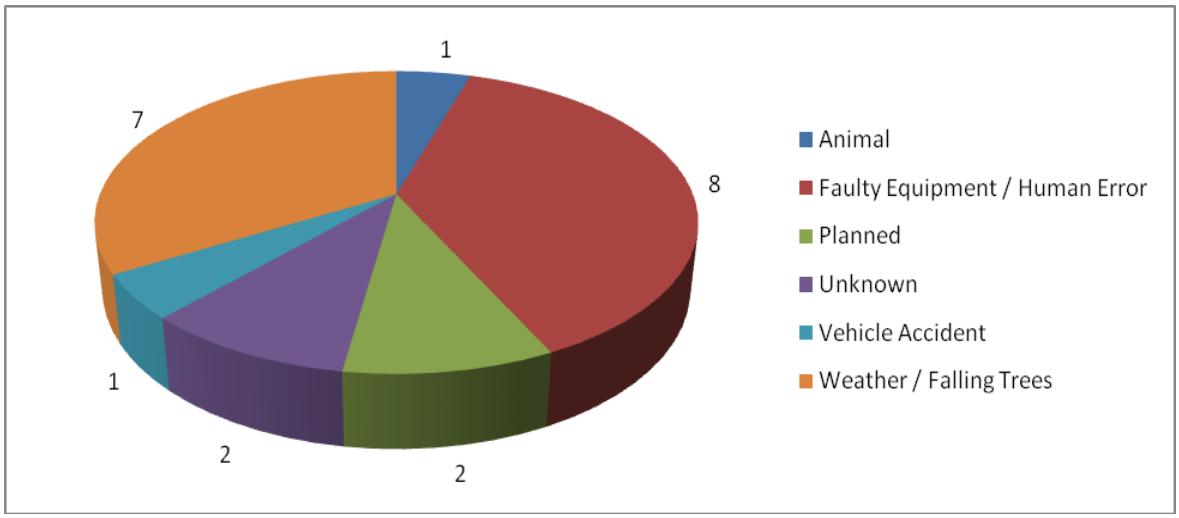
Outage summary

Total number of people affected by outages	37,823
Total duration of outages	1,730 minutes (almost 29 hours)
Total number of outages	21
State ranking (number of outages)	40 (tie)
Average number of people affected per outage	1,801
Average duration of outage	82 minutes

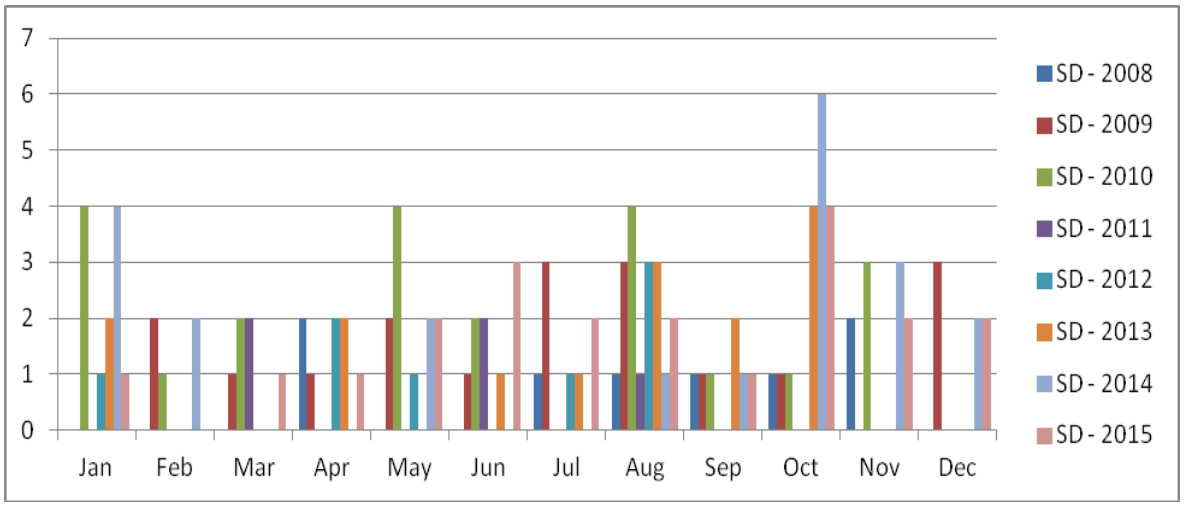
Note: Total number of people affected (and average) based on 16 (76%) of the total reported outages. Total duration of outages (and average) based on 8 (38%) of the total reported outages.

Outage fact: An April 14 outage started with a balloon, but there was no celebration in southeast Rapid City when it got tangled in power lines and knocked out electricity to 5,900 customers.

Reported power outages by cause



Reported power outages by month



Tennessee

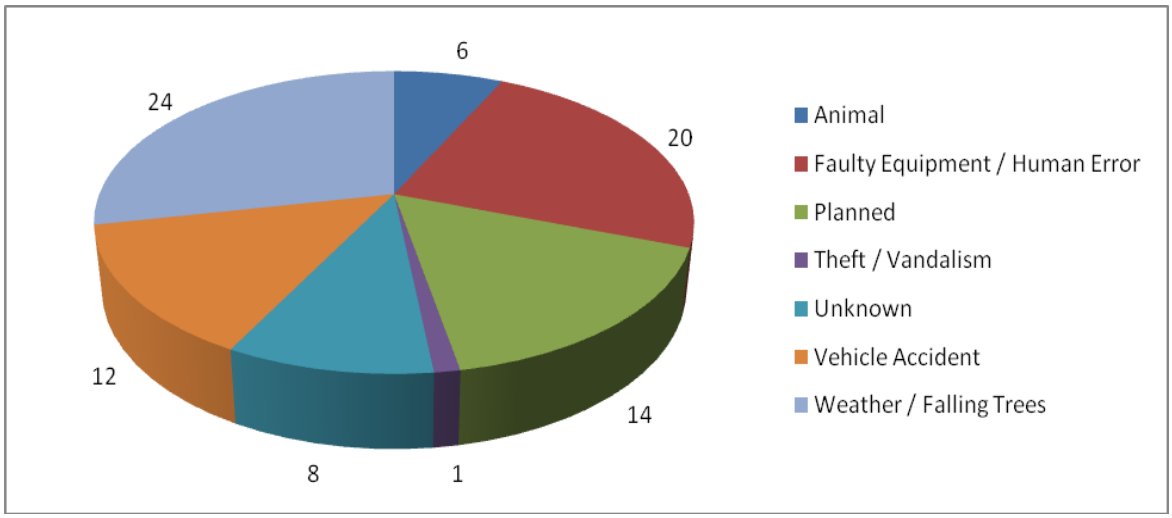
Outage summary

Total number of people affected by outages	299,815
Total duration of outages	3,640 minutes (2 ½ days)
Total number of outages	85
State ranking (number of outages)	13
Average number of people affected per outage	3,527
Average duration of outage	43 minutes

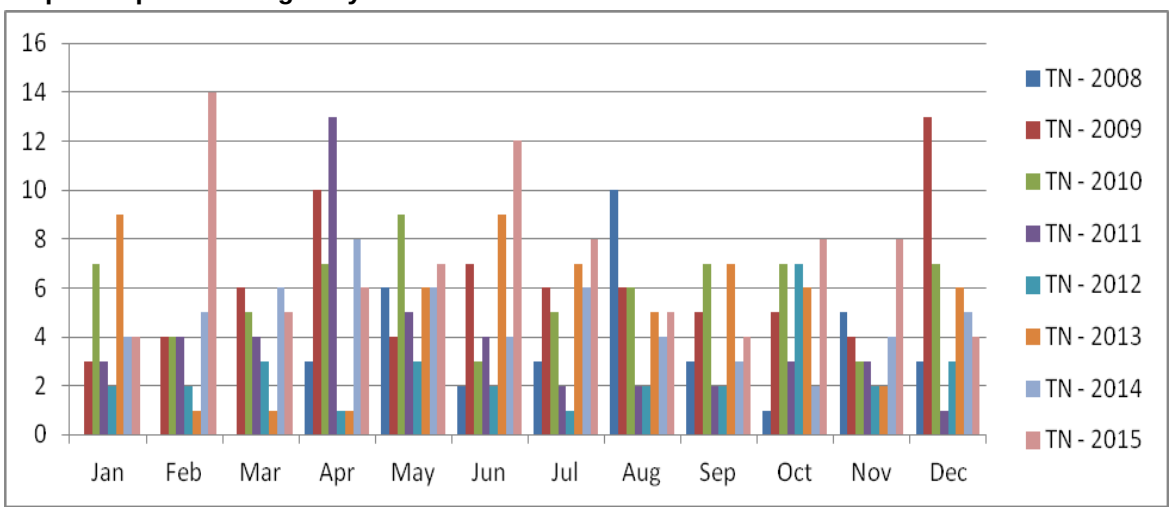
Note: Total number of people affected (and average) based on 49 (58%) of the total reported outages. Total duration of outages (and average) based on 22 (26%) of the total reported outages.

Outage fact: On Dec. 4, a rat in an underground cable caused a lengthy outage for 1,000 Bellevue residents as temperatures fell below freezing.

Reported power outages by cause



Reported power outages by month



Texas

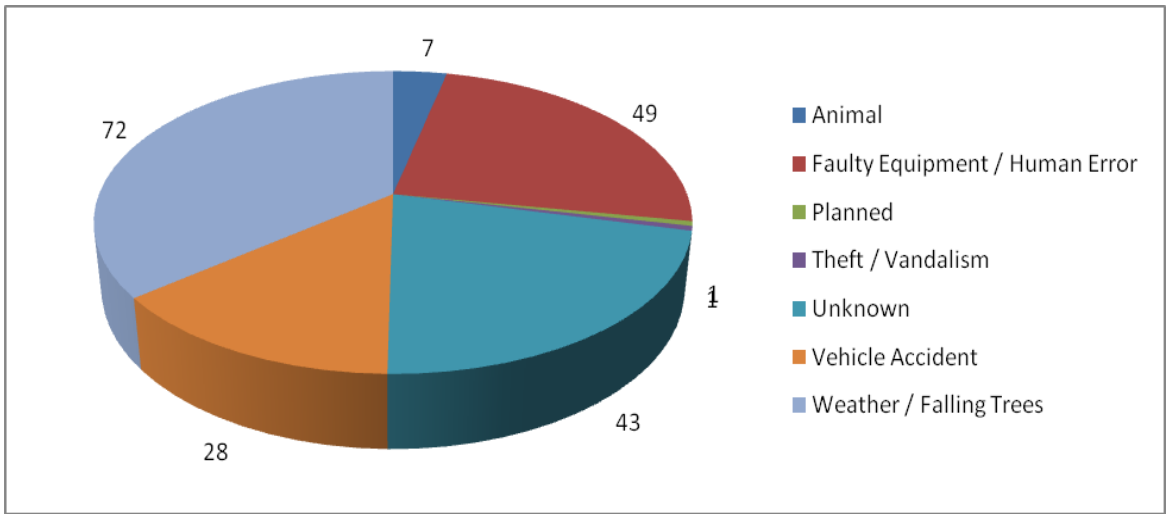
Outage summary

Total number of people affected by outages	708,241
Total duration of outages	3,652 minutes (2 ½ days)
Total number of outages	201
State ranking (number of outages)	2
Average number of people affected per outage	3,524
Average duration of outage	18 minutes

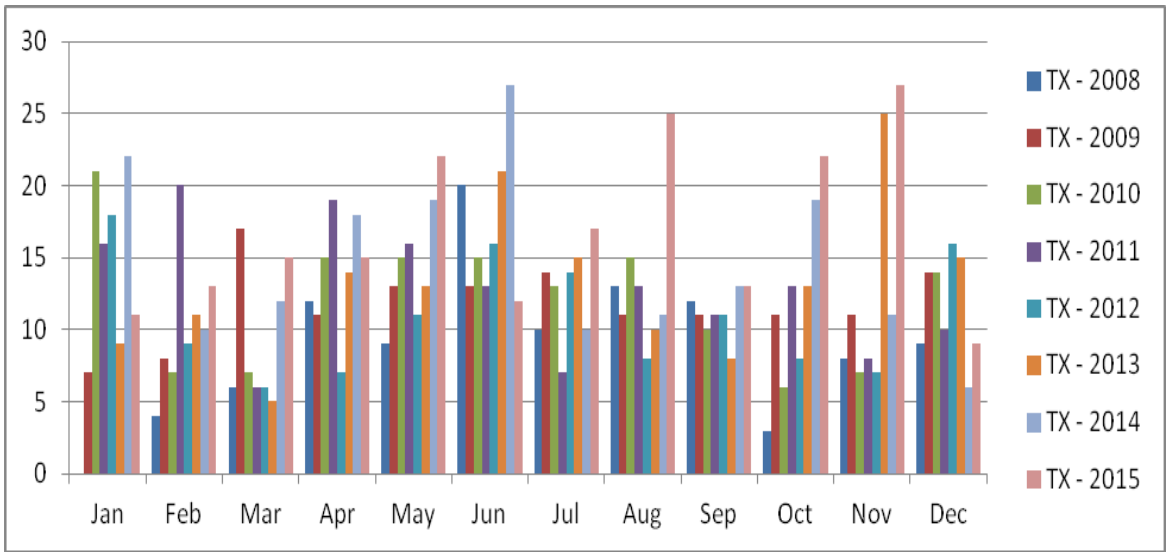
Note: Total number of people affected (and average) based on 123 (61%) of the total reported outages. Total duration of outages (and average) based on 30 (15%) of the total reported outages.

Outage fact: On Oct. 23, Hurricane Patricia barreled through Texas, cutting power to 21,000 in Dallas and 14,000 in Waco.

Reported power outages by cause



Reported power outages by month



Utah

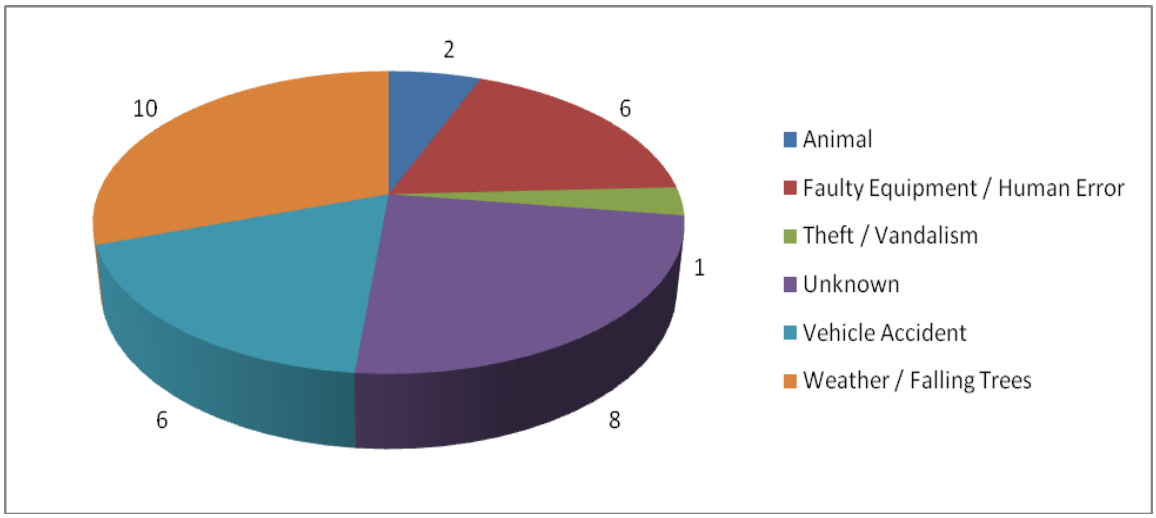
Outage summary

Total number of people affected by outages	209,427
Total duration of outages	528 minutes (almost 9 hours)
Total number of outages	33
State ranking (number of outages)	33
Average number of people affected per outage	6,346
Average duration of outage	16 minutes

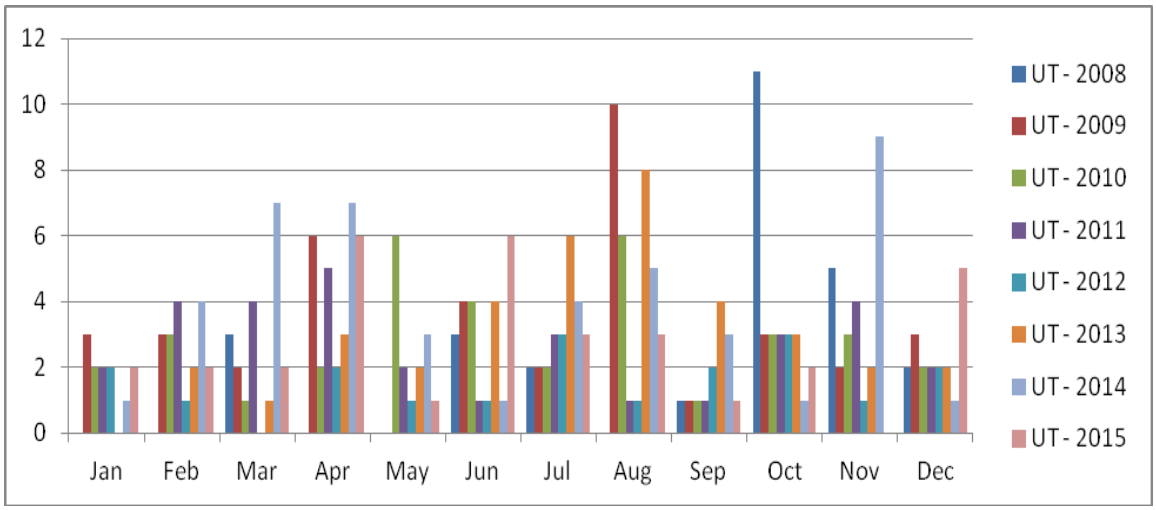
Note: Total number of people affected (and average) based on 26 (79%) of the total reported outages. Total duration of outages (and average) based on 5 (15%) of the total reported outages.

Outage fact: Extreme heat on June 30 sparked an outage when a circuit breaker popped at a substation, leaving 4,000 northern Utah customers in the dark.

Reported power outages by cause



Reported power outages by month



Vermont

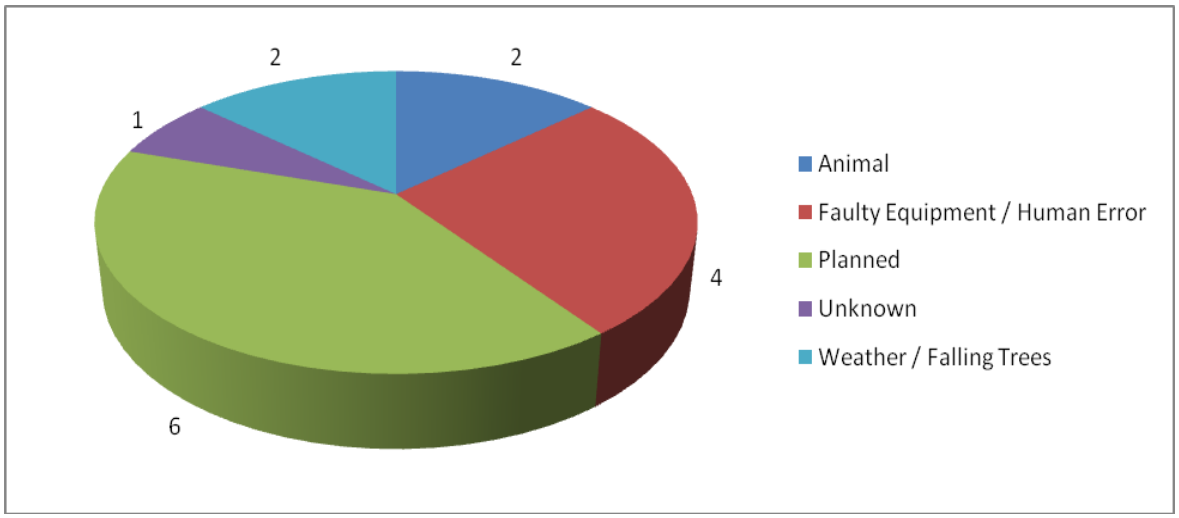
Outage summary

Total number of people affected by outages	30,977
Total duration of outages	1,260 minutes (21 hours)
Total number of outages	15
State ranking (number of outages)	42
Average number of people affected per outage	2,065
Average duration of outage	84 minutes

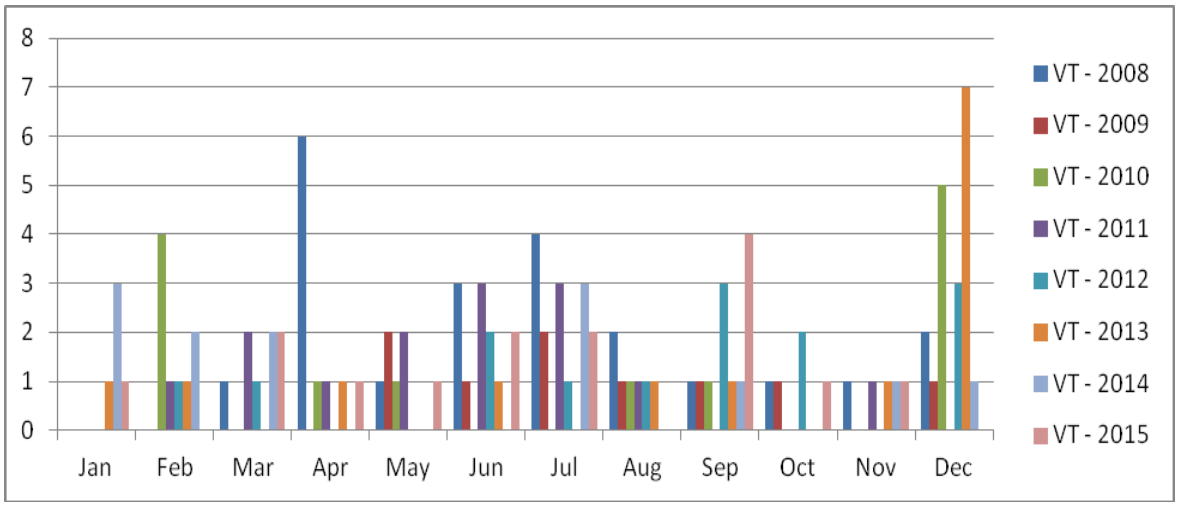
Note: Total number of people affected (and average) based on 11 (73%) of the total reported outages. Total duration of outages (and average) based on 7 (54%) of the total reported outages.

Outage fact: On Oct. 3 a kite flew into Burlington power lines, knocking out power to 1,300 people.

Reported power outages by cause



Reported power outages by month



Virginia

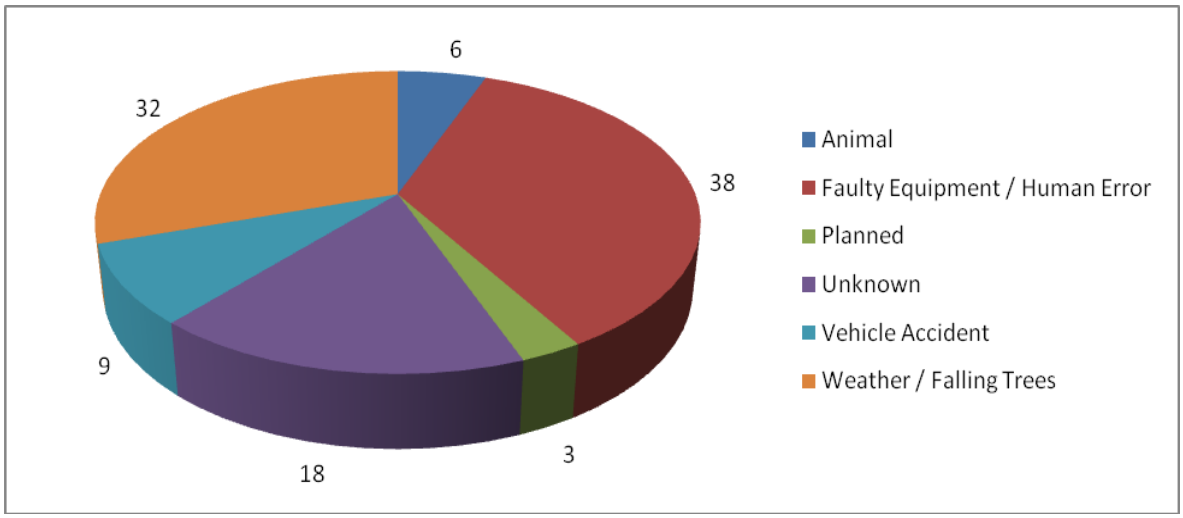
Outage summary

Total number of people affected by outages	317,078
Total duration of outages	13,111 minutes (more than 9 days)
Total number of outages	106
State ranking (number of outages)	8
Average number of people affected per outage	2,991
Average duration of outage	124 minutes

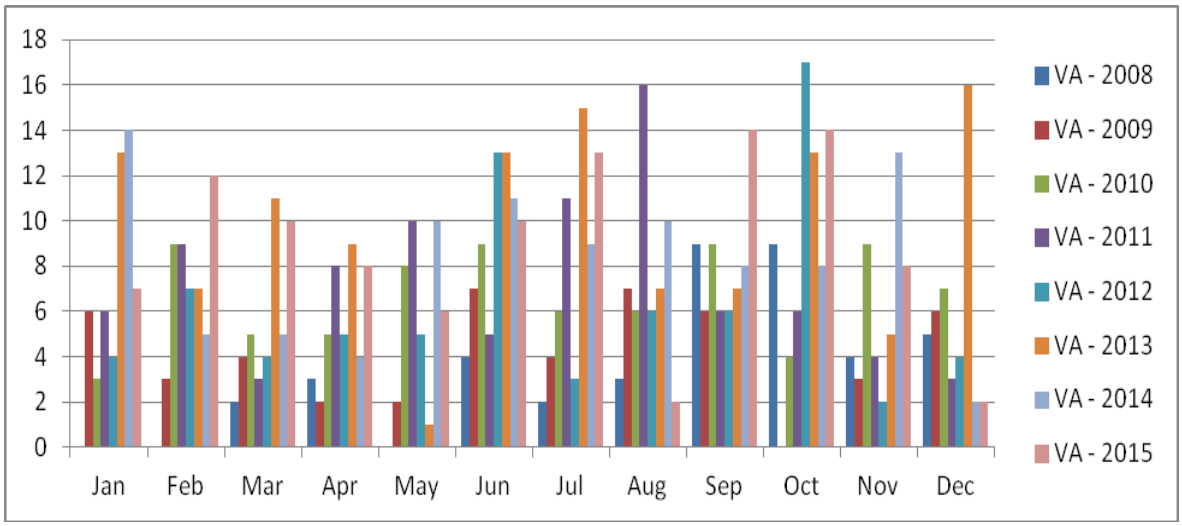
Note: Total number of people affected (and average) based on 68 (64%) of the total reported outages. Total duration of outages (and average) based on 18 (17%) of the total reported outages.

Outage fact: More than 100,000 Richmond residents had their Valentine's Day dampened by darkness after a cold front brought extreme wind conditions to the area.

Reported power outages by cause



Reported power outages by month



Washington

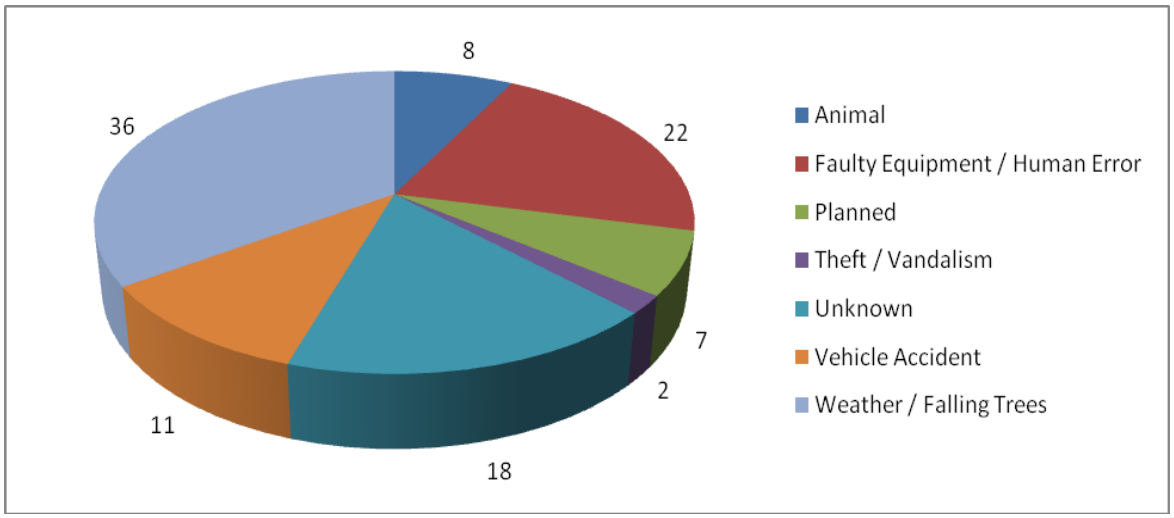
Outage summary

Total number of people affected by outages	1,098,952
Total duration of outages	7,218 minutes (5 days)
Total number of outages	104
State ranking (number of outages)	9
Average number of people affected per outage	10,567
Average duration of outage	69 minutes

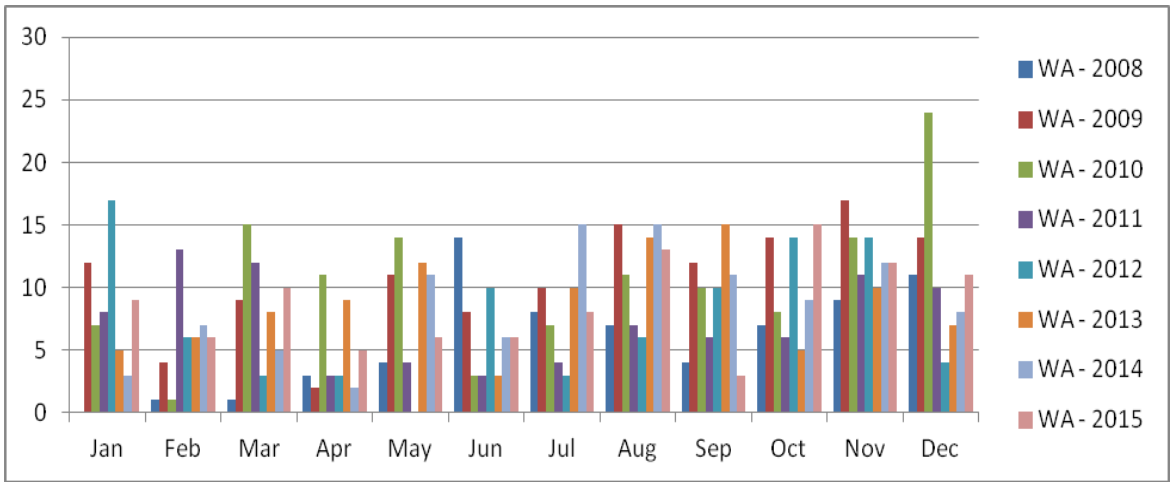
Note: Total number of people affected (and average) based on 104 (71%) of the total reported outages. Total duration of outages (and average) based on 27 (26%) of the total reported outages.

Outage fact: An errant squirrel got a nasty "trick" on Oct. 31 when it made its way into some utility equipment, cutting power to 3,500 in Helena before meeting its demise.

Reported power outages by cause



Reported power outages by month



West Virginia

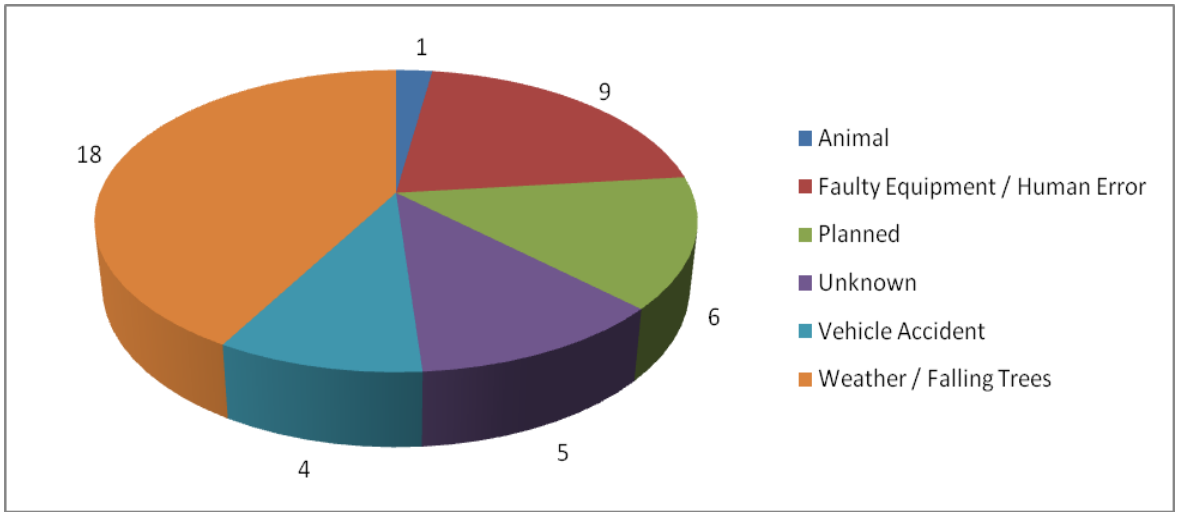
Outage summary

Total number of people affected by outages	84,308
Total duration of outages	1,210 minutes (20 hours)
Total number of outages	43
State ranking (number of outages)	28 (tie)
Average number of people affected per outage	1,961
Average duration of outage	28 minutes

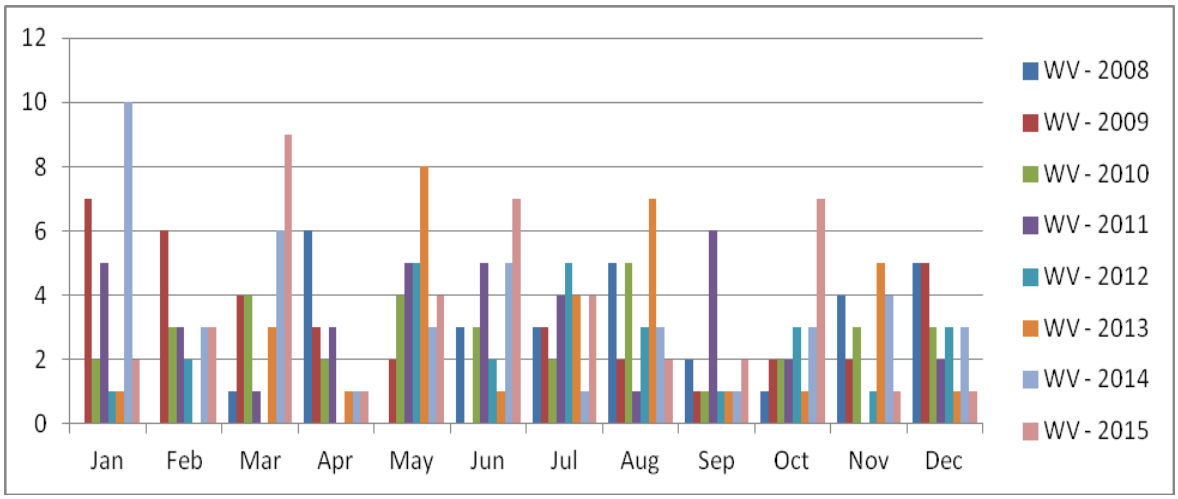
Note: Total number of people affected (and average) based on 27 (63%) of the total reported outages. Total duration of outages (and average) based on 5 (12%) of the total reported outages.

Outage fact: A bird that flew into a substation caused an Oct. 20 outage for 2,300 Parkersburg customers. It was found outside the substation at the foot of a tower, completely scorched.

Reported power outages by cause



Reported power outages by month



Wisconsin

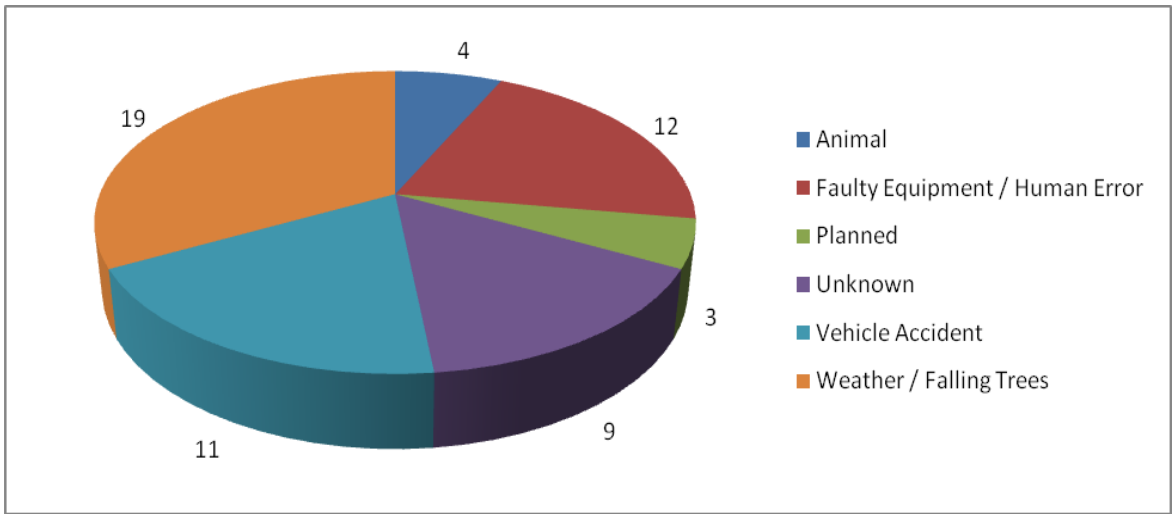
Outage summary

Total number of people affected by outages	276,535
Total duration of outages	4,631 minutes (more than 3 days)
Total number of outages	58
State ranking (number of outages)	22
Average number of people affected per outage	4,768
Average duration of outage	80 minutes

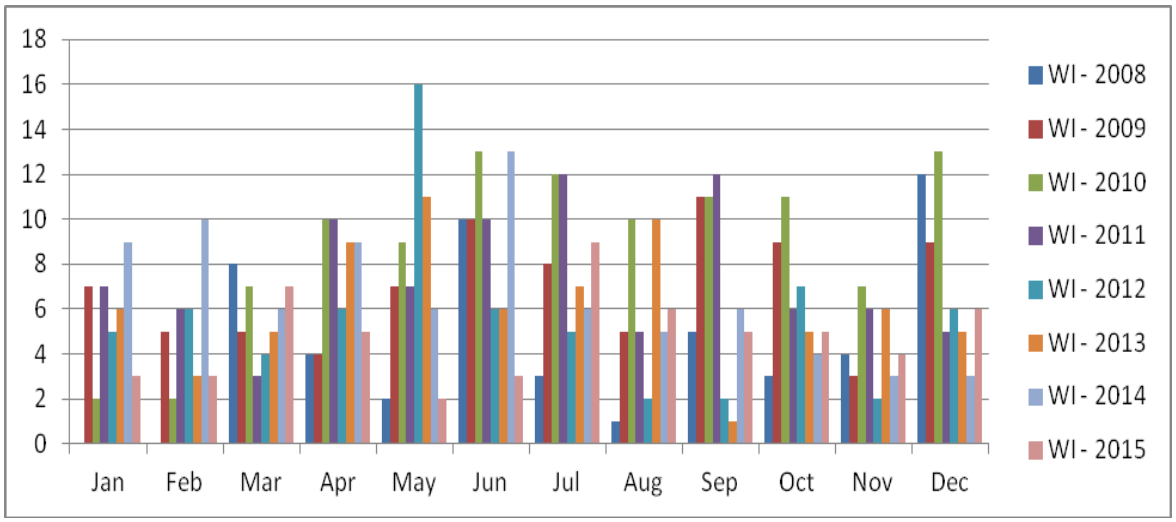
Note: Total number of people affected (and average) based on 43 (74%) of the total reported outages. Total duration of outages (and average) based on 19 (33%) of the total reported outages.

Outage fact: On July 16, a raccoon got into a utility substation in Madison, cutting power to 3,200 customers.

Reported power outages by cause



Reported power outages by month



Wyoming

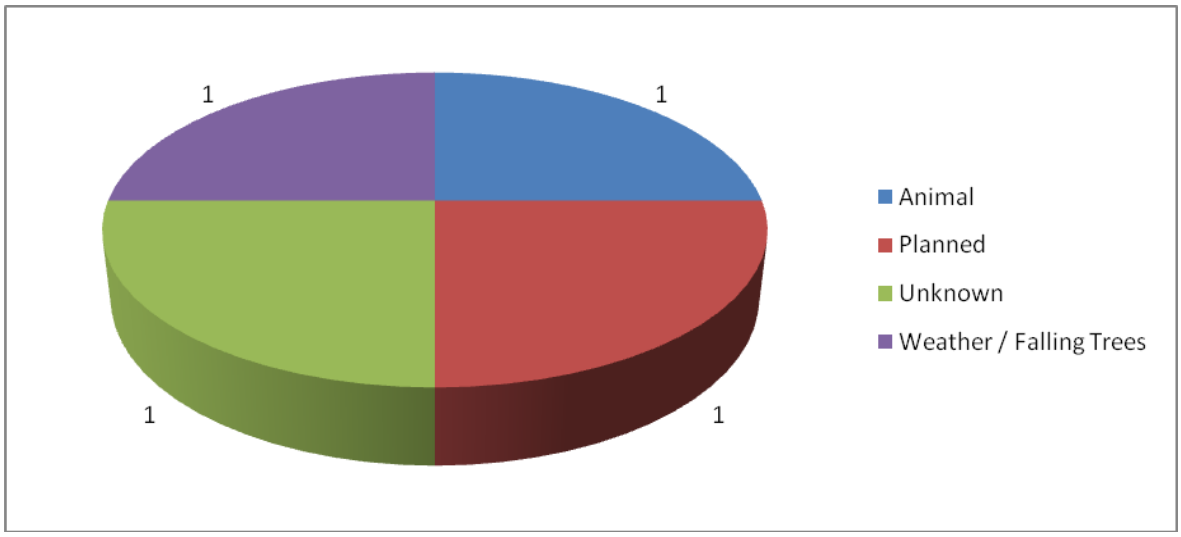
Outage summary

Total number of people affected by outages	3,186
Total duration of outages	6,060 minutes (more than 4 days)
Total number of outages	4
State ranking (number of outages)	45
Average number of people affected per outage	797
Average duration of outage	1,515 minutes

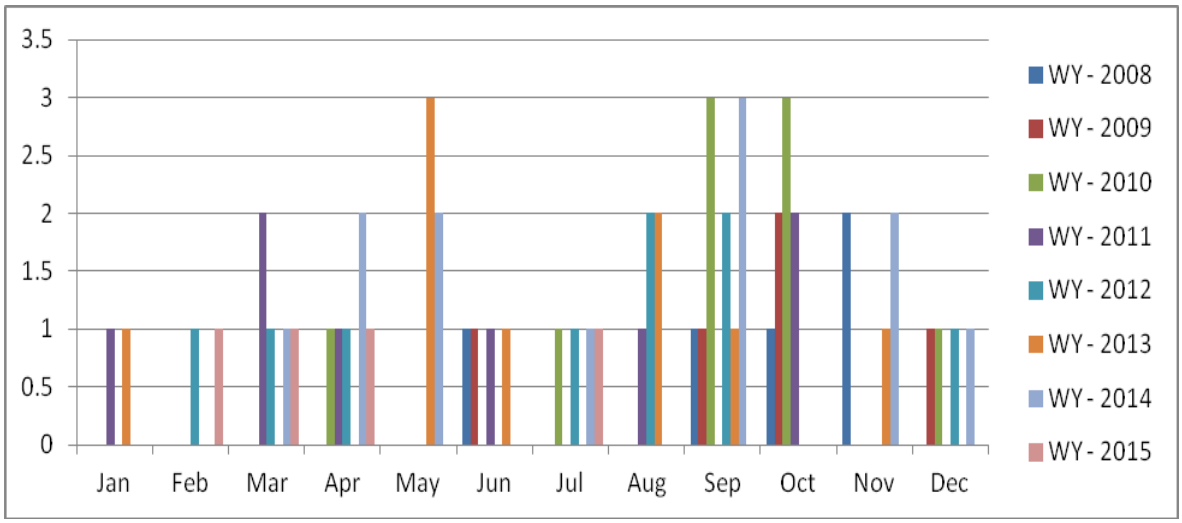
Note: Total number of people affected (and average) based on 3 (75%) of the total reported outages. Total duration of outages (and average) based on 3 (75%) of the total reported outages.

Outage fact: A Canadian goose flew into a power line on March 31, causing a bright light to flash in the sky as 664 customers lost electricity in Wapiti.

Reported power outages by cause



Reported power outages by month



Eaton
1000 Eaton Blvd.
Cleveland, OH 44122 USA
Eaton.com

8609 Six Forks Road
Raleigh, NC 27615 U.S.A.
Toll Free: 1.800.356.5794
Eaton.com/blackouttracker

Printed in USA
MZ153028EN
February 2016

Powering Business Worldwide