

Blackout Tracker

Canada Annual Report 2011

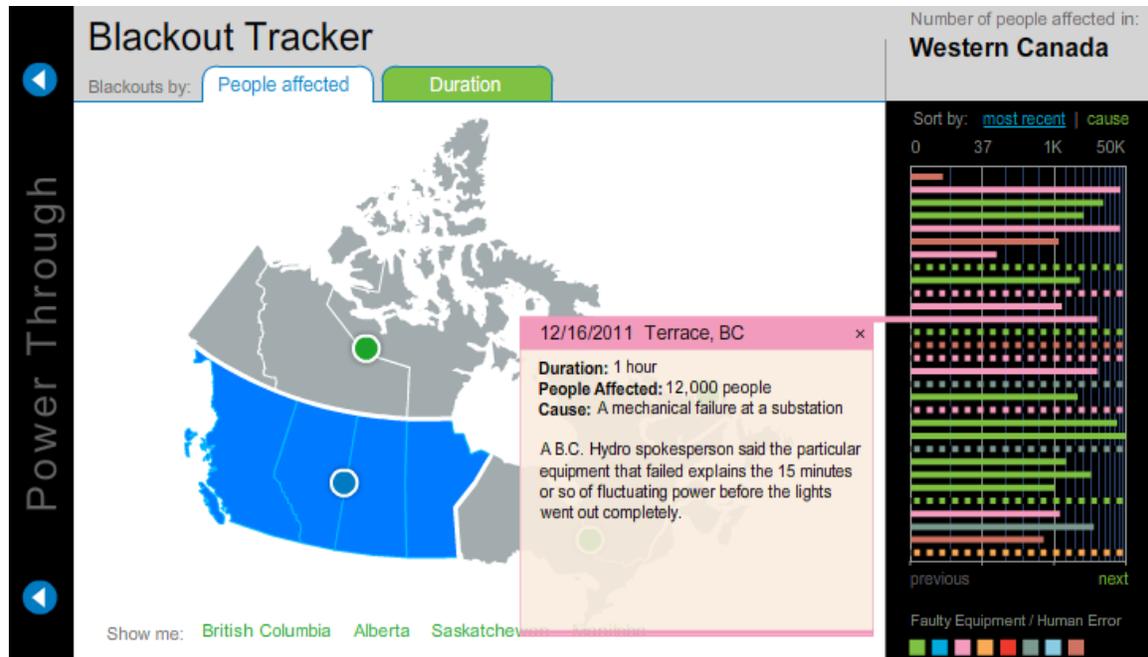
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Table of contents

A Canadian welcome	2
Introduction	3
Productivity and monetary loss	3
Five most significant reported outages	4
Five most unusual reported outages	4
Provinces and territories ranked by number of reported outages	4
Overview of national power outage data	5
Outage summary	5
Reported power outages by cause	6
Reported power outages by duration	6
Reported power outages by month	7
Reported power outages by region	7
Pros and cons of underground power lines.....	8
Power outage data by province	9
Introduction.....	9
Alberta	10
British Columbia	11
Manitoba.....	12
New Brunswick.....	13
Nova Scotia	14
Ontario.....	15
Quebec.....	16
Saskatchewan	17



A Canadian welcome

Thank you for taking an interest in Eaton Power Quality Company's Blackout Tracker Annual Report for 2011. I believe you will find the data in this report of significant value to substantiate the growing concerns over power outages across Canada that may or may not be officially reported, yet significant enough to disrupt IT operations, damage equipment and cause data losses.

Productivity and monetary loss to any organization can be quite extensive and of great consequence regardless of the size of your operation. Extensive recovery time will drive the costs associated with a power outage very high and without proper planning could be devastating to the company. You will find references in this report to additional white papers available to you on various power-related topics through our website and I strongly encourage you to download these for future reference in developing a strategy to prepare for power outages that could affect you and your organization.

We at Eaton Power Quality Company are very pleased to offer this report and I trust you will find it very insightful and useful in properly protecting your business and your IT investment against power outages in future. Your comments and feedback are always appreciated and encouraged.

Sincerely,



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Introduction

Welcome to Eaton Power Quality Company's Blackout Tracker Annual Report for 2011. From the huge, far-reaching power failures brought on by severe winter storms to the smaller, local disruptions that may have affected people in only one neighborhood, power outages caused problems for people and businesses across Canada.

This annual report is based on reported power outages in all the provinces and territories. Sources for the data included: news services, newspapers, websites (including those of newspapers, TV stations, etc.) and personal accounts. In all, 177 reported outages were tabulated and used as the basis for the report. This compares with 194 in 2010, 142 in 2009 and 128 in 2008. (The 2008 data collection began on April 6 so 2008 results are not for a complete year). We, at Eaton, hope that you not only find the report interesting, but that it prompts you to take appropriate action to prepare for power outages that could affect you and your business or organization.

It is important to note that an unknown number of power outages go unreported each year. The large power outages that impact tens of thousands or even millions of people are well reported. Many power outages last only a few seconds or minutes, but are long enough to significantly disrupt IT operations, damage equipment and cause data loss. These short outages often go unreported.

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 province

Productivity and monetary loss

The losses from a power failure can be extensive and of great consequence. For a business, the recovery time is significant and the costs are high. According to Price Waterhouse research, after a power outage disrupts IT systems:

- More than 33 percent of companies take more than a day to recover
- 10 percent of companies take more than a week
- It can take up to 48 hours to reconfigure a network
- It can take days or weeks to re-enter lost data
- 90 percent of companies that experience a computer disaster and don't have a survival plan go out of business within 18 months

Financially speaking, the losses in Canada are similar to those in the United States. Power outages can cause substantial losses for the company affected. According to the US Department of Energy, when a power failure disrupts IT systems:

- 33 percent of companies lose \$20,000-\$500,000*
- 20 percent lose \$500,000 to \$2 million*
- 15 percent lose more than \$2 million*

This is but a brief summary of the potential losses due to a disruption to IT. The information is an excerpt from a white paper entitled, "Ten Ways to Protect Your IT Infrastructure." The entire white paper and other white papers on various power-related topics are located on our [website](#).

*U.S. dollars

Five most significant reported outages

1. Fierce thunderstorms, June 8 – Halifax, NS: Heavy rain, powerful winds and hail knocked down trees and power lines, leaving 140,000 people in the dark.
2. Wind storm, March 2 – Vancouver, BC: The heavy wind knocked down trees and power lines cutting the power for 70,000 people. The wind caused ferry cancellations and also forced the cancellation of the Sarah McLachlan concert.
3. More stormy weather, November 11 – Vancouver, BC: Heavy winds knocked down trees onto power lines causing power outages for 50,000 people.
4. Thunderstorms, June 2 – Camp Breton, Nova Scotia: Powerful thunderstorms clobbered the area, causing power outages for 50,000 people.
5. Equipment problem, December 30th – Richmond, BC: An undisclosed problem at a substation caused 37,000 people to lose power.
5. High winds, June 1 – Muskoka, ON: A powerful wind storm toppled trees and power lines, cutting power for 37,000 people.

Five most unusual reported outages

1. Copper thieves, June 30 – Jonquière, QC: Thieves stole copper wire from a power distribution site and cut a high tension line resulting in a transformer explosion, which caused an outage for 15,000 people.
2. Wayward crow, July 26 – Richmond, BC: A crow got into a substation and caused a short, which resulted in a 30-minute power outage for 20,000 people.
3. Looking for something to do? Try throwing an eaves trough at power lines, April 23rd – Winnipeg, MB: Two boys were spotted throwing an old eaves trough at power lines. This caused a transformer to explode, resulting in a power outage for area residents.
4. Goose hits power line, August 10 – Sault Ste Marie, ON: A Canada goose flew into a power line causing a 16-minute outage for 8,320 people.
5. Unlucky squirrel, May 22 – Kitchener, ON: A squirrel shorted an insulator that knocked out power for 4,600 area residents.

Provinces and territories ranked by number of reported outages

2011	2010	2009
1. Ontario - 69	1. Ontario – 64	1. Ontario – 80
2. British Columbia - 46	2. British Columbia – 43	2. British Columbia – 23
3. Saskatchewan - 18	3. Alberta – 22	3. Saskatchewan – 8
4. New Brunswick - 10	4. Saskatchewan – 20	4. Alberta – 6
5. Manitoba - 9	5. Nova Scotia – 12	4. Nova Scotia – 6
6. Nova Scotia - 8	6. Quebec – 11	4. Quebec – 6
7. Alberta - 7	7. Manitoba – 9	7. Manitoba – 4
8. Quebec - 6	7. New Brunswick – 9	7. New Brunswick – 4
9. Newfoundland - 2	9. Newfoundland – 2	7. Prince Edward Island – 4
10. Northwest Territories - 1	10. Prince Edward Island – 1	10. Northwest Territories – 1
10. Prince Edward Island - 1		

What you can do to protect your business

The most important thing you can do to protect your business is to develop a power protection plan. If you don't know where to start, contact a company that specializes in power protection and get the expert advice needed. For some ideas on this topic visit our [website](#) and download the white paper entitled, "Ten Ways to Protect Your IT Infrastructure."

Overview of national power outage data

This section provides aggregate data for Canada and includes all the data found in the subsequent province section.

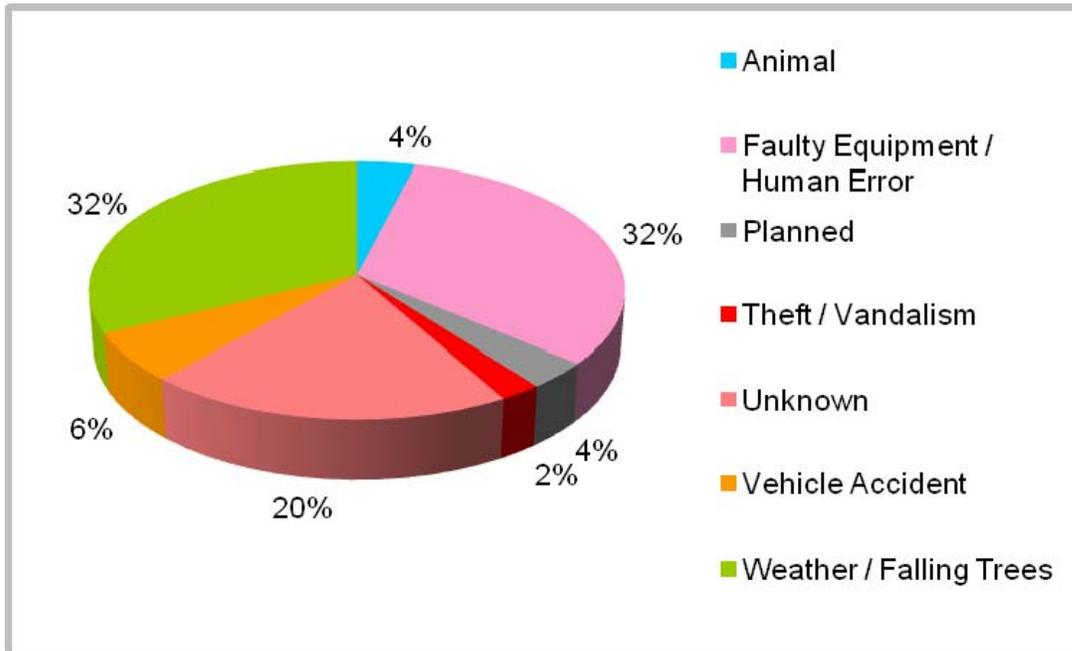
Outage summary

Total number of people affected by outages <i>(This is the sum of the number of people affected by reported power outages in Canada starting January 1, 2011.)</i>	1,118,898
Total duration of outages <i>(This is the sum of the durations of the reported power outages for 2011.)</i>	7,905 minutes (approximately 132 hours or nearly 5.5 days)
Total number of outages <i>(The sum of the number of reported power outages for 2011.)</i>	177
Average number of people affected per outage <i>(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.)</i>	9,815
Average duration of outage <i>(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.)</i>	188 minutes (over 3 hours)

Notes:

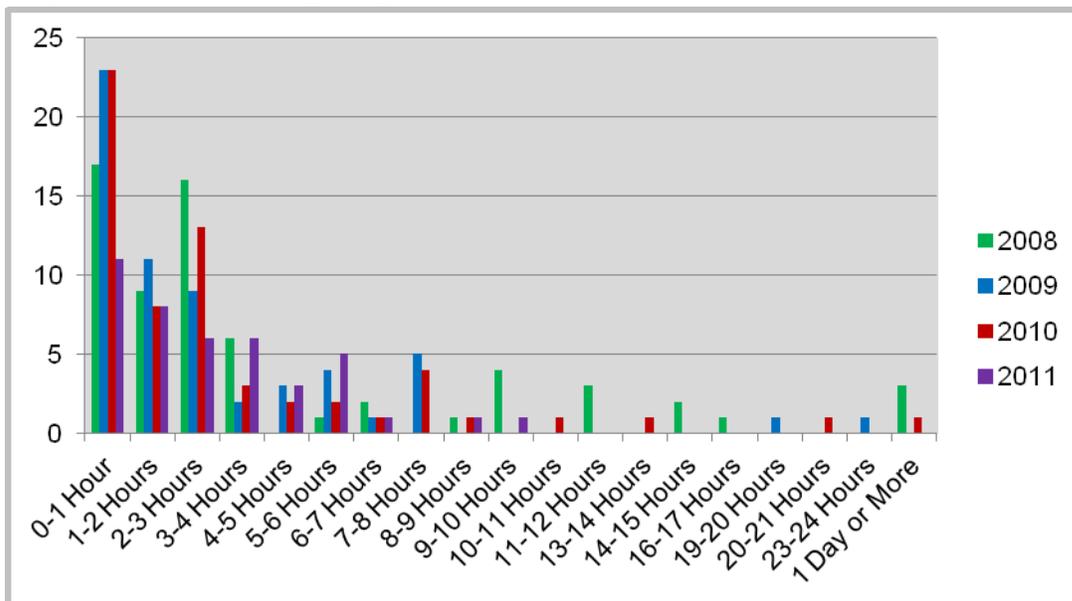
- a. Total number of people affected (and average) based on 114 (64%) of the total reported outages.
Total duration of outages (and average) based on 42 (24%) of the total reported outages.
- b. Reports from news services, newspapers, websites, etc. that are used as sources sometimes give statistics using different terms. For example, some reports may be based on "people" while others may be based on "addresses," "homes and businesses" or "utility customers." For purposes of this report all of these are assumed to be, and are counted, as people.

Reported power outages by cause



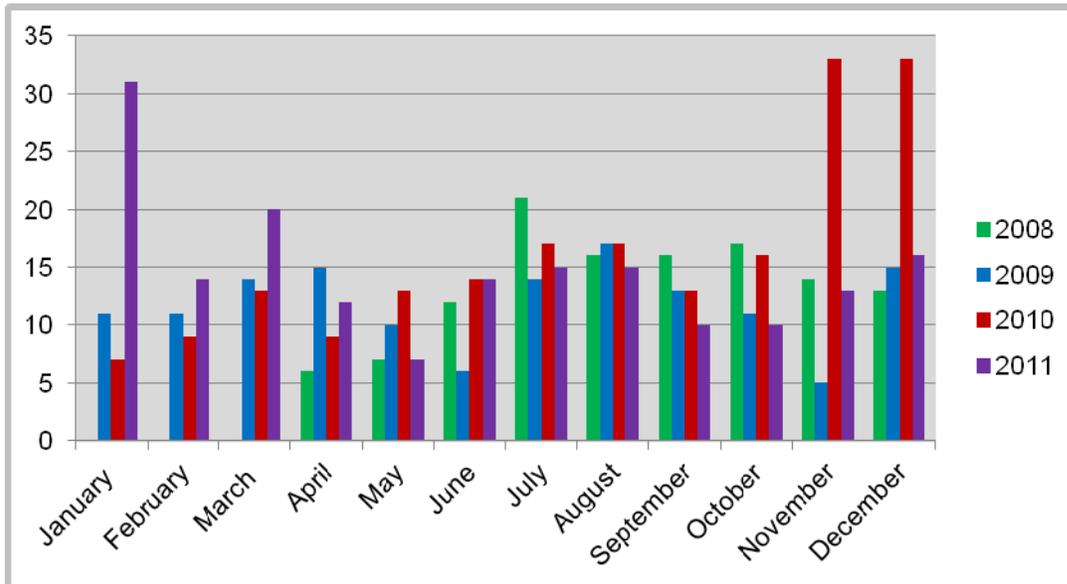
Note: Each power outage was grouped into one of seven possible causes. The outages by cause were totaled. The number adjacent to the pie piece represents the percentage of outages attributable to that cause.

Reported power outages by duration



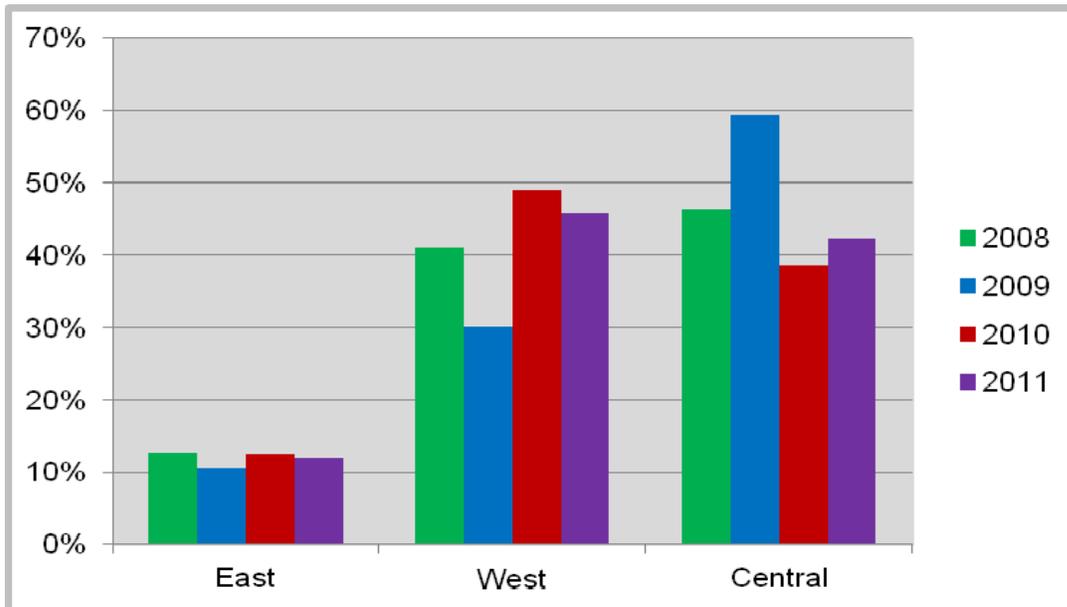
Note: Data collection began April 6, 2008.

Reported power outages by month



Note: Data collection began April 6, 2008.

Reported power outages by region



Regions:

East: Newfoundland, New Brunswick, Nova Scotia, Prince Edward Island

West: Alberta, British Columbia, Manitoba, Northwest Territories, Saskatchewan

Central: Ontario, Quebec

Note: Data collection began April 6, 2008.

Pros and cons of underground power lines

With 32 percent of reported outages caused by the weather and another 6 percent caused by vehicle accidents, why aren't all power lines put underground?

After a large storm, particularly one involving ice and wind, questions about underground power lines are frequently asked. Ice storms bring down power lines because of falling trees and also because of the weight of ice on the power lines. If the wind is strong then the situation deteriorates further.

So why aren't power lines buried underground, eliminating the chance of weather-related outages? Also, many vehicle-related power failures could be avoided with buried power lines. In addition, removing above ground power lines from view would be much more aesthetically pleasing.

The main issue with underground power lines is cost. According to several studies performed in the U.S. on the subject, the cost of installation of underground power lines is approximately \$1 million (U.S. dollars) per mile, 10 times the cost of overhead lines. Installation of underground transmission lines costs about \$5 million per mile, 10 times the cost of overhead lines. A study in the State of North Carolina found that it would cost approximately \$41 billion and would take 25 years to bury all the power lines in the state. There are also increased costs for maintenance and repair of lines that are underground. Outages caused by problems with underground lines last longer than those related to overhead lines. Rate increases to cover these increased costs were estimated at a whopping 125 percent.

In addition, underground systems, while inherently less prone to weather-related problems, are susceptible to flooding. Salt water exacerbates the problems.

The results of the studies are that the costs of burying power lines are generally cost-prohibitive. The cost becomes more reasonable if an entire development is being excavated and the power lines can be buried as part of this process. Another exception is in large cities where above ground space is at a premium and the underground infrastructure exists.

Source: [Entergy Corporation](#).

Power Outage Data by Province

Introduction

This section of the report provides an analysis of the power outages by province. 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 overview of national power outage data in the previous section of this report. Only data pertaining to the particular province is used.
2. The second part of the analysis on each province is the outage fact. This is simply an interesting fact concerning a particular outage (or outages) in a province.
3. The third part of the analysis is a chart of the reported power outages by cause, which is the same type of chart that can be found in the overview of national power outage data. Only data pertaining to the particular province is used.
4. The last part of each provincial section is the number of reported power outages by month, which is the same type of chart that can be found in the overview of national power outage data. Only data pertaining to the particular province is used. From this chart it may be possible to determine particular times of the year when power outages are more common.

Note: There were two reported outages for St. John's, Newfoundland. The first outage occurred on February 11, was caused by faulty equipment and affected 8,000 people. The second happened on April 12, was caused by high winds and lasted 2.5 hours. There was one reported outage on Prince Edward Island caused by heavy snow. It occurred on January 3. There was no information regarding duration or number of people affected available. There was also one outage reported for Yellowknife in the Northwest Territories. It occurred on January 13 and was caused by a faulty switch. The outage lasted 160 minutes and affected about three quarters of the town. The temperature was -37°C during the power outage.

Alberta

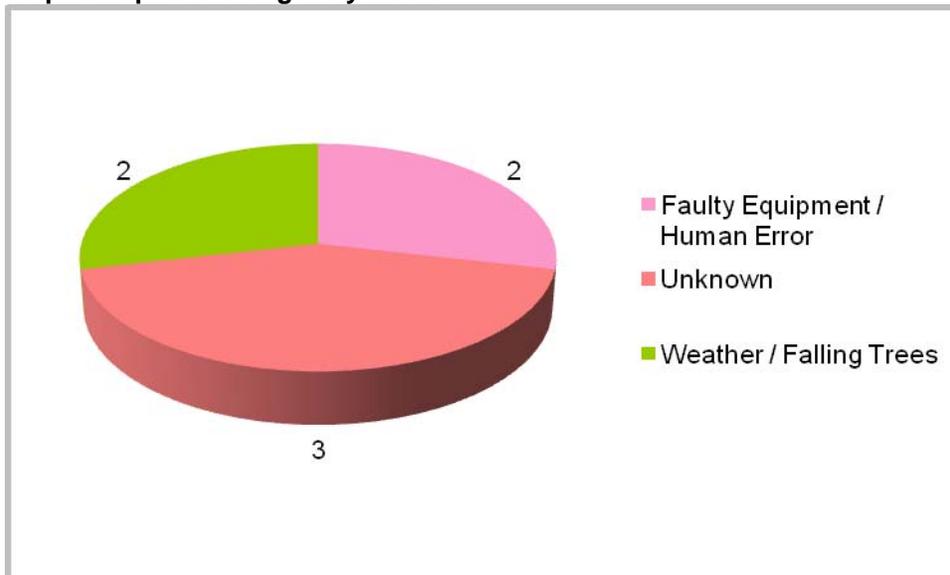
Outage summary

Total number of people affected by outages	3,960
Total duration of outages	360 minutes (6 hours)
Total number of outages	7
Average number of people affected per outage	1,320
Average duration of outage	180 minutes (3 hours)

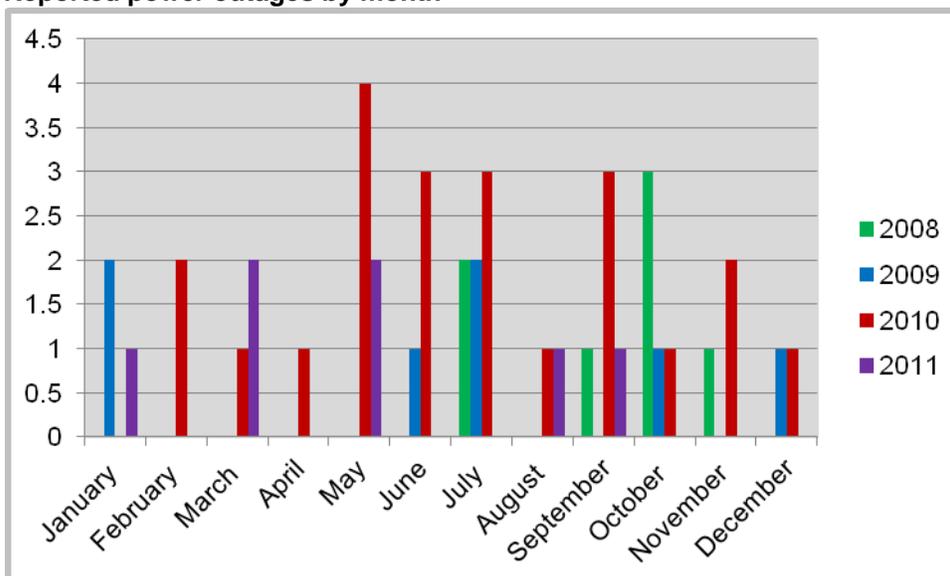
Note: Total number of people affected (and average) based on 3 (43%) of the total reported outages. Total duration of outages (and average) based on 2 (29%) of the total reported outages.

Outage fact: On September 19, a gang switch failed causing a two-hour power outage for 1,800 people in Fort McMurray.

Reported power outages by cause



Reported power outages by month



Note: Data collection began April 6, 2008.

British Columbia

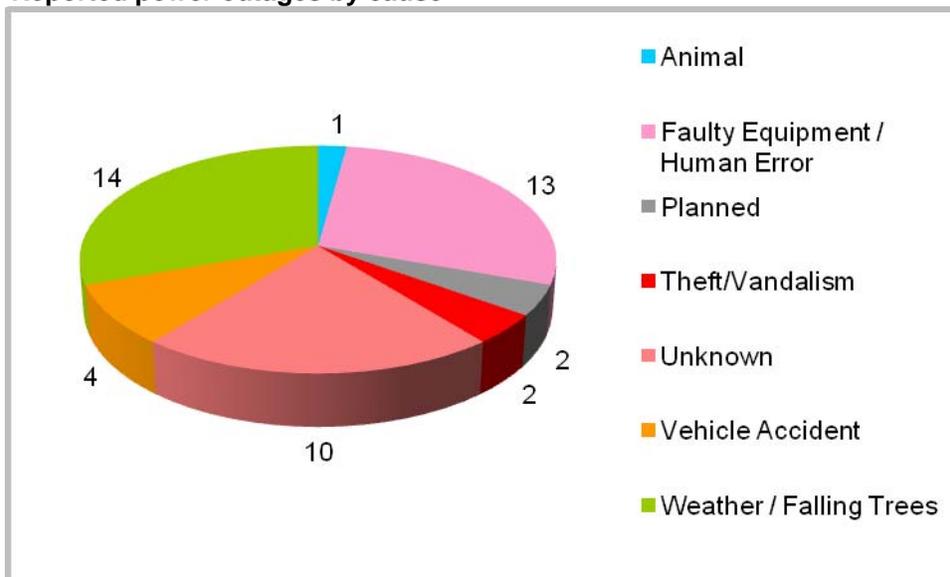
Outage summary

Total number of people affected by outages	389,994
Total duration of outages	3,120 minutes (over 2 days)
Total number of outages	46
Average number of people affected per outage	12,581
Average duration of outage	240 minutes (4 hours)

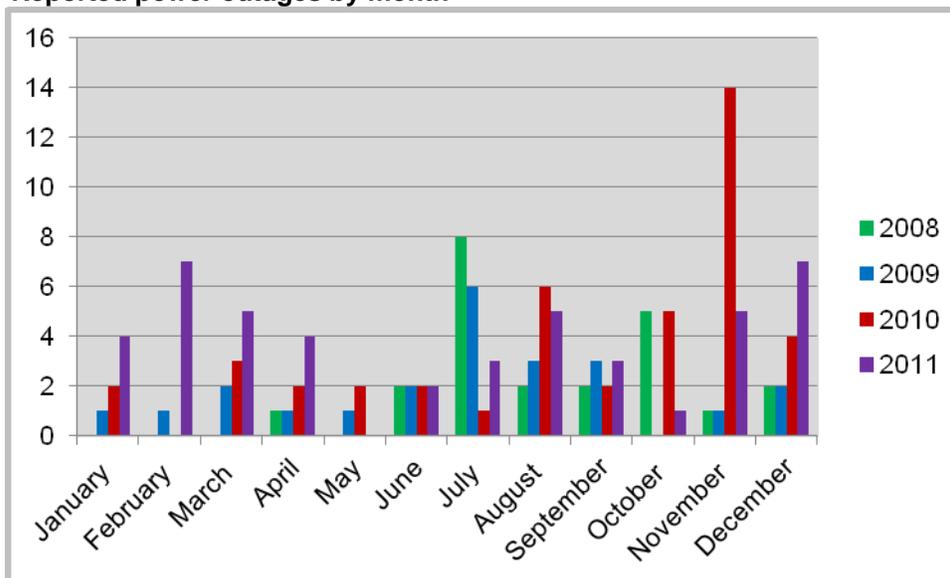
Note: Total number of people affected (and average) based on 31 (67%) of the total reported outages. Total duration of outages (and average) based on 13 (28%) of the total reported outages.

Outage fact: On March 2, strong winds toppled trees and downed power lines causing power outages for 70,000 people in the Vancouver area.

Reported power outages by cause



Reported power outages by month



Note: Data collection began April 6, 2008.

Manitoba

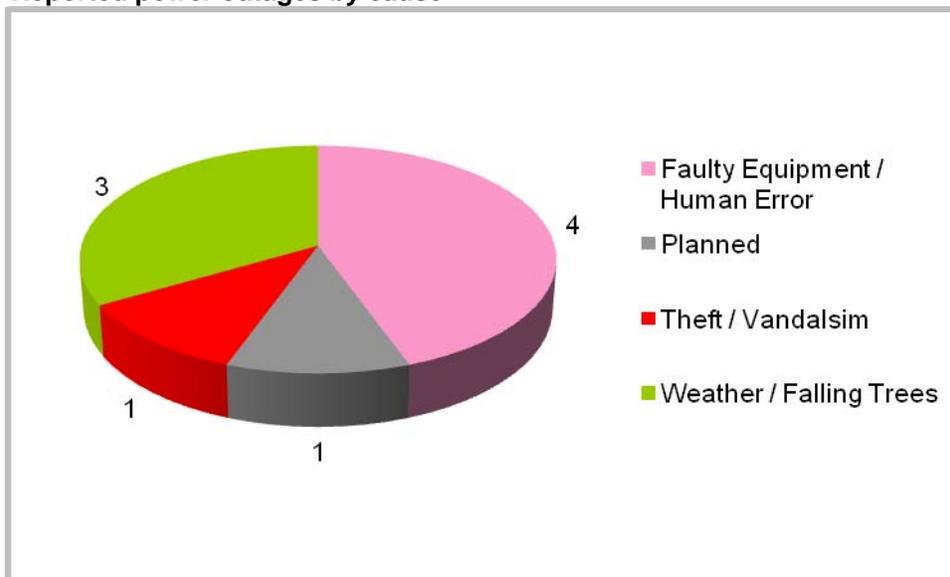
Outage summary

Total number of people affected by outages	15,155
Total duration of outages	300 minutes (5 hours)
Total number of outages	9
Average number of people affected per outage	2,165
Average duration of outage	300 minutes (5 hours)

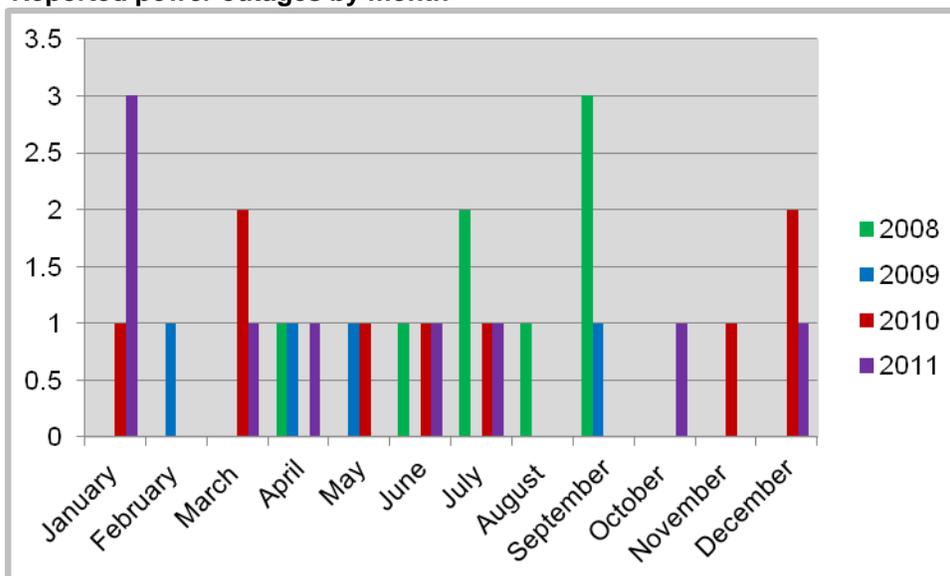
Note: Total number of people affected (and average) based on 7 (78%) of the total reported outages. Total duration of outages (and average) based on 1 (11%) of the total reported outages.

Outage fact: On October 7, powerful winds knocked down trees and power lines causing outages for 2,500 people.

Reported power outages by cause



Reported power outages by month



Note: Data collection began April 6, 2008.

New Brunswick

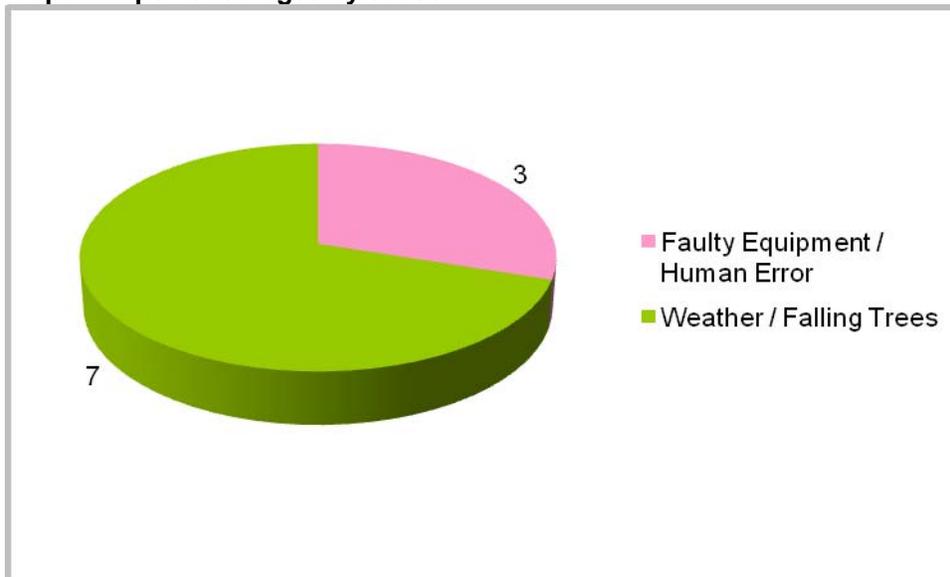
Outage summary

Total number of people affected by outages	40,688
Total duration of outages	270 minutes (4.5 hours)
Total number of outages	10
Average number of people affected per outage	5,086
Average duration of outage	135 minutes (over 2 hours)

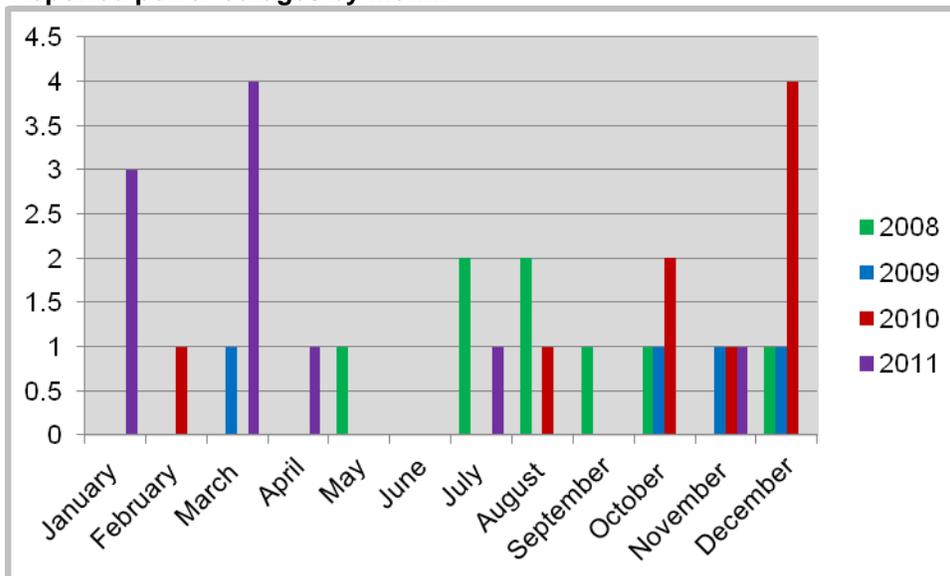
Note: Total number of people affected (and average) based on 8 (80%) of the total reported outages. Total duration of outages (and average) based on 2 (20%) of the total reported outages.

Outage fact: On January 3, a heavy snowfall caused power outages for 8,500 people in Moncton.

Reported power outages by cause



Reported power outages by month



Note: Data collection began April 6, 2008.

Nova Scotia

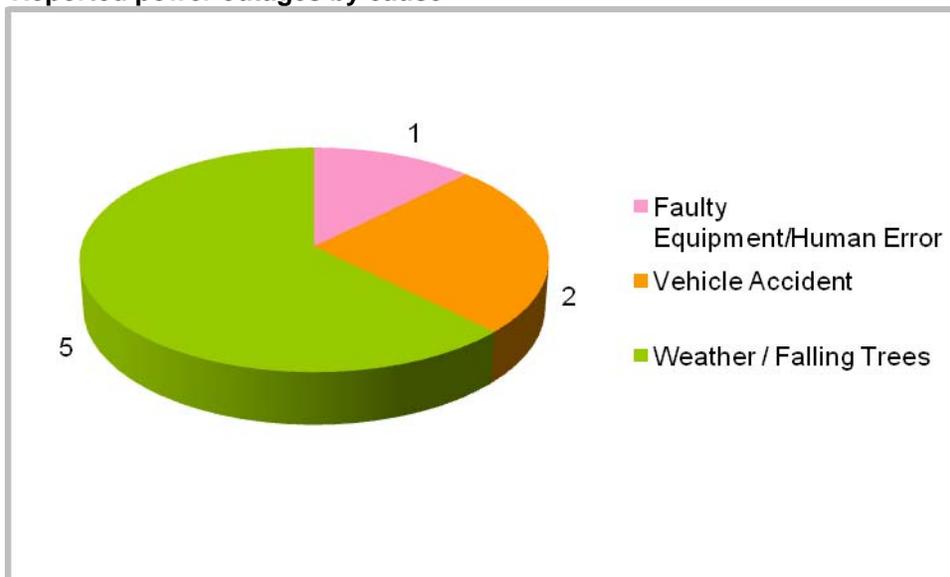
Outage summary

Total number of people affected by outages	91,836
Total duration of outages	60 minutes (1 hour)
Total number of outages	8
Average number of people affected per outage	11,480
Average duration of outage	60 minutes (1 hour)

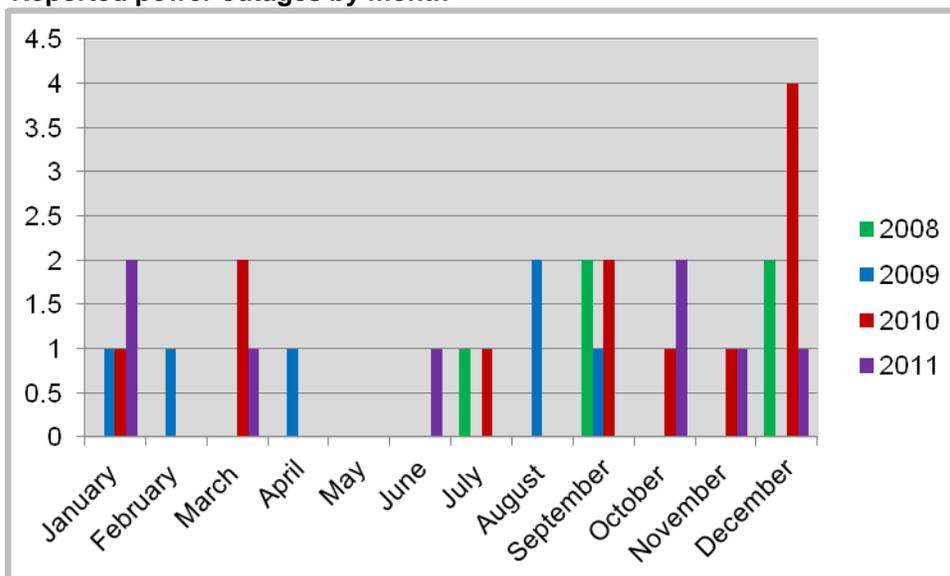
Note: Total number of people affected (and average) based on 8 (100%) of the total reported outages. Total duration of outages (and average) based on 1 (13%) of the total reported outages.

Outage fact: on January 24, a three-vehicle collision caused an hour-long power failure for 10,000 people in Dartmouth.

Reported power outages by cause



Reported power outages by month



Note: Data collection began April 6, 2008.

Ontario

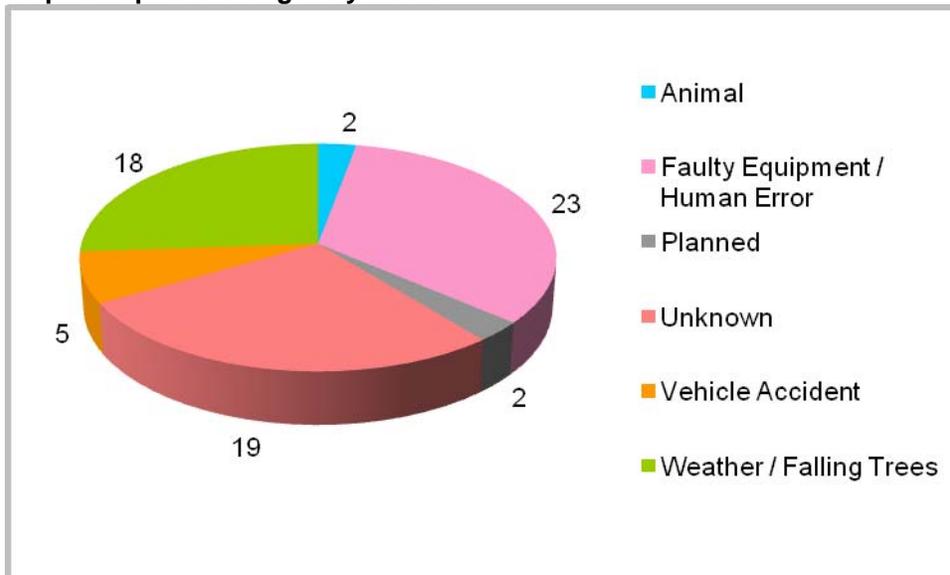
Outage summary

Total number of people affected by outages	472,265
Total duration of outages	2,635 minutes (nearly 44 hours)
Total number of outages	69
Average number of people affected per outage	11,244
Average duration of outage	176 minutes (nearly 3 hours)

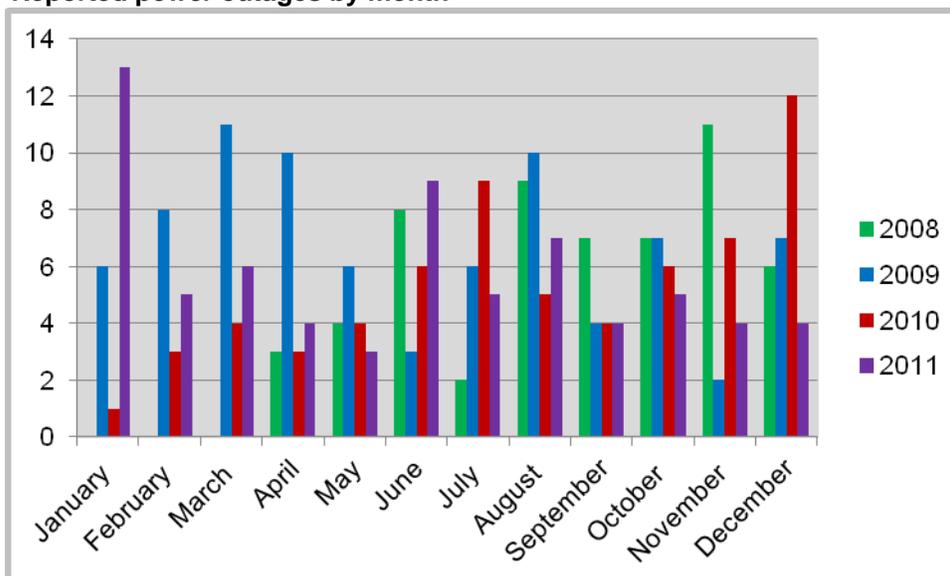
Note: Total number of people affected (and average) based on 42 (61%) of the total reported outages. Total duration of outages (and average) based on 15 (22%) of the total reported outages.

Outage fact: On June 8, powerful thunderstorms knocked trees onto power lines causing power outages that affected 140,000 people.

Reported power outages by cause



Reported power outages by month



Note: Data collection began April 6, 2008.

Quebec

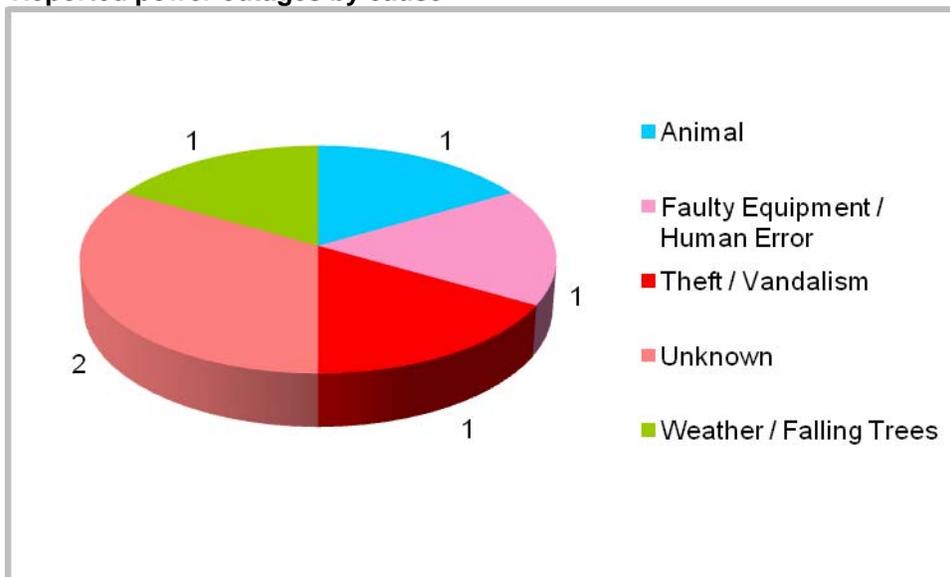
Outage summary

Total number of people affected by outages	47,000
Total duration of outages	210 minutes (3.5 hours)
Total number of outages	6
Average number of people affected per outage	11,750
Average duration of outage	105 minutes (over 1.5 hours)

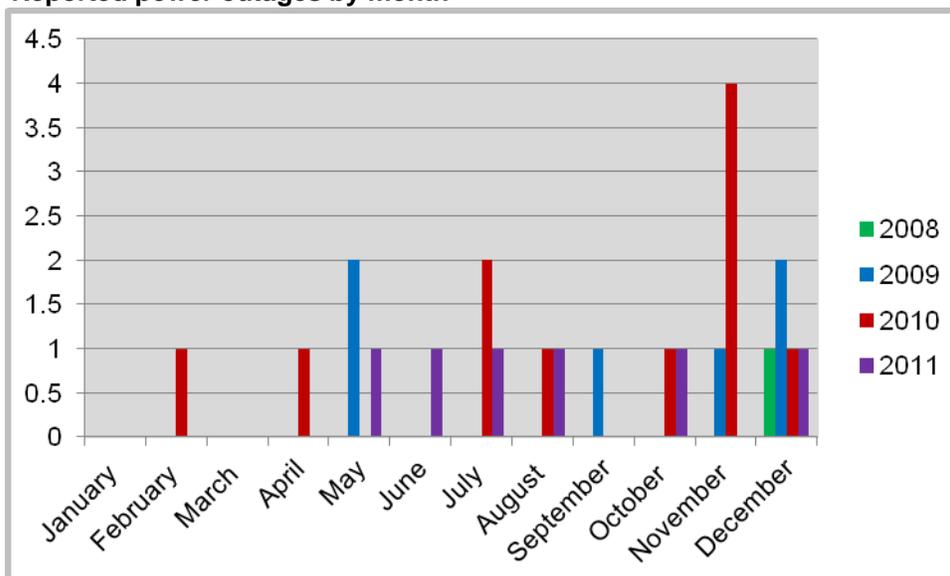
Note: Total number of people affected (and average) based on 4 (67%) of the total reported outages. Total duration of outages (and average) based on 2 (33%) of the total reported outages.

Outage fact: On June 30, thieves stole copper wire from a power distribution site and cut a high-tension line causing a transformer explosion. 15,000 Jonquière residents lost power.

Reported power outages by cause



Reported power outages by month



Note: Data collection began April 6, 2008.

Saskatchewan

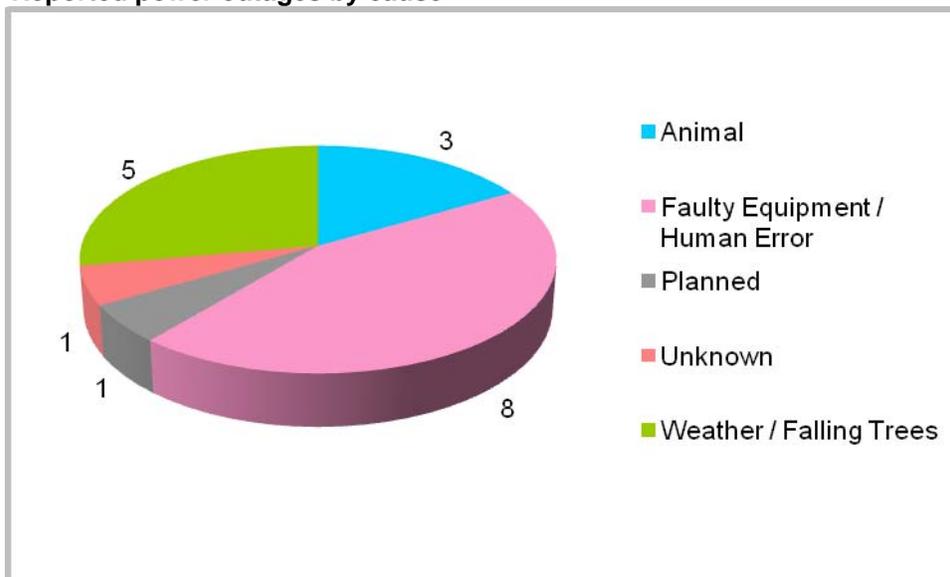
Outage summary

Total number of people affected by outages	50,000
Total duration of outages	640 minutes (over 10.5 hours)
Total number of outages	18
Average number of people affected per outage	5,000
Average duration of outage	160 minutes (over 2.5 hours)

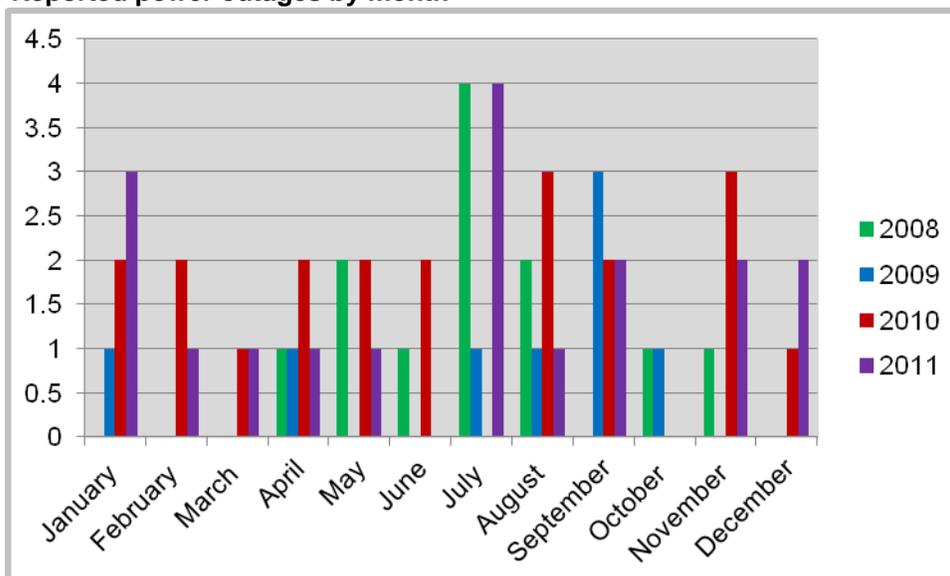
Note: Total number of people affected (and average) based on 10 (56%) of the total reported outages. Total duration of outages (and average) based on 4 (22%) of the total reported outages.

Outage fact: On July 30, a storm knocked down trees onto power lines causing outages for 12,000 people in Regina.

Reported power outages by cause



Reported power outages by month



Note: Data collection began April 6, 2008.

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