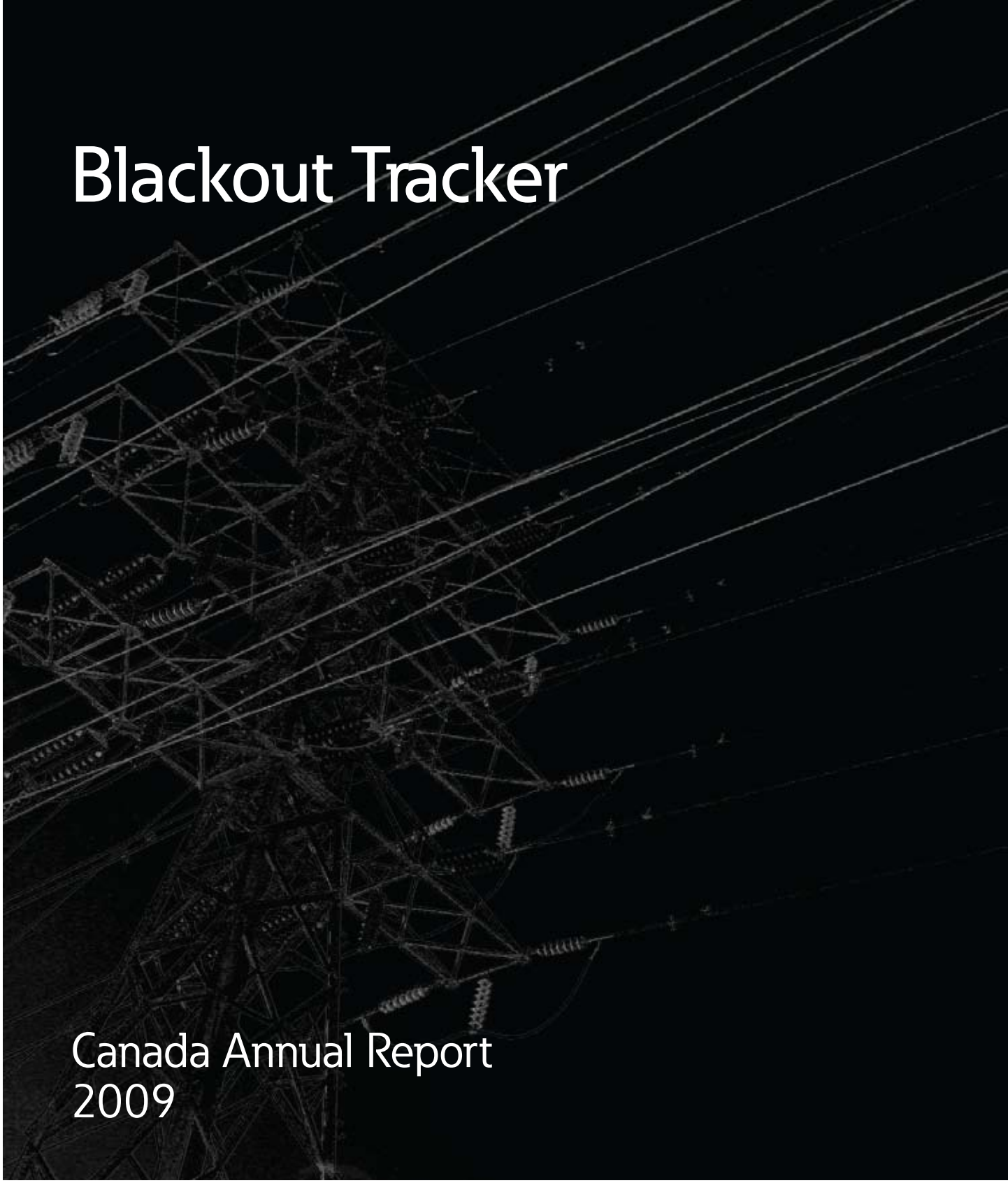

Blackout Tracker

Canada Annual Report 2009

Powering Business Worldwide

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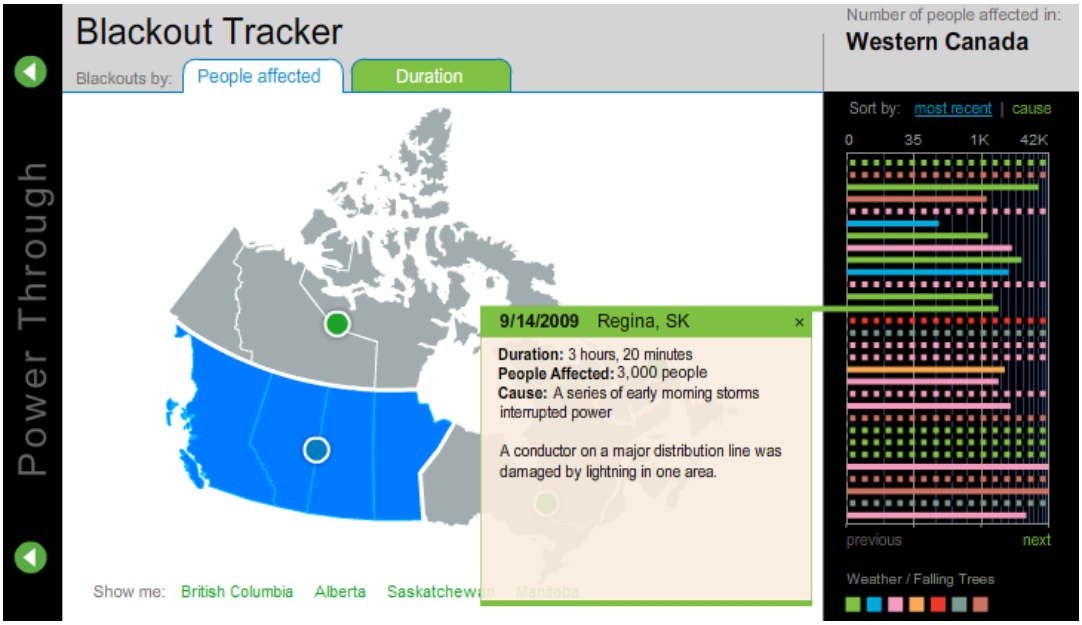


A Canadian Welcome

Thank you for taking an interest in Eaton Power Quality Company's Blackout Tracker Annual report for 2009. 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

Robert B. Woolner
Managing Director, Canada
Eaton Power Quality Company

Email: RobertBWoolner@eaton.com
Ph: 1.800.461.9166 ext #3403

Introduction

Welcome to Eaton Power Quality Company's Blackout Tracker Annual Report for 2009. From the huge, far-reaching power failures brought on by ice storms to the smaller, local disruptions that may have affected people in only one neighborhood, power outages caused problems for people and businesses in all 10 provinces and three territories.

This Annual Report is based on reported power outages in Canada. Data collection began on January 1, 2009 from sources including news services, newspapers, Web sites (including those of newspapers, TV stations, etc.) and personal accounts. In all, 142 reported outages were tabulated and used as the basis for the report. This compares with 128 in 2008. The reasons for this are that the 2009 report covers the entire year while the 2008 data collection began on April 6. Also, the data collection methods were improved. 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 can be found in the Spotlight section, at *www.eaton.com/powerquality* (choose Canada as your default country).

Five Most Significant Reported Outages

1. January 15 – Toronto, ON: A valve that triggers sprinklers in a substation incorrectly opened. The sprinklers turned on, flooding the substation and cutting power to 250,000 people.
2. December 15 – Montreal, QC: A problem, of unknown origin, at a Hydro-Québec facility caused a power failure for 200,000 people in the Montreal area.
3. February 12 – Ottawa, ON: A problem, of unreported origin, caused an outage affecting 100,000 people.
4. July 18 – Edmonton, AB: A severe thunderstorm toppled trees and knocked down power lines interrupting power for 57,000 people
5. April 27 – Charlottetown, PE: A squirrel gnawed on wires in a substation, starting a fire that knocked-out power for 55,000 people. The fire caused $200,000 in damage.

Five Most Unusual Reported Outages

1. Transformers shot, February 8 – Camperville, MB: Three transformers were damaged by rifle shots, resulting in a power outage that lasted for several hours. Damages were reported to be in the hundreds of thousands of dollars.
2. Forklift mishap, April 2 – Saskatoon, SK: A forklift struck and downed a power line causing a power outage that affected 17,000 people for about 75 minutes.
3. Flood caused by sprinklers, January 15 – Toronto, ON: A valve that triggers sprinklers in a substation incorrectly opened. The sprinklers turned on, flooding the substation and cutting power to 250,000 people.
4. Squirrel, April 27 – Charlottetown, PE: A squirrel gnawed on wires in a West Royalty substation, starting a fire that knocked-out power for 55,000 people.
5. Raven, January 4 – Grande Prairie, AB: A raven landed on a power line causing a fault that knocked-out power for 2,200 people for 3 hours.

Provinces and Territories Ranked By Number of Reported Outages

1. Ontario – 80
2. British Columbia – 23
3. Saskatchewan – 8
4. Alberta – 6 (tie)
5. Nova Scotia – 6 (tie)
6. Quebec – 6 (tie)
7. Manitoba – 4 (tie)
8. New Brunswick – 4 (tie)
9. Prince Edward Island – 4 (tie)
10. Northwest Territories - 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 the Spot Light Section at www.eaton.com/powerquality and download the white paper entitled "Ten Ways to Protect Your IT Infrastructure."

If you have wondered how to provide serious protection on a small-business budget, this white paper is for you:

- Learn about power, cooling and security issues that put your IT systems at risk.
- Find out how to provide clean, conditioned, continuous power for critical systems.
- Understand how to select the right power protection strategies for your needs.
- Learn which cooling and security practices are best for your IT environment.
- Save money with optimized strategies while increasing IT reliability and longevity.

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

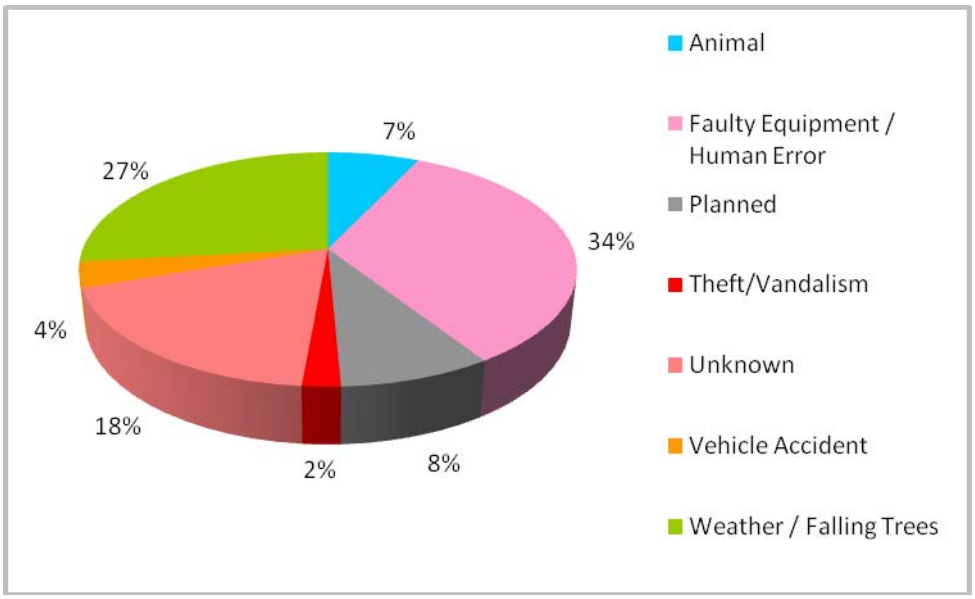
Total number of people affected by outages *(This is the sum of the number of people affected by reported power outages in the Canada starting January 1, 2009.)*	1,348,960
Total duration of outages *(This is the sum of the durations of the reported power outages for 2009.)*	11,718 minutes (approximately 195 hours or over 8 days)
Total number of outages *(The sum of the number of reported power outages for 2009.)*	142
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.)*	14,505
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.)*	195 minutes (over 3.25 hours)

Notes:

a. Total number of people affected (and average) based on 93 (66%) of the total reported outages.
Total duration of outages (and average) based on 60 (43%) of the total reported outages.

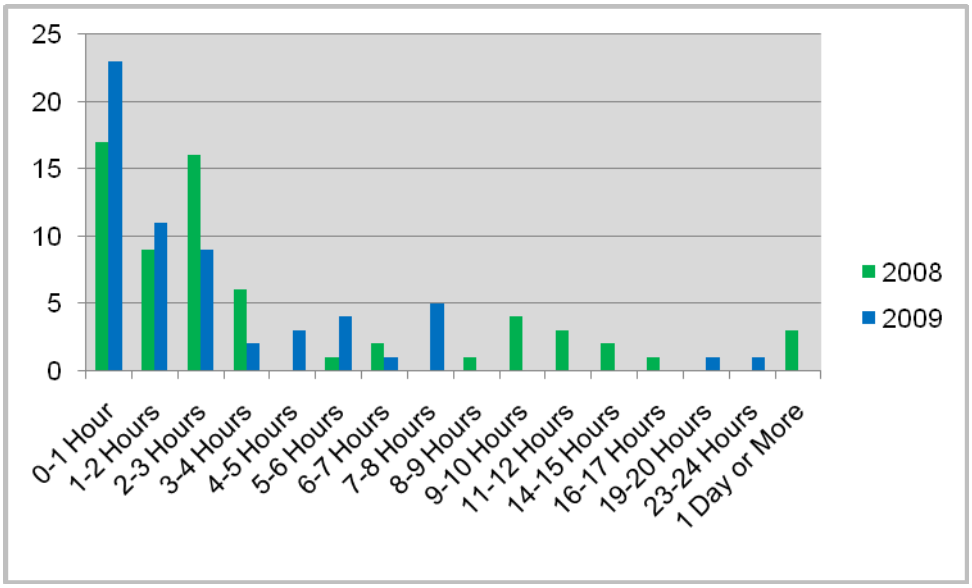
b. Reports from news services, newspapers, Web sites, etc. that are used as sources sometimes give statistics using different terms. For example, some reports may be based on "people" while others may be based on "addresses", "homes and businesses" or "utility customers." For purposes of this report all of these are assumed to be, and are counted, as people.

Reported Power Outages by Cause



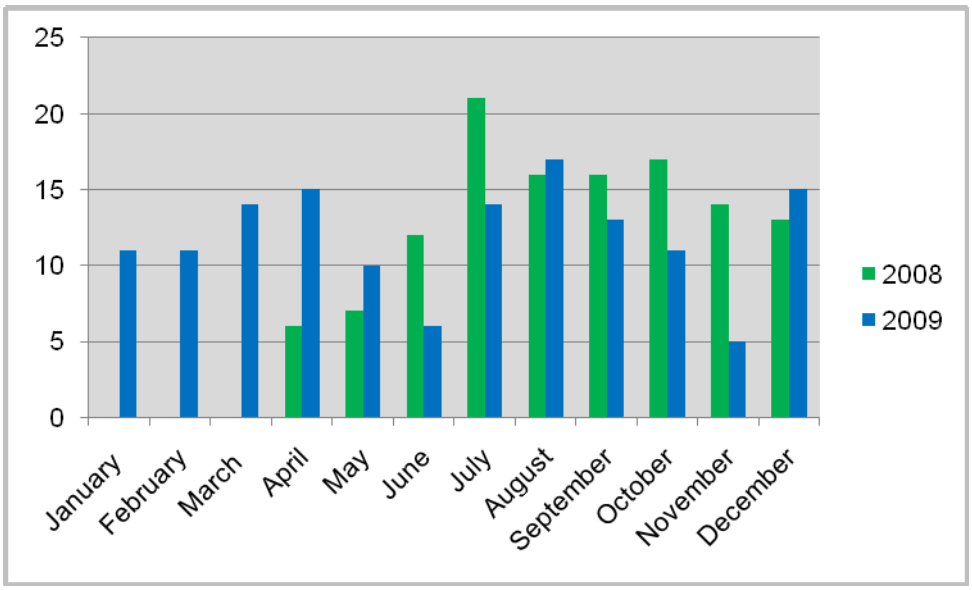
Note: Each power outage was grouped into one of seven possible causes. The outages by cause were totaled. The number adjacent to the pie piece represents the percentage of outages attributable to that cause.

Reported Power Outages by Duration



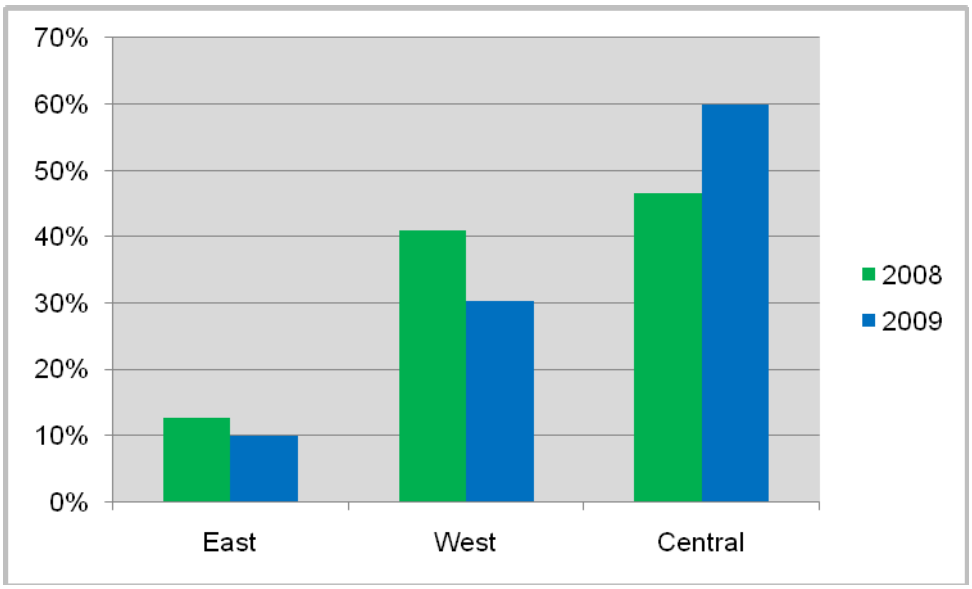
Note: Data collection began April 6, 2008.

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.

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. This 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. This 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 no reported power outages for Newfoundland and Labrador, Nunavut and Yukon for 2009. There was one reported outage, of unknown cause, in Yellowknife, Northwest Territories. It occurred on December 2, 2009.

Alberta

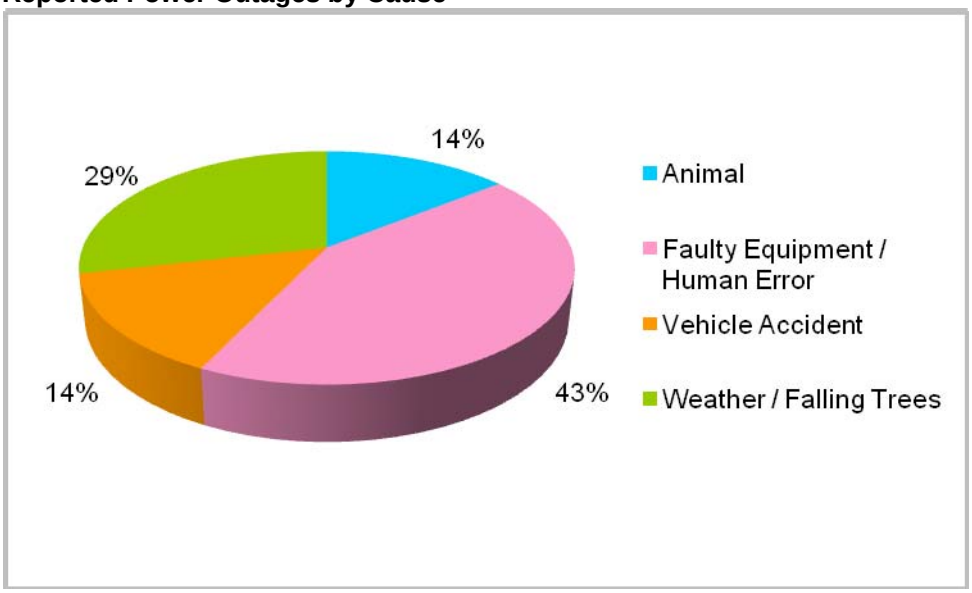
Outage Summary

Total number of people affected by outages	100,500
Total duration of outages	360 minutes (6 hours)
Total number of outages	7
Average number of people affected per outage	20,100
Average duration of outage	90 minutes

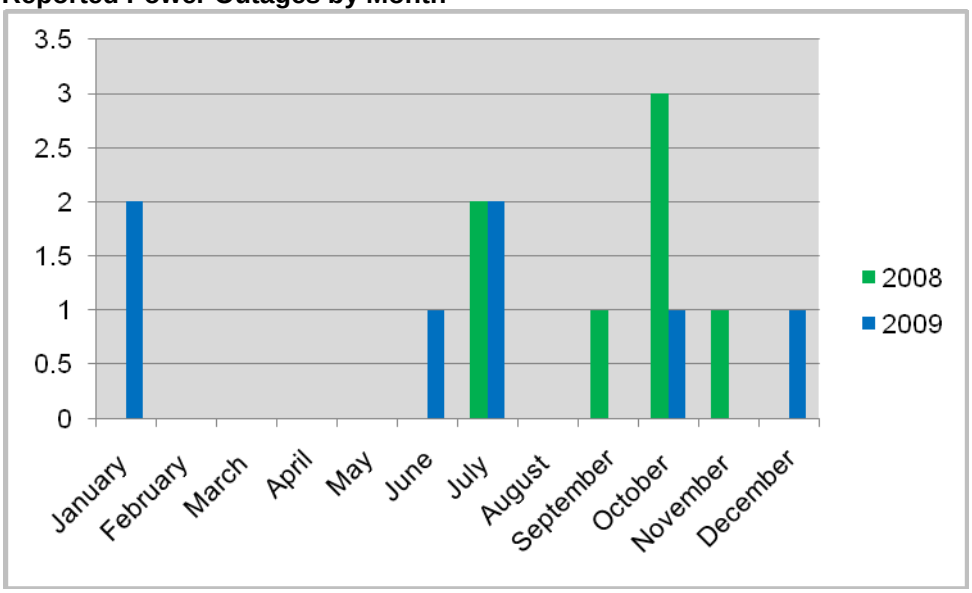
Note: Total number of people affected (and average) based on 5 (71%) of the total reported outages. Total duration of outages (and average) based on 4 (67%) of the total reported outages.

Outage fact: On July 18, a severe thunderstorm toppled trees and knocked down power lines interrupting power for 57,000 people in Edmonton.

Reported Power Outages by Cause



Reported Power Outages by Month



Note: Data collection began April 6, 2008.

British Columbia

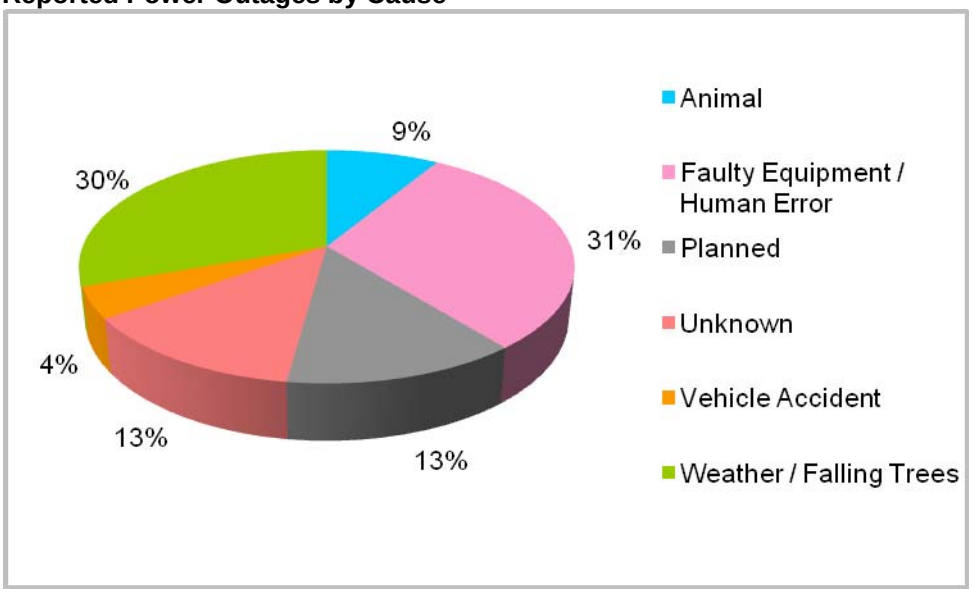
Outage Summary

Total number of people affected by outages	175,177
Total duration of outages	4,210 minutes (nearly 3 days)
Total number of outages	23
Average number of people affected per outage	11,679
Average duration of outage	301 minutes (just over 5 hours)

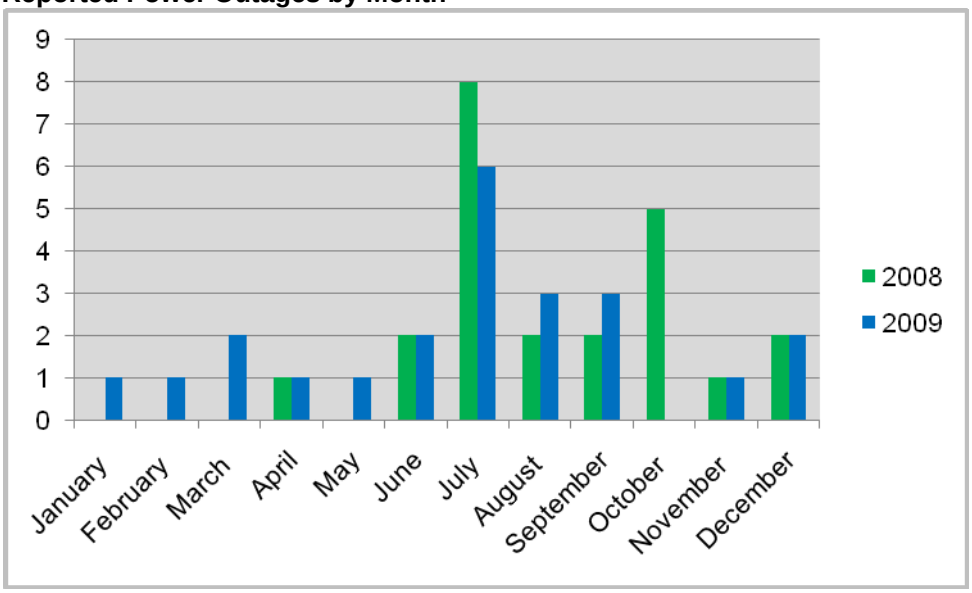
Note: Total number of people affected (and average) based on 15 (65%) of the total reported outages. Total duration of outages (and average) based on 14 (61%) of the total reported outages.

Outage fact: On July 14, a substation problem, of unknown origin, knocked-out power for 42,000 people in the Vancouver area. The outage lasted 35 minutes.

Reported Power Outages by Cause



Reported Power Outages by Month



Note: Data collection began April 6, 2008.

Manitoba

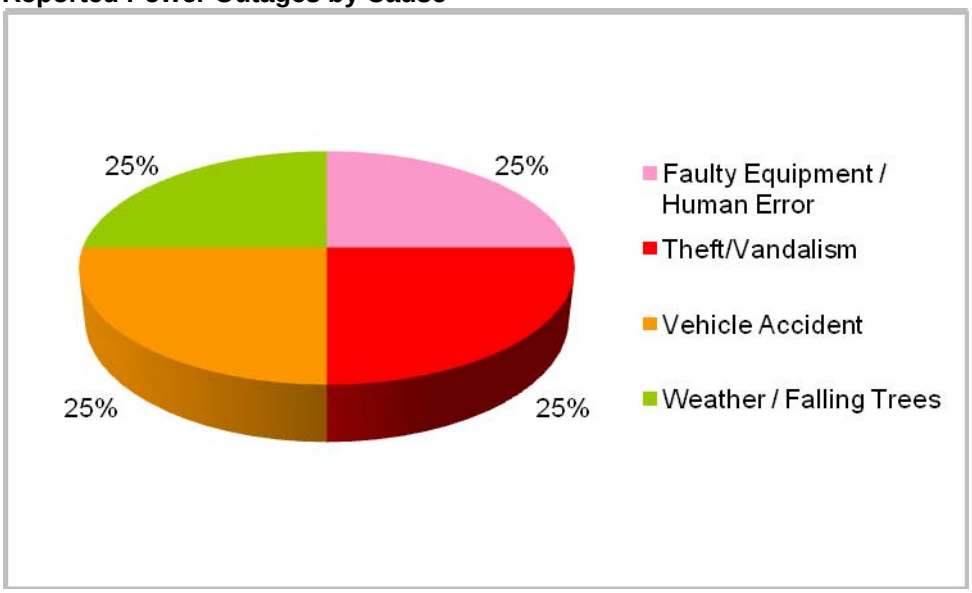
Outage Summary

Total number of people affected by outages	600
Total duration of outages	480 minutes (8 hours)
Total number of outages	4
Average number of people affected per outage	600
Average duration of outage	480 minutes (8 hours)

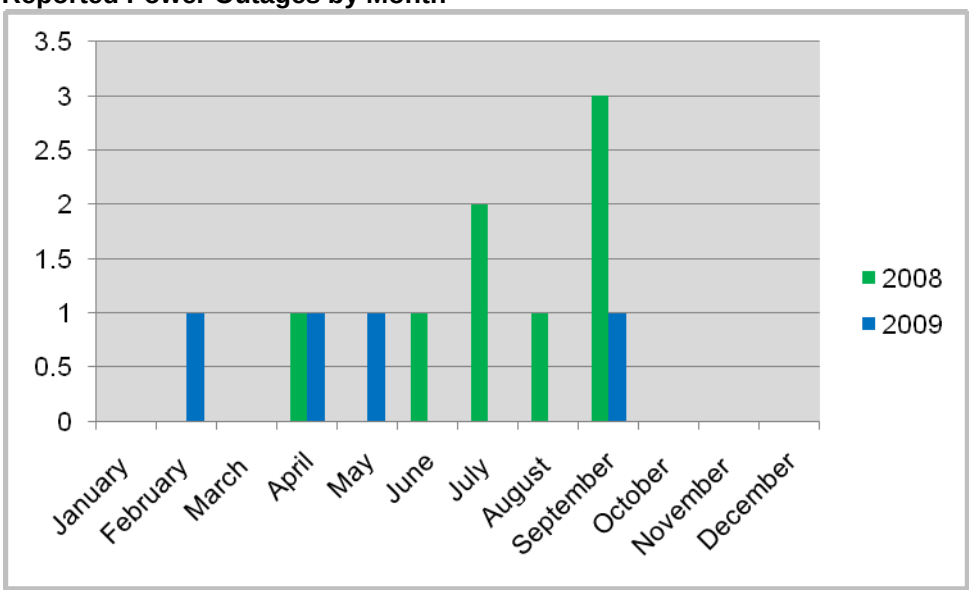
Note: Total number of people affected (and average) based on 1 (25%) of the total reported outages. Total duration of outages (and average) based on 1 (25%) of the total reported outages.

Outage fact: On February 8, in Camperville, three transformers were damaged by rifle shots. The resulting power outage lasted for several hours.

Reported Power Outages by Cause



Reported Power Outages by Month



Note: Data collection began April 6, 2008.

New Brunswick

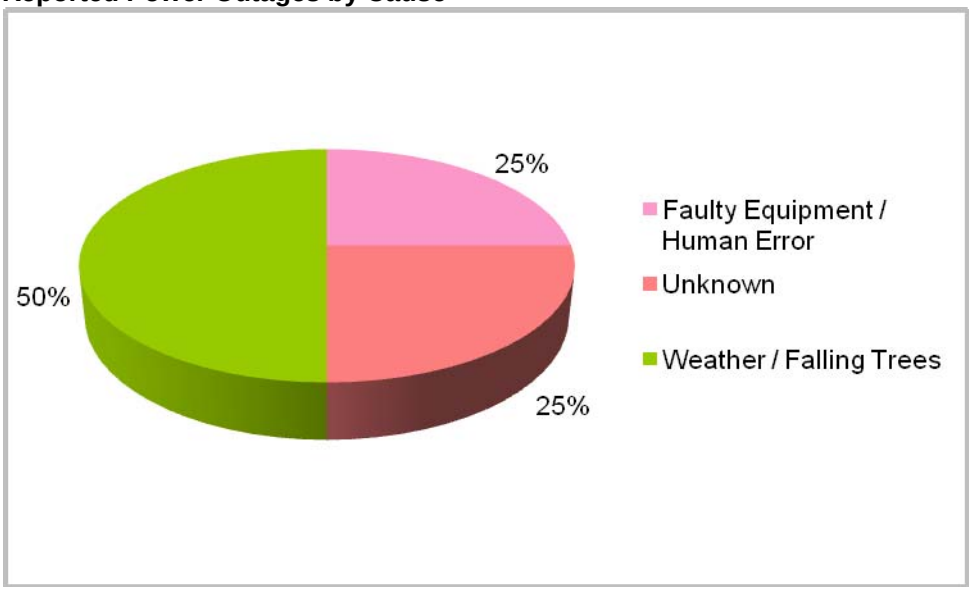
Outage Summary

Total number of people affected by outages	25,500
Total duration of outages	180 minutes (3 hours)
Total number of outages	4
Average number of people affected per outage	8,500
Average duration of outage	180 minutes (3 hours)

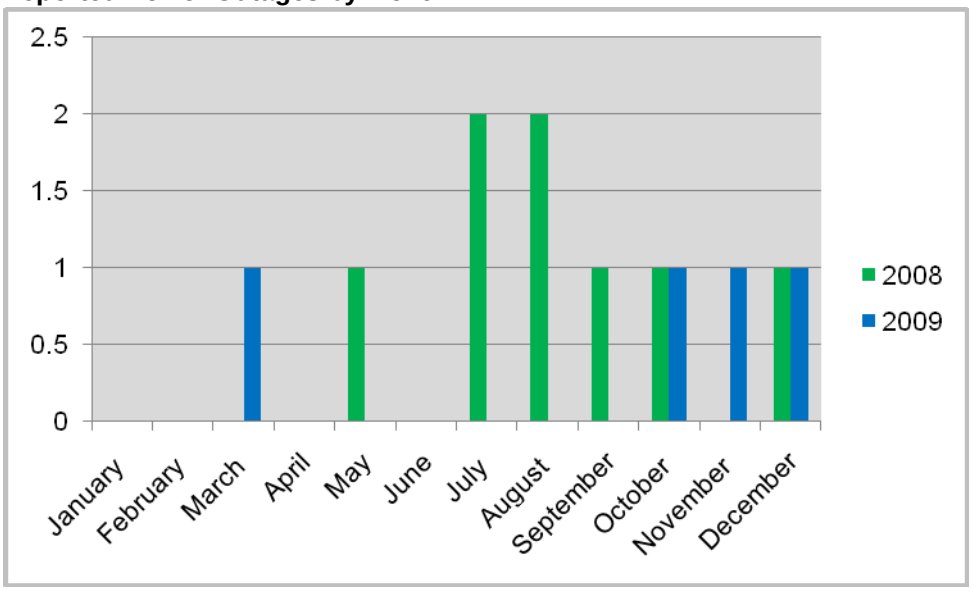
Note: Total number of people affected (and average) based on 3 (75%) of the total reported outages. Total duration of outages (and average) based on 1 (25%) of the total reported outages.

Outage fact: On October 25, heavy rain and wind caused power outages for 6,000 people in the Saint John area.

Reported Power Outages by Cause



Reported Power Outages by Month



Note: Data collection began April 6, 2008.

Nova Scotia

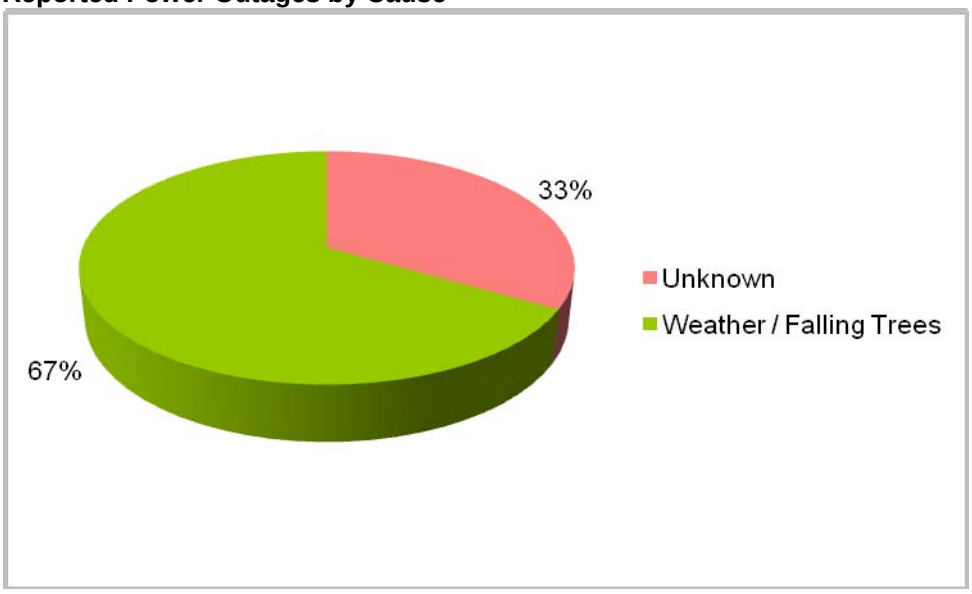
Outage Summary

Total number of people affected by outages	53,277
Total duration of outages	unknown
Total number of outages	6
Average number of people affected per outage	10,655
Average duration of outage	unknown

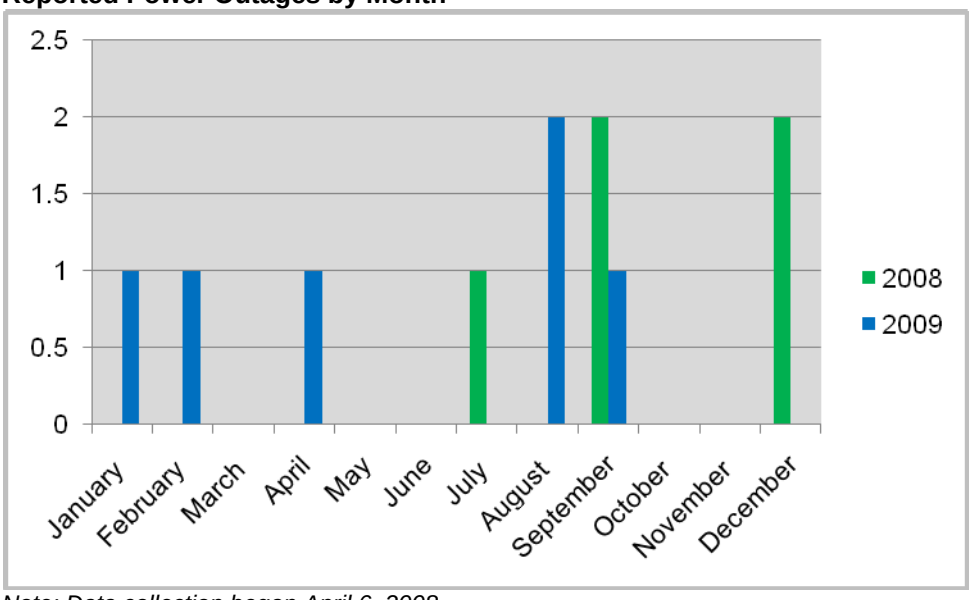
Note: Total number of people affected (and average) based on 5 (83%) of the total reported outages. Duration data was not reported for the outages.

Outage fact: On August 23, remnants of Hurricane Bill knocked down trees and power lines causing power outages for 38,000 residents of the Halifax area.

Reported Power Outages by Cause



Reported Power Outages by Month



Note: Data collection began April 6, 2008.

Ontario

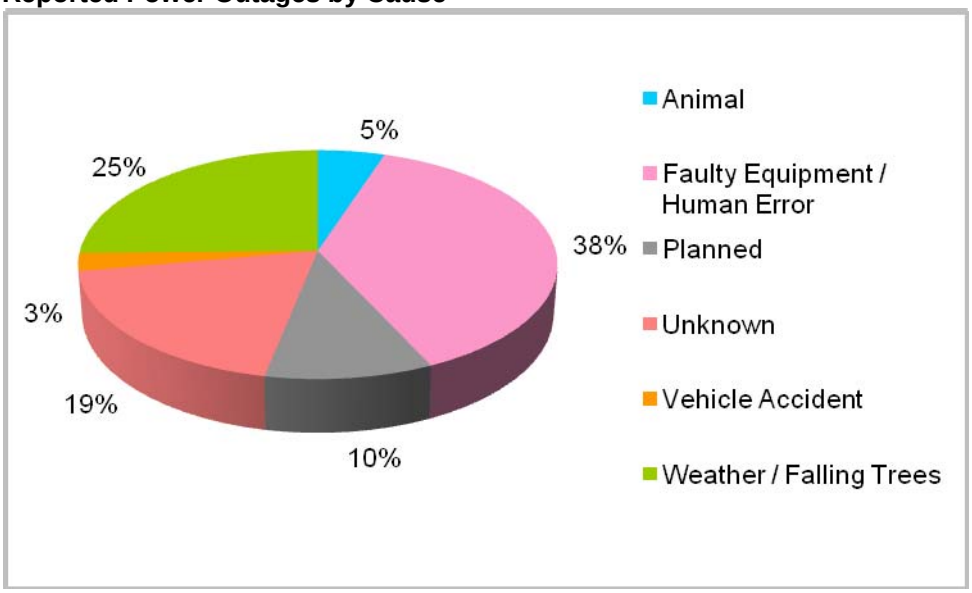
Outage Summary

Total number of people affected by outages	685,301
Total duration of outages	5,756 minutes (nearly 4 days)
Total number of outages	79
Average number of people affected per outage	13,179
Average duration of outage	174 minutes (nearly 3 hours)

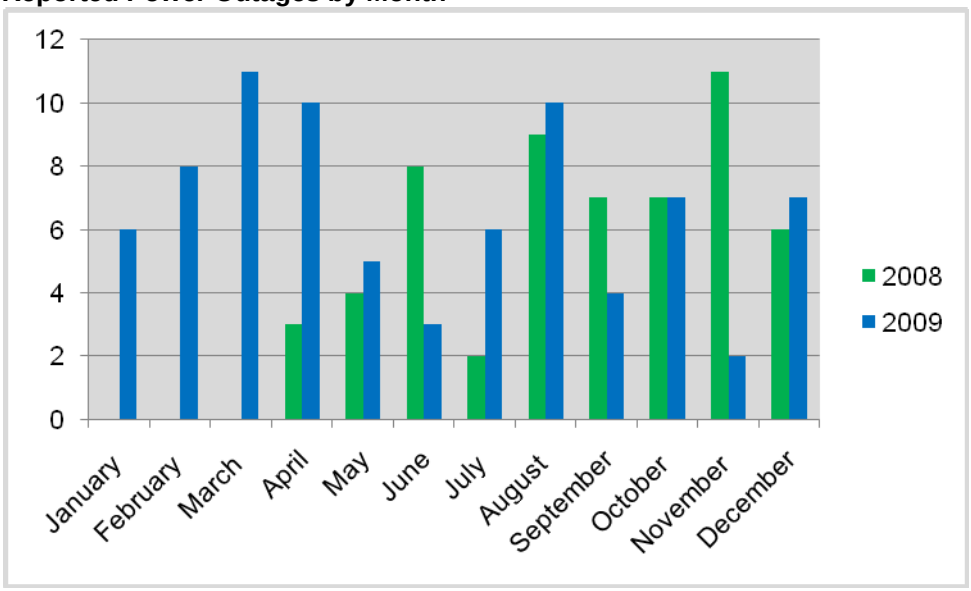
Note: Total number of people affected (and average) based on 52 (66%) of the total reported outages. Total duration of outages (and average) based on 33 (42%) of the total reported outages.

Outage fact: On January 15, a valve that triggers sprinklers in a Toronto substation incorrectly opened. The sprinklers turned on, flooding the substation and cutting power to 250,000 people.

Reported Power Outages by Cause



Reported Power Outages by Month



Note: Data collection began April 6, 2008.

Prince Edward Island

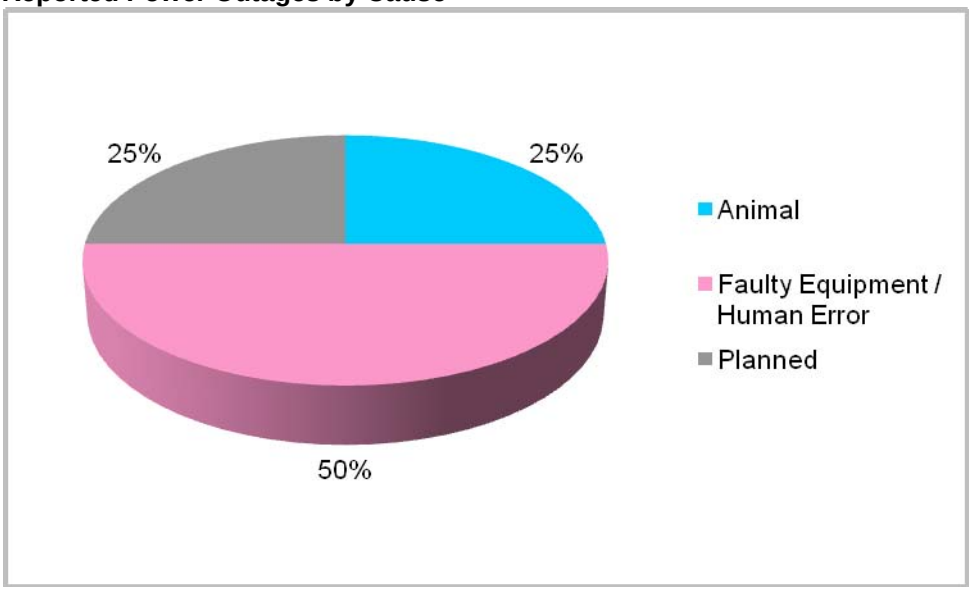
Outage Summary

Total number of people affected by outages	56,430
Total duration of outages	unknown
Total number of outages	4
Average number of people affected per outage	14,108
Average duration of outage	unknown

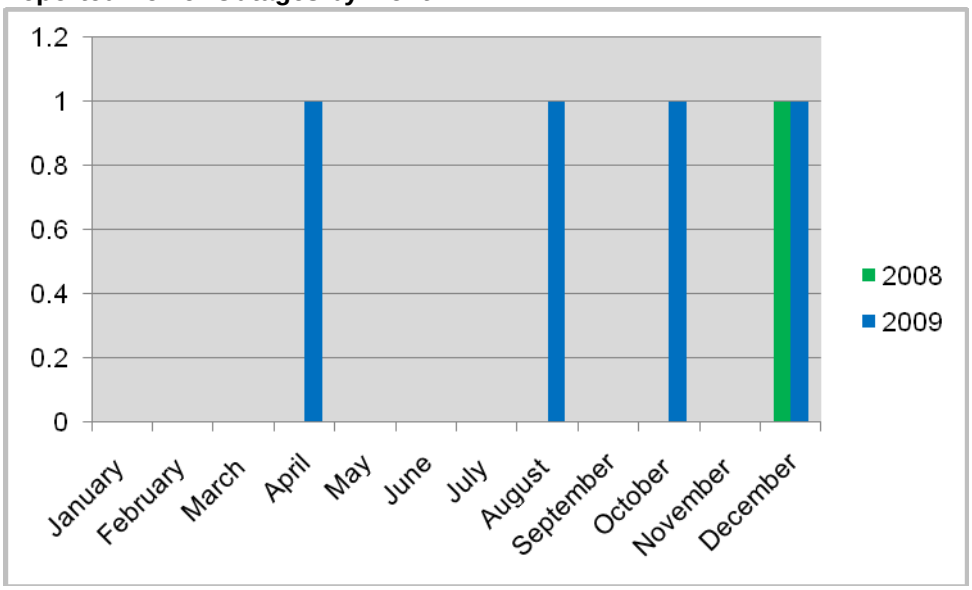
Note: Total number of people affected (and average) based on 4 (100%) of the total reported outages. Average number of people affected is very high because of one outage (see Outage Fact).

Outage fact: On April 27, a squirrel gnawed on wires in a West Royalty substation, starting a fire that knocked-out power for 55,000 people in the Charlottetown area.

Reported Power Outages by Cause



Reported Power Outages by Month



Note: Data collection began April 6, 2008.

Quebec

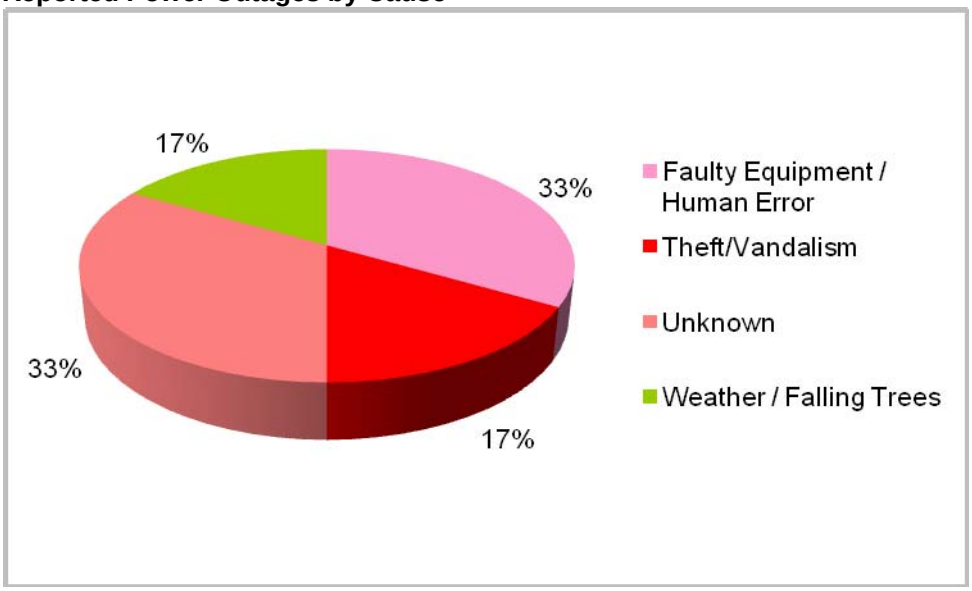
Outage Summary

Total number of people affected by outages	226,575
Total duration of outages	280
Total number of outages	6
Average number of people affected per outage	56,644
Average duration of outage	93 minutes

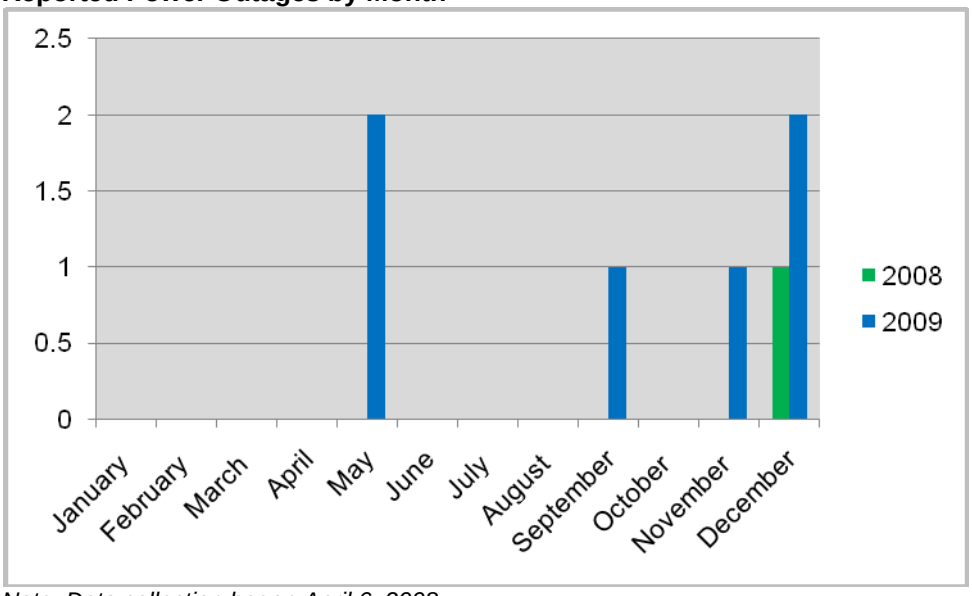
Note: Total number of people affected (and average) based on 4 (67%) of the total reported outages. Total duration of outages (and average) based on 3 (50%) of the total reported outages.

Outage fact: On December 15, a problem, of unknown origin, at a Hydro-Québec facility caused a power failure for 200,000 people in the Montreal area.

Reported Power Outages by Cause



Reported Power Outages by Month



Note: Data collection began April 6, 2008.

Saskatchewan

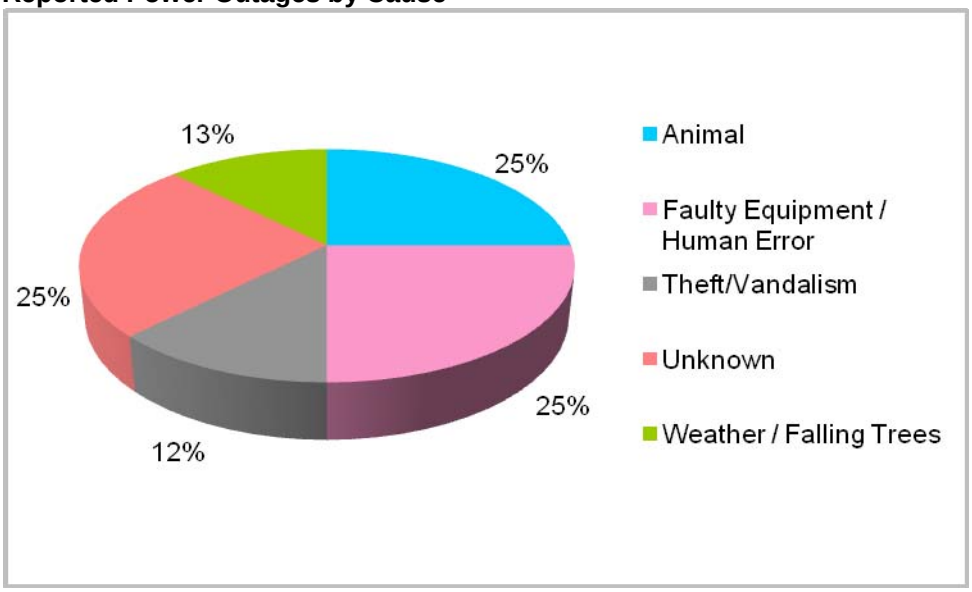
Outage Summary

Total number of people affected by outages	25,600
Total duration of outages	452 minutes (over 7.5 hours)
Total number of outages	8
Average number of people affected per outage	6,400
Average duration of outage	113 minutes

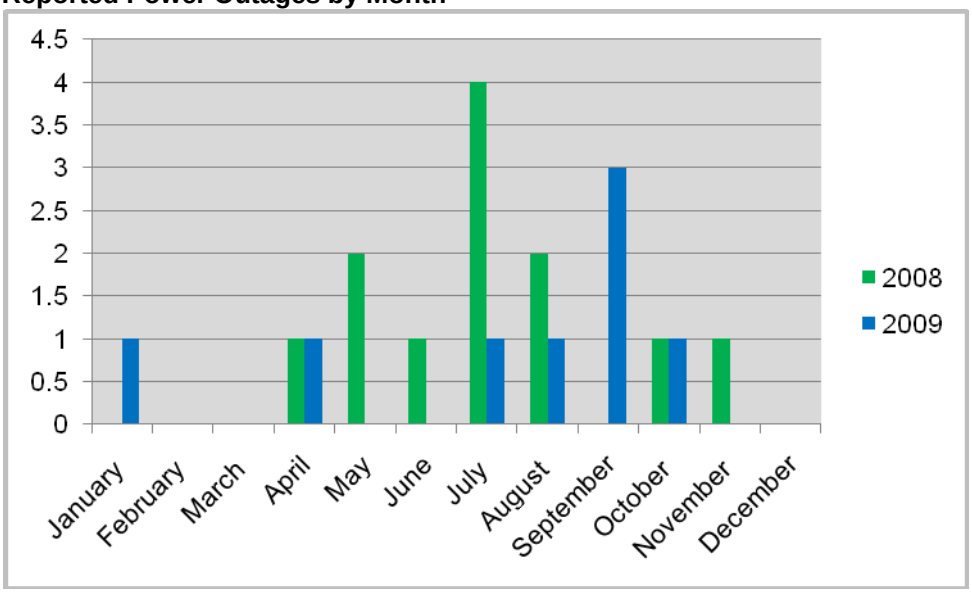
Note: Total number of people affected (and average) based on 4 (50%) of the total reported outages. Total duration of outages (and average) based on 4 (50%) of the total reported outages.

Outage fact: On April 2, a forklift struck and downed a power line causing a power outage that affected 17,000 people in the Saskatoon area for about 75 minutes.

Reported Power Outages by Cause



Reported Power Outages by Month



Note: Data collection began April 6, 2008.

EATON POWER QUALITY COMPANY
Head Office
380 Carlingview Drive
Toronto Ontario M9W 5X9
Toll free: 1.800.461.9166

Regional Office - Eastern Canada
Lachine, Quebec
1.514.420.6186

Regional Office - Western Canada
Calgary, Alberta
1.403.717.4913

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