Q. **B-48, Increase Generation Capacity – Mary's Harbour $1,489,000**

For each year from 2005 to 2010 please provide a chart showing the reasons for outages on the Mary's Harbour System, along with the number of times that an outage can be attributed to each reason and the number of customer minutes that can be attributed to each reason.

A. Hydro uses the guidelines set out by the Canadian Electricity Association (CEA) to classify the causes of outages to the distribution system. The various outage classes are defined below.

CEA Classification of Interruptions by Cause

A customer interruption has been defined in terms of primary cause of the interruption. These causes have been assigned the following codes:

0. Unknown/Other

Customer interruptions with no apparent cause or reason which could have contributed to the outage.

1. Scheduled Outage

Customer interruptions due to the disconnection at a selected time for the purpose of construction or preventive maintenance.

2. Loss of Supply

Customer interruptions due to problems in the bulk electricity supply system such as underfrequency load shedding, transmission system transients, or system frequency excursions. During a rotating load shedding cycle, the duration is the

total outage time until normal operating conditions resume, while the number of customers affected is the average number of customers interrupted per rotating cycle.

3. Tree Contacts

Customer interruptions caused by faults due to trees or tree limbs contacting energized circuits.

4. Lightning

Customer interruptions caused by faults due to lightning striking the Distribution System, resulting in an insulation breakdown and/or flashover.

5. Defective Equipment

Customer interruptions resulting from equipment failures due to deterioration from age, incorrect maintenance, or imminent failures detected by maintenance.

6. Adverse Weather

Customer interruptions resulting from rain, ice storms, snow winds, extreme ambient temperatures, freezing fog, or frost and other extreme conditions.

7. Adverse Environment

Customer interruptions due to equipment being subjected to abnormal environment such as salt spray, industrial contamination, humidity, corrosion, vibration, fire or flooding.

8. Human Element

Customer interruptions due to the interface of the utility staff with the system such as incorrect records, incorrect use of equipment, incorrect construction or

installation, incorrect protection settings, switching errors, commissioning errors, deliberate damage, or sabotage.

9. Foreign Interference

Customer interruptions beyond the control of the utility such as birds, animals, vehicles, excavations, vandalism, sabotage and foreign objects.

The following table provides the annual outage data (number of outages and the customer minutes) broken down by cause for the Mary's Harbour Distribution System for each year from 2005 to 2010.

Table 1: Mary's Harbour Outage Statistics

Cause Codes	2005		2006		2007		2008		2009		2010	
	No. Outages	Cust Minutes	No. Outages	Cust Minutes	No. Outages	Cust Minutes	No. Outages	Cust Minutes	No. Outages	Cust Minutes	No. Outages	Cust Minutes
Unknown/Other	7	25,591	2	14,077	1	2,320	3	10,438	1	2,850	1	150
Scheduled outage	3	17,414	3	39,060	3	3,080	3	17,850	1	520	4	56,560
Loss of Supply	34	29,412	20	59,360	30	59,788	19	18,438	24	20,098	18	68,501
Tree Contacts	0	0	0	0	0	0	0	0	0	0	0	0
Lightning	0	0	0	0	1	200	0	0	2	20,098	0	00
Defective Equipment	6	26,405	3	7,435	1	5,916	2	23,780	2	16,770	2	1,920
Adverse Weather	0	0	0	0	4	38,108	6	31,640	6	25,585	5	95,204
Adverse Environment	1	120	0	0	1	170	0	0	1	120	0	0
Human Element	0	0	0	0	0	0	2	300	0	0	1	90
Foreign Interference	0	0	0	0	0	0	0	0	0	0	1	1,440

The table below illustrates the same data in terms of SAIDI and SAIFI. It should be noted that, in the SAIDI metric, Hydro tracks the duration of customer outages in hours and the following data are presented as such.

Table 2: Mary's Harbour Reliability Performance

	2005		2006		2007		2008		2009		2010	
Cause Codes	SAIFI	SAIDI	SAIFI	SAIDI	SAIFI	SAIDI	SAIFI	SAIDI	SAIFI	SAIDI	SAIFI	SAIDI
Unknown/Other	3.03	1.67	0.78	0.92	0.23	0.15	0.26	0.68	0.15	0.19	0.00	0.01
Scheduled outage	0.82	1.13	1.05	2.56	0.10	0.20	1.23	1.17	0.05	0.03	0.86	3.67
Loss of Supply	16.98	1.91	10.01	3.90	15.02	3.92	9.76	1.21	12.02	7.28	8.99	4.44
Tree Contacts	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Lightning	0.00	0.00	0.00	0.00	0.00	0.01	0.00	0.00	0.23	1.27	0.00	0.00
Defective Equipment	1.39	1.72	0.28	0.49	0.23	0.39	0.45	1.55	1.00	1.08	0.05	0.12
Adverse Weather	0.00	0.00	0.00	0.00	1.23	2.50	0.60	2.07	1.47	1.67	1.02	6.17
Adverse Environment	0.00	0.01	0.00	0.00	0.00	0.01	0.00	0.00	0.00	0.01	0.00	0.00
Human Element	0.00	0.00	0.00	0.00	0.00	0.00	0.03	0.02	0.00	0.00	0.00	0.01
Foreign Interference	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.02	0.09

Figures 1 through 12 show a series of pie charts which present the magnitude of the causes for the outages on the Mary's Harbour distribution system in graphical form by year. As the charts show, the majority of outages are due to Loss of Supply, and therefore originate from the Mary's Harbour Diesel Generating Station.

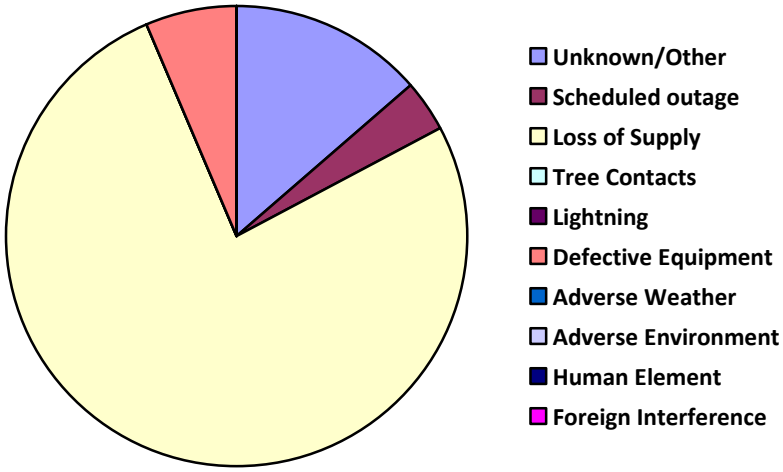

Figure 1: Outage Statistics - 2005 SAIFI

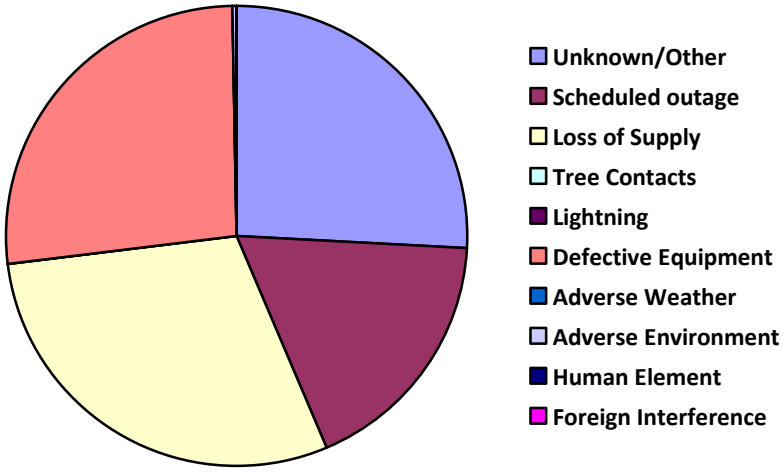

Figure 2: Outage Statistics - 2005 SAIDI

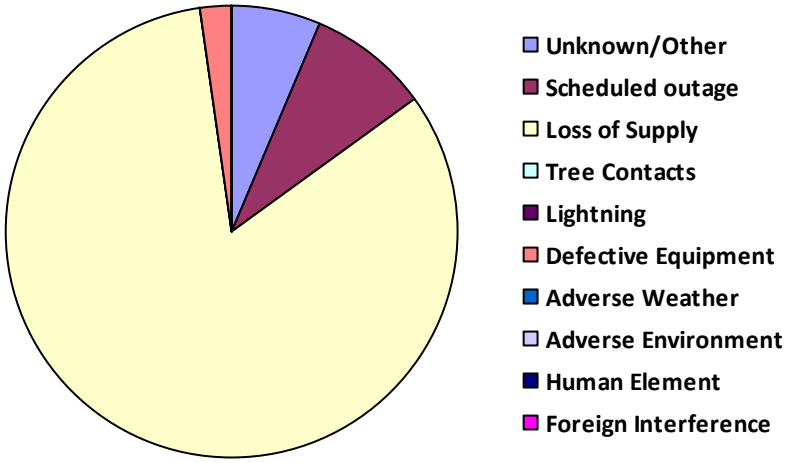

Figure 3: Outage Statistics - 2006 SAIFI

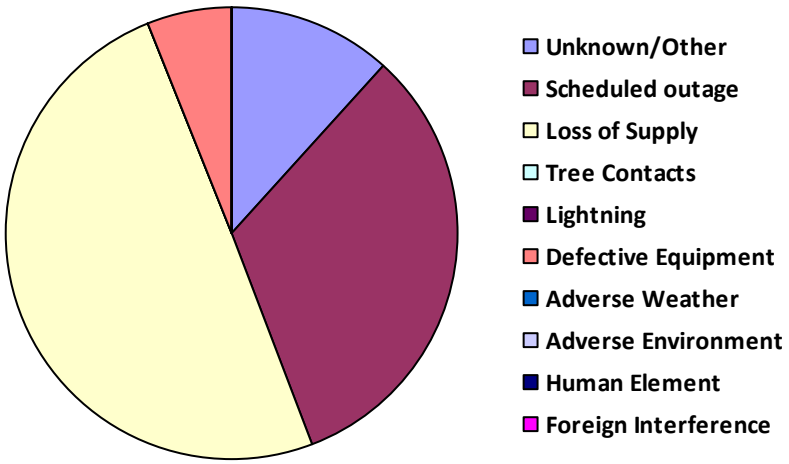

Figure 4: Outage Statistics - 2006 SAIDI

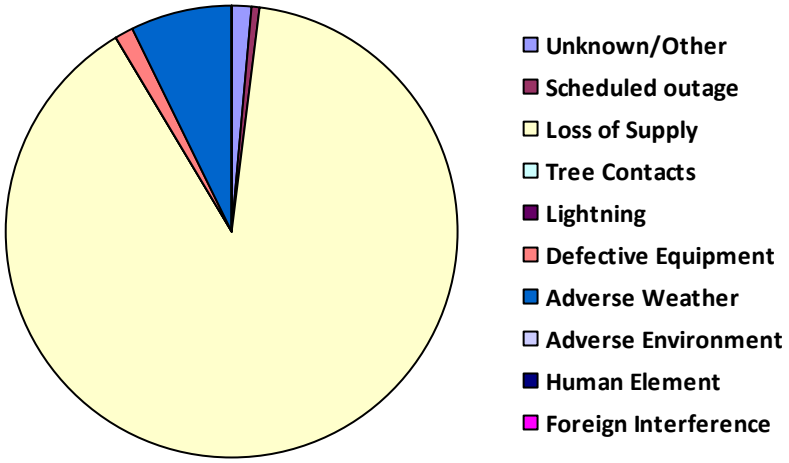

Figure 5: Outage Statistics - 2007 SAIFI

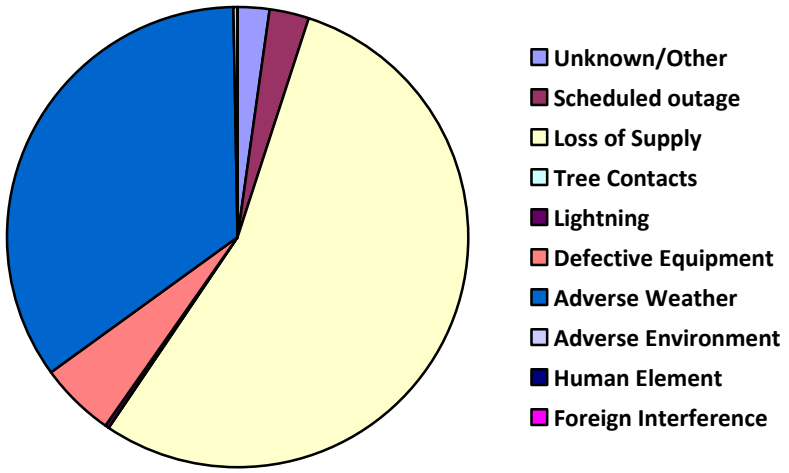

Figure 6: Outage Statistics - 2007 SAIDI

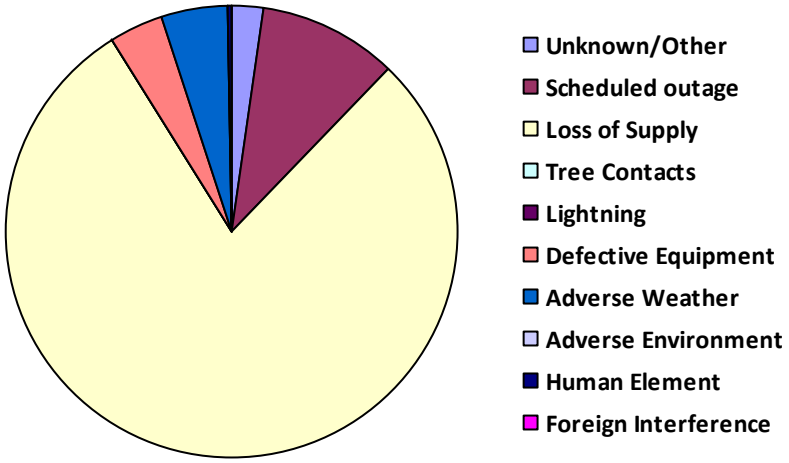

Figure 7: Outage Statistics - 2008 SAIFI

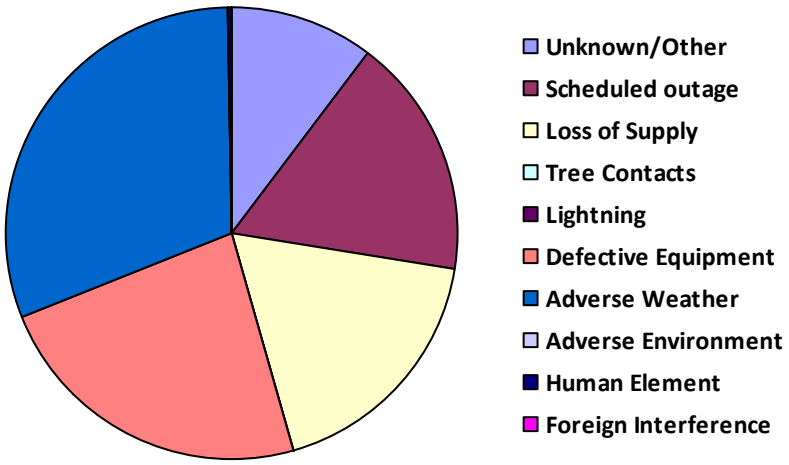

Figure 8: Outage Statistics - 2008 SAIDI

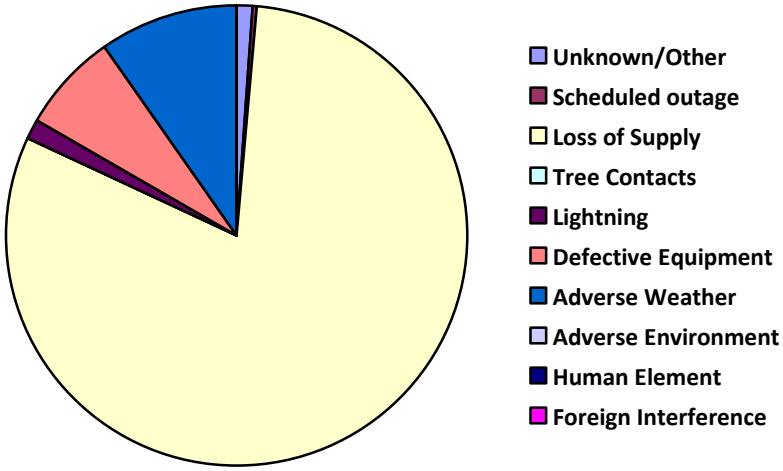

Figure 9: Outage Statistics - 2009 SAIFI

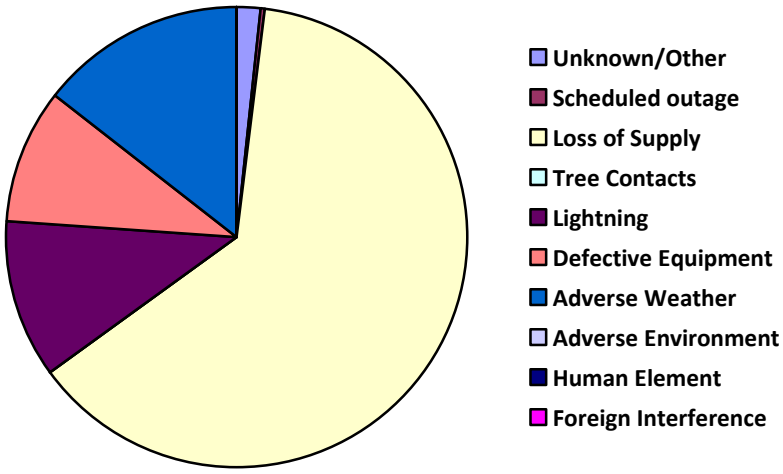

Figure 10: Outage Statistics - 2009 SAIDI

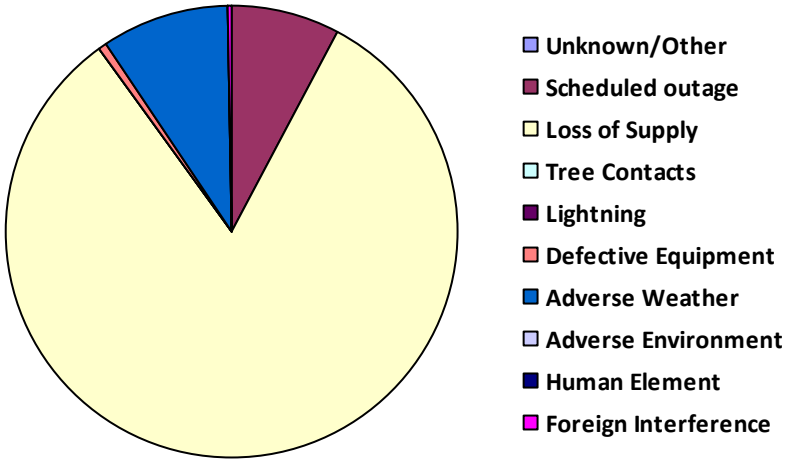

Figure 11: Outage Statistics - 2010 SAIFI

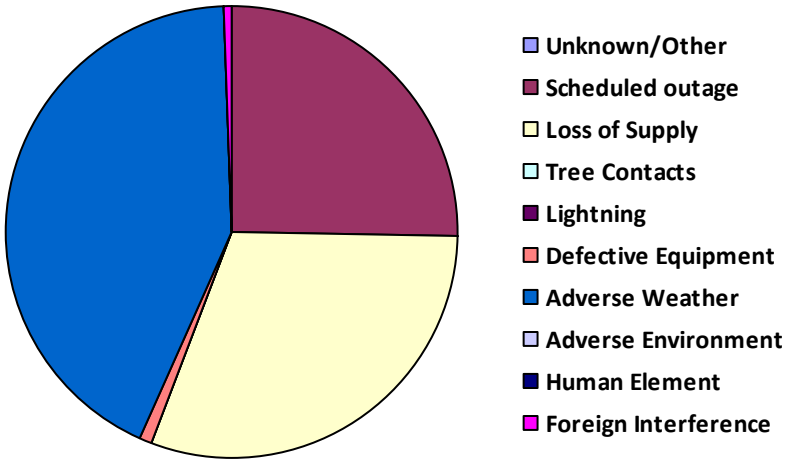

Figure 12: Outage Statistics - 2010 SAIDI