NorthWestern Energy

February 27, 2013

Ms. Kate Whitney
Administrator
Montana Public Service Commission
1701 Prospect Avenue
PO Box 202601
Helena, MT 59620-2601

RE: 2012 Annual Electric Reliability Report

Dear Ms. Whitney:

With this letter, NorthWestern Energy (NWE) submits the 2012 Reliability Report in compliance with Administrative Rules of Montana 38.5.8619 Annual Electric Reliability Report, effective on July 29, 2005. The data provided in this report includes the information requested in ARM 38.5.8619 and utilizes the *IEEE Guide for Electric Power Distribution Reliability Indices (IEEE Std. 1366-2003)* for definition of major events and the appropriate reliability indices. Similar to the previous two years, additional transmission line reliability information is attached to the report.

Please contact me to answer any questions concerning this report. My contact information is as follows:

Randy Sullivan
Manager Electric System Integrity
NorthWestern Energy
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Bozeman, Montana 59715
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randy.sullivan@northwestern.com

Sincerely,

Randy Sullivan, P.E.
Manager Electric System Integrity

Enclosure: 2012 Annual Electric Reliability Report

NorthWestern™ Energy

2012
-Montana-
Electric Distribution/Transmission
Annual Reliability Report

March 2013

EXECUTIVE SUMMARY

This report provides information and insights into NorthWestern Energy's (NWE) 2012 Electric Distribution and Transmission System reliability indices for the Montana region, per the guidelines outlined by the Administrative Rules of Montana (Rule 38.5.8619). The indices included are **SAIDI** (**S**ystem **A**verage **I**nterruption **D**uration **I**ndex – in minutes), **CAIDI** (**C**ustomer **A**verage **I**nterruption **D**uration **I**ndex – in minutes), **SAIFI** (**S**ystem **A**verage **I**nterruption **F**requency **I**ndex – in frequency) and **Outage Counts**. By the IEEE standard definition, these indices are for "sustained interruptions" meaning they lasted longer than five minutes.

System indices are given for the NWE Montana operating region and are also broken down into the eight operating areas of the state: Billings, Bozeman, Butte, Great Falls, Havre, Helena, Lewistown, and Missoula. As with the previous years' annual reports, the Institute of Electrical and Electronics Engineers (IEEE) Standard 1366-2003 will again be followed. This standard is directly related to the use of a statistically based definition for classification of Major Event Days (MEDs) – also commonly referred to as the 2.5 Beta Method. Major Event Days are days in which the regional SAIDI exceeds a statistically derived threshold value and represent days in which the electric system experienced stresses beyond normal operating conditions (such as a severe weather storm) and often requiring that additional crews be brought into the area for repairs.

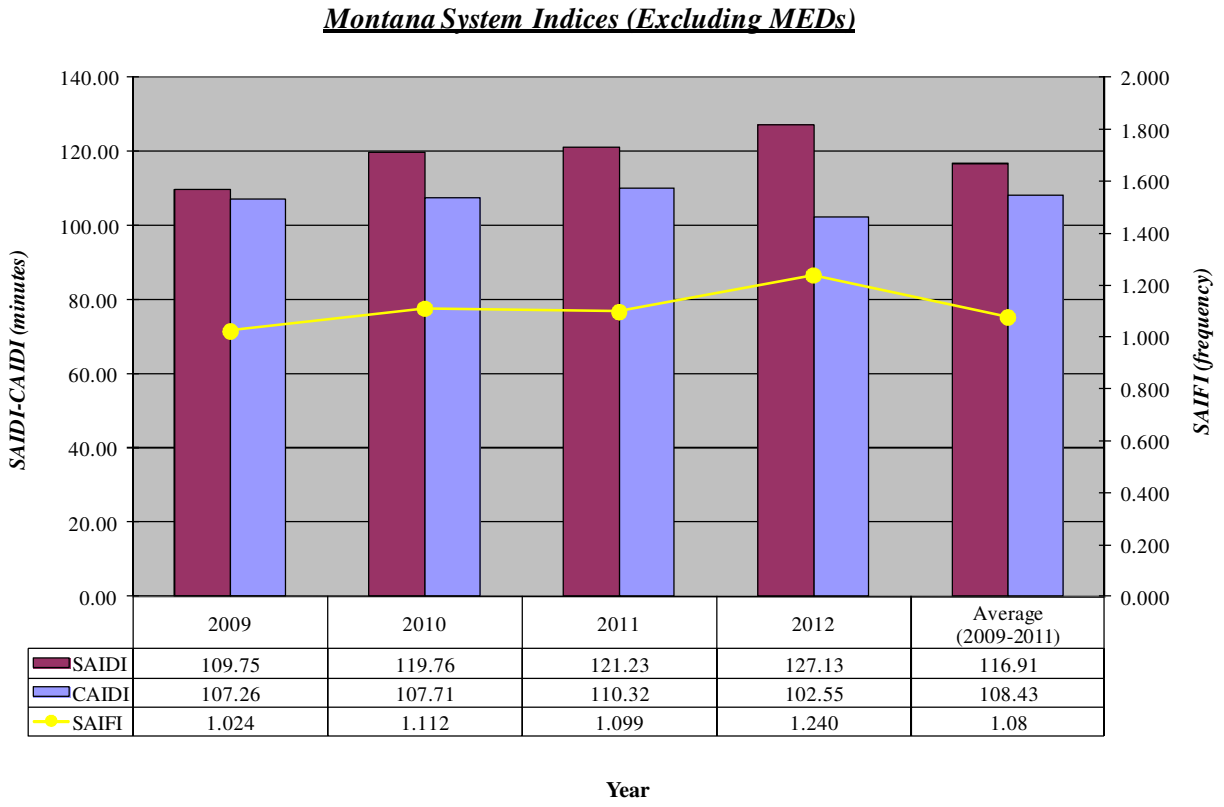
NorthWestern Energy has an active relationship with the IEEE Power and Energy Society Reliability Working Group to ensure a consistent and accurate portrayal of our utility's ability to report and benchmark reliability indices. MEDs are identified through a monthly process for each region and can be included or excluded per the data requested. This report will provide all information, including and excluding MEDs, for all three indices to better demonstrate and analyze normal versus emergency conditions. In 2012, there were two Major Event Days, one on January 25th and the other on March 19th. By comparison, there were five MED events in 2008, none in 2009, one in 2010, and none in 2011. For the Montana region, it took 6.52 SAIDI minutes in 2012 to declare an MED. January 25th had a windstorm primarily around Great Falls that added 7.21 Montana SAIDI minutes and March 19th was a wind and snowstorm, largely in Great Falls and Havre which added 25.81 SAIDI minutes.

Transmission related reliability data and graphs have been added as an annex to the report again this year.

1.0 GENERAL

In addition to the two Major Event Days in 2012, there were six days with a "Customer-Minutes Interrupted" (CMI) number greater than one million (an MED for 2012 required 2.28 million CMI). In order of magnitude, these six significant events were the loss of two larger substations on July 15th, a windstorm on October 16th, high winds and fires on June 26th, a windstorm affecting Great Falls and Havre on August 14th, an October 3rd snow and ice storm, and wind and lightning on August 8th. These events, while not being MEDs, added considerably to the SAIDI minutes for 2012. Further details on these events are provided in the operating area discussions below.

2.0 MONTANA SYSTEM RELIABILITY



	2009	2010	2011	2012	Average (2009-2011)
SAIDI	109.75	119.76	121.23	127.13	116.91
CAIDI	107.26	107.71	110.32	102.55	108.43
SAIFI	1.024	1.112	1.099	1.240	1.08

Figure 2.1 Montana system indices excluding major event days (MEDs) as defined in IEEE Standard 1366-2003.

The figure above displays NorthWestern Energy's Montana region indices for the years 2009-2012. Region indices shown for 2009 to 2011 data (excluding MEDs) are from year-end audited data (excluding MEDs). Please note that SAIDI and CAIDI are given in minutes and SAIFI is given in the frequency of occurrence.

As can be seen by **Figure 2.1**, the 2012 SAIDI and SAIFI indices increased from the 2011 year-end while CAIDI decreased, and the two indices were higher than the previous three-year averages, while CAIDI was lower. Overall, 2012 was a year with early grassland fires, wind and snow storms and some substation failures in the Montana region, causing somewhat worse reliability. Contributing factors to the decreased reliability will be discussed as each of the operating divisions of the Montana region are examined and in the report conclusion. Data and figures are presented that characterize the system reliability both including and excluding MEDs to demonstrate the effect MEDs had on the system reliability.

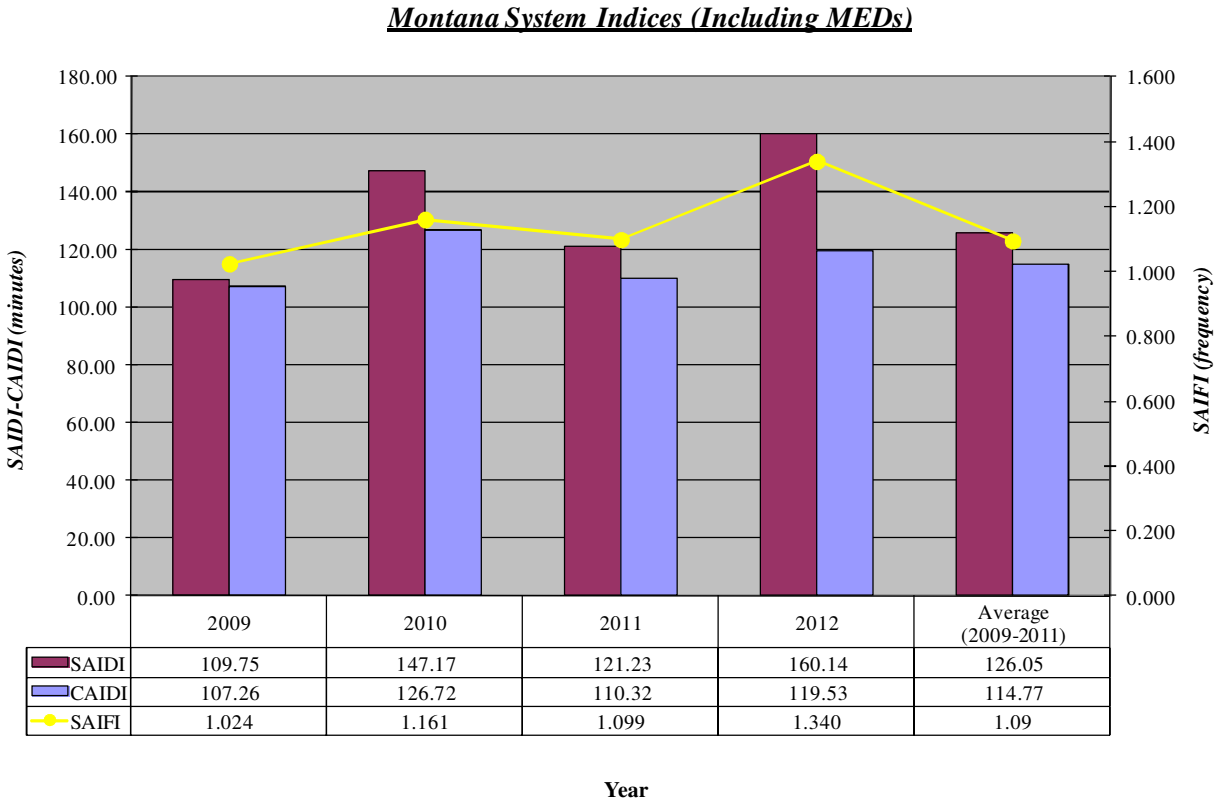
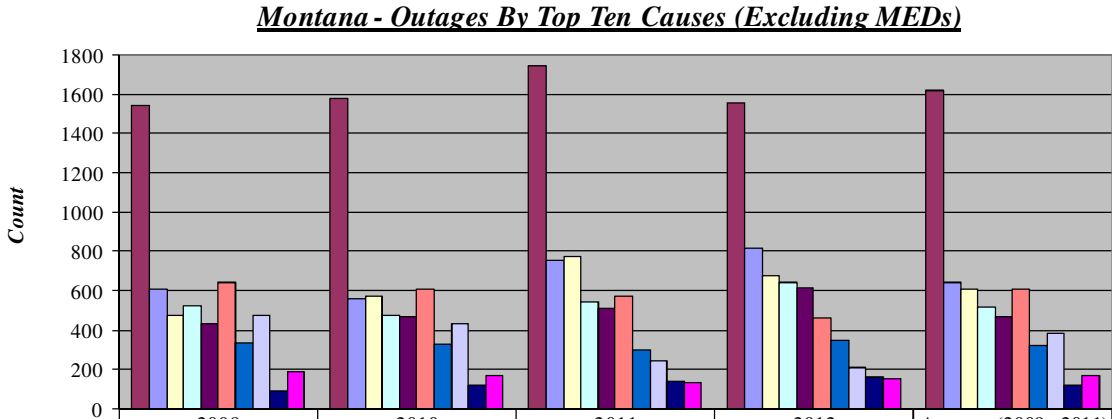


Figure 2.2 Montana system indices including major event days (MEDs) as defined in IEEE Standard 1366-2003.

Thirty-three additional SAIDI minutes are shown in 2012 when the two MEDs are included in the reliability index. Also, CAIDI and SAIFI increase noticeably.

Outages by cause (excluding MEDs) are shown in **Figure 2.3**.

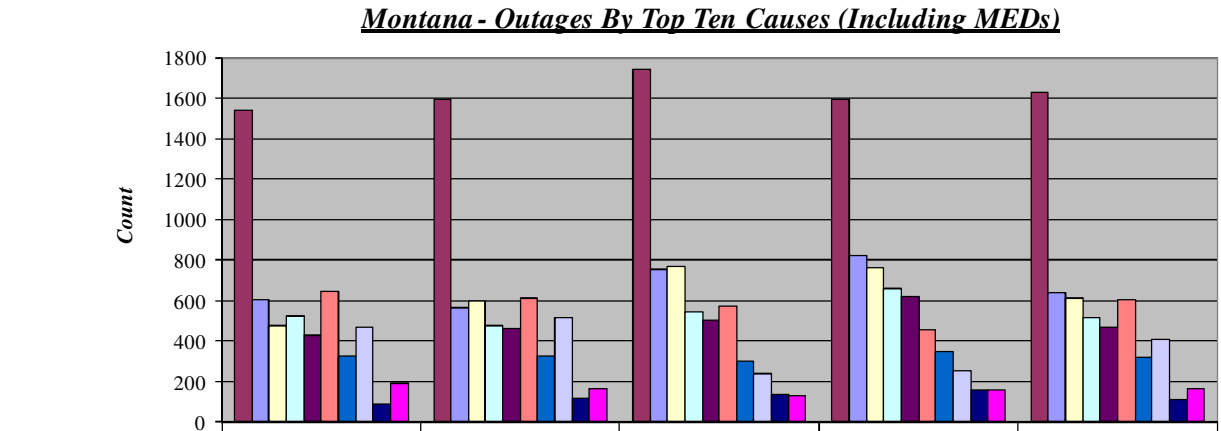


	2009	2010	2011	2012	Average (2009 - 2011)
Equipment Failure	1542	1577	1744	1559	1621
Unknown	603	560	756	816	640
Wind	474	568	771	679	604
Tree In Line	525	472	545	641	514
Squirrel	430	465	507	615	467
Lightning	643	609	570	456	607
Other Bird	331	325	302	348	319
Snow/Ice	470	435	241	209	382
Scheduled Maintenance	89	115	138	159	114
Limb In Line	189	165	134	155	163
MT REGION TOTAL	6290	6325	6771	6643	6462

Figure 2.3 Montana system outages by top ten causes excluding major event days (MEDs) as defined in IEEE Standard 1366-2003.

The outage causes represented in this table are the top ten major contributors for outages on the NorthWestern Energy Electric Distribution and Transmission system. Most outage cause categories in 2012 are similar to 2011 numbers with the top ten total decreasing by 128 for 2012. Equipment failure and wind related outages were both down from 2011, even with the multiple windstorms. Equipment Failure is the most common of the outage causes due to its broad and all-inclusive category nature. Outages can be related back to Equipment Failure in many different ways and it is the responsibility of the operations personnel to correctly identify the cause.

The graph and table below show outage causes with MEDs. Most 2012 numbers are near the three-year previous average, though wind and tree- related outages are up. Keep in mind, there were no MEDs in 2011.

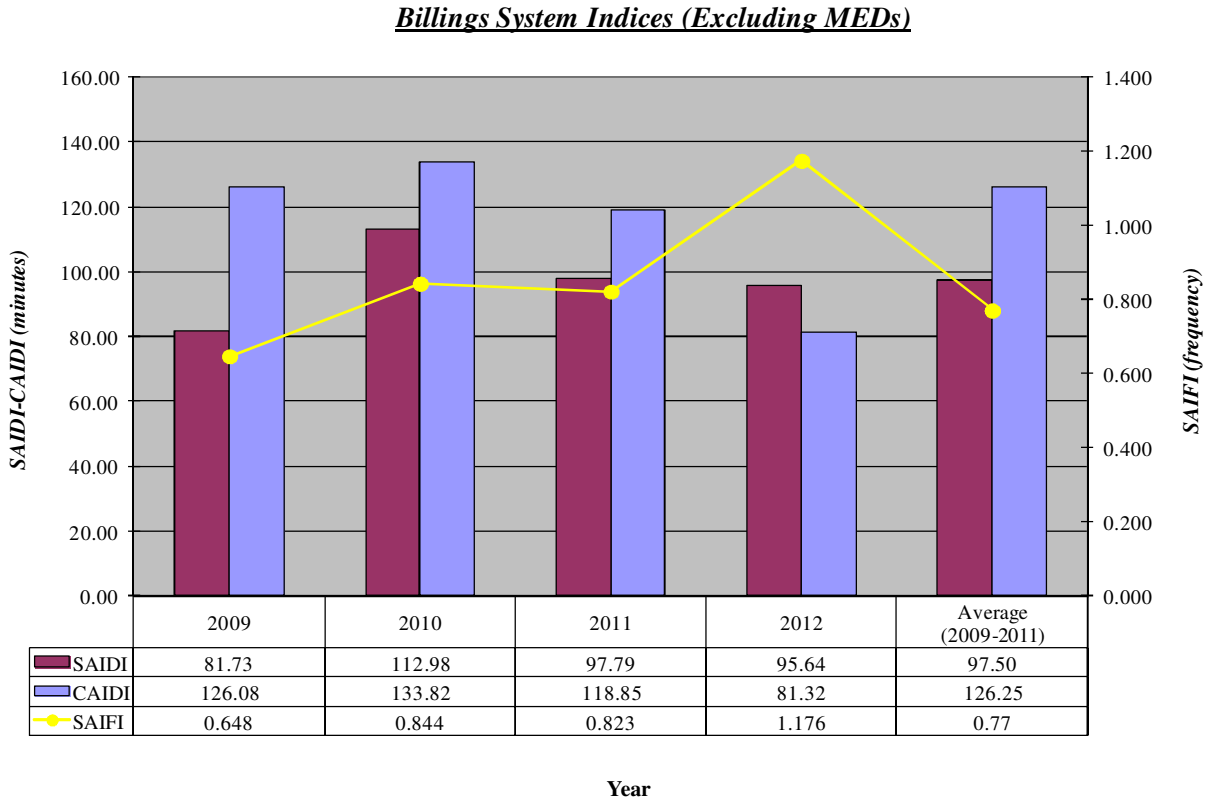


	2009	2010	2011	2012	Average (2009 - 2011)
Equipment Failure	1542	1593	1744	1597	1626
Unknown	603	563	756	821	641
Wind	474	597	771	760	614
Tree In Line	525	478	545	660	516
Squirrel	430	465	507	616	467
Lightning	643	610	570	456	608
Other Bird	331	325	302	348	319
Snow/Ice	470	515	241	255	409
Scheduled Maintenance	89	116	138	159	114
Limb In Line	189	165	134	158	163
MT REGION TOTAL	6290	6462	6771	6844	6508

Figure 2.4 Montana system outages by top ten causes including major event days (MEDs) as defined in IEEE Standard 1366-2003.

3.0 BILLINGS SYSTEM RELIABILITY

Billings Division saw two indices drop in 2012 from 2011 values. Larger events for the year included two substation differentials at the Billings Eighth Street Sub resulting in over 12,000 customers out each time, which also explain the marked increase in SAIFI for the year. Several feeders were lost during summer storms and equipment failures, but most of these were restored in short time periods and didn't result in significant SAIDI events. Equipment and wind related outages decreased in 2012, but squirrel related outages were up significantly.



	2009	2010	2011	2012	Average (2009-2011)
SAIDI	81.73	112.98	97.79	95.64	97.50
CAIDI	126.08	133.82	118.85	81.32	126.25
SAIFI	0.648	0.844	0.823	1.176	0.77

Figure 3.1 Billings system indices excluding major event days (MEDs) as defined in IEEE Standard 1366-2003.

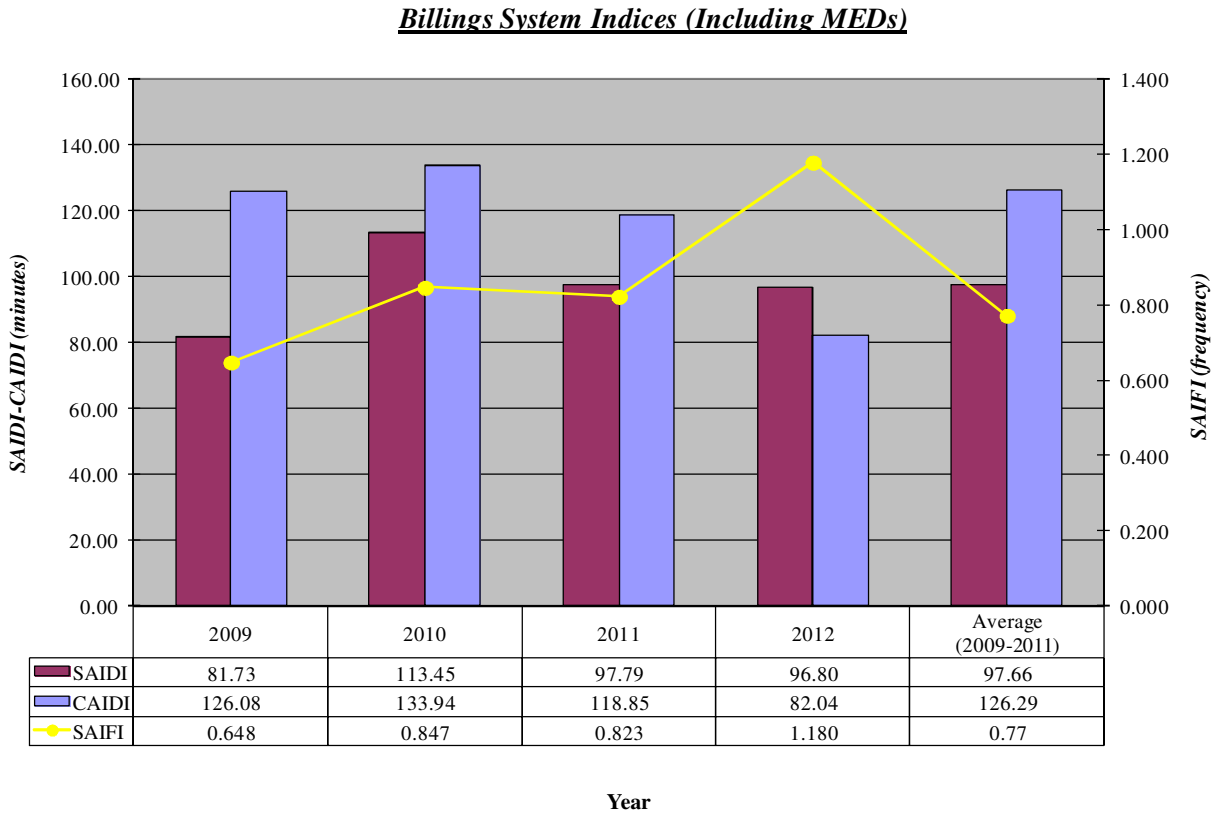
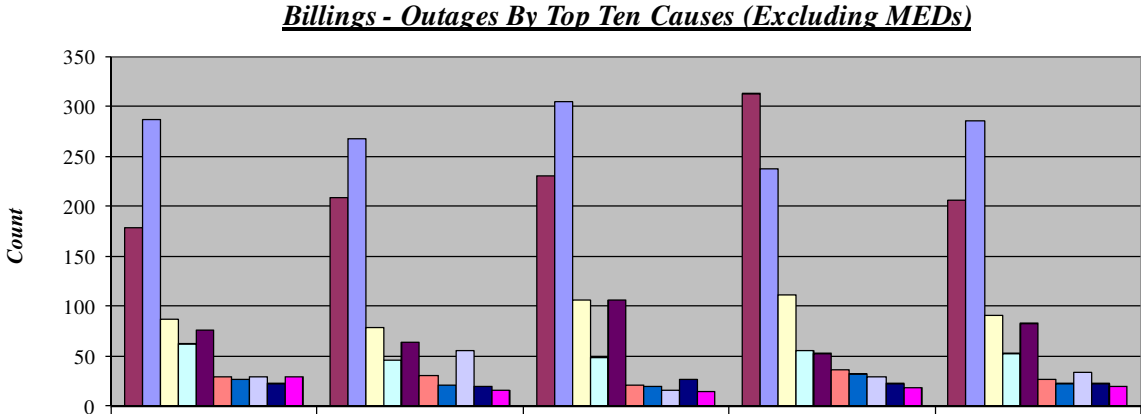


Figure 3.2 Billings system indices including major event days (MEDs) as defined in IEEE Standard 1366-2003.

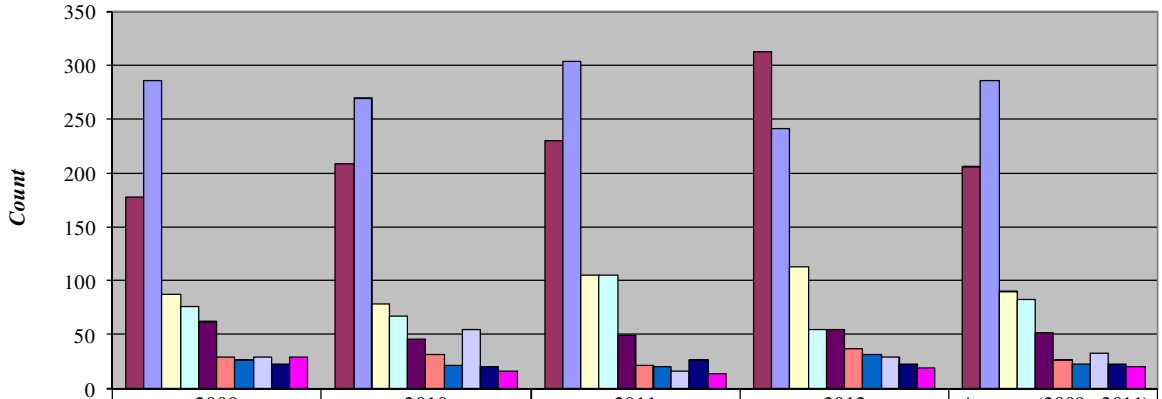
Billings was not impacted by the two MEDs in 2012.



	2009	2010	2011	2012	Average (2009 - 2011)
Squirrel	178	209	230	313	206
Equipment Failure	286	267	304	237	286
Unknown	87	79	106	112	91
Tree In Line	62	46	49	55	52
Wind	76	64	106	52	82
Other Bird	29	31	21	36	27
Racoon	26	21	20	32	22
Other System	29	55	16	29	33
Limb In Line	23	20	26	22	23
Vehicle Hit	29	16	14	19	20
DIVISION TOTAL	1,159	999	1,100	1,027	1,086

Figure 3.3 Billings system outages by top ten causes excluding major event days (MEDs) as defined in IEEE Standard 1366-2003.

Billings - Outages By Top Ten Causes (Including MEDs)

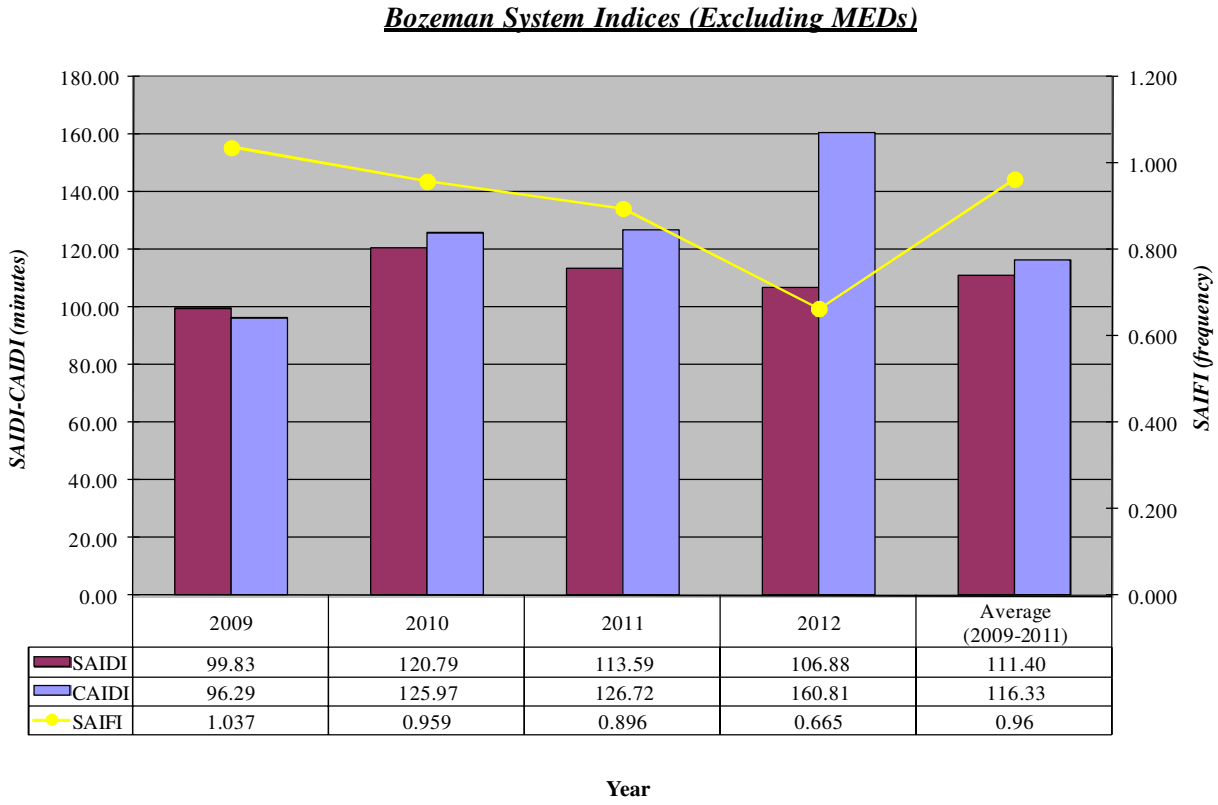


	2009	2010	2011	2012	Average (2009 - 2011)
Squirrel	178	209	230	313	206
Equipment Failure	286	269	304	242	286
Unknown	87	79	106	113	91
Wind	76	67	106	55	83
Tree In Line	62	46	49	55	52
Other Bird	29	31	21	36	27
Raccoon	26	21	20	32	22
System Other	29	55	16	29	33
Limb In Line	23	20	26	22	23
Vehicle Hit	29	16	14	19	20
DIVISION TOTAL	1,159	1,004	1,100	1,042	1,088

Figure 3.4 Billings system outages by top ten causes including major event days (MEDs) as defined in IEEE Standard 1366-2003.

4.0 BOZEMAN SYSTEM RELIABILITY

Bozeman Division indices for 2012 saw continued improvement in SAIDI and SAIFI from 2011 but an increase in the CAIDI index. Higher CAIDI with lower SAIFI often indicates more rural and storm related outages that take a longer time to locate and repair. Larger events were a burnt transmission pole serving customers on the Bozeman Hill, a feeder outage for the Riverside Sub, and the planned upgrade of the Big Timber Sub. Wind related outages were down for the year, while other causes were close to the previous year.



	2009	2010	2011	2012	Average (2009-2011)
SAIDI	99.83	120.79	113.59	106.88	111.40
CAIDI	96.29	125.97	126.72	160.81	116.33
SAIFI	1.037	0.959	0.896	0.665	0.96

Figure 4.1 Bozeman system indices excluding major event days (MEDs) as defined in IEEE Standard 1366-2003.

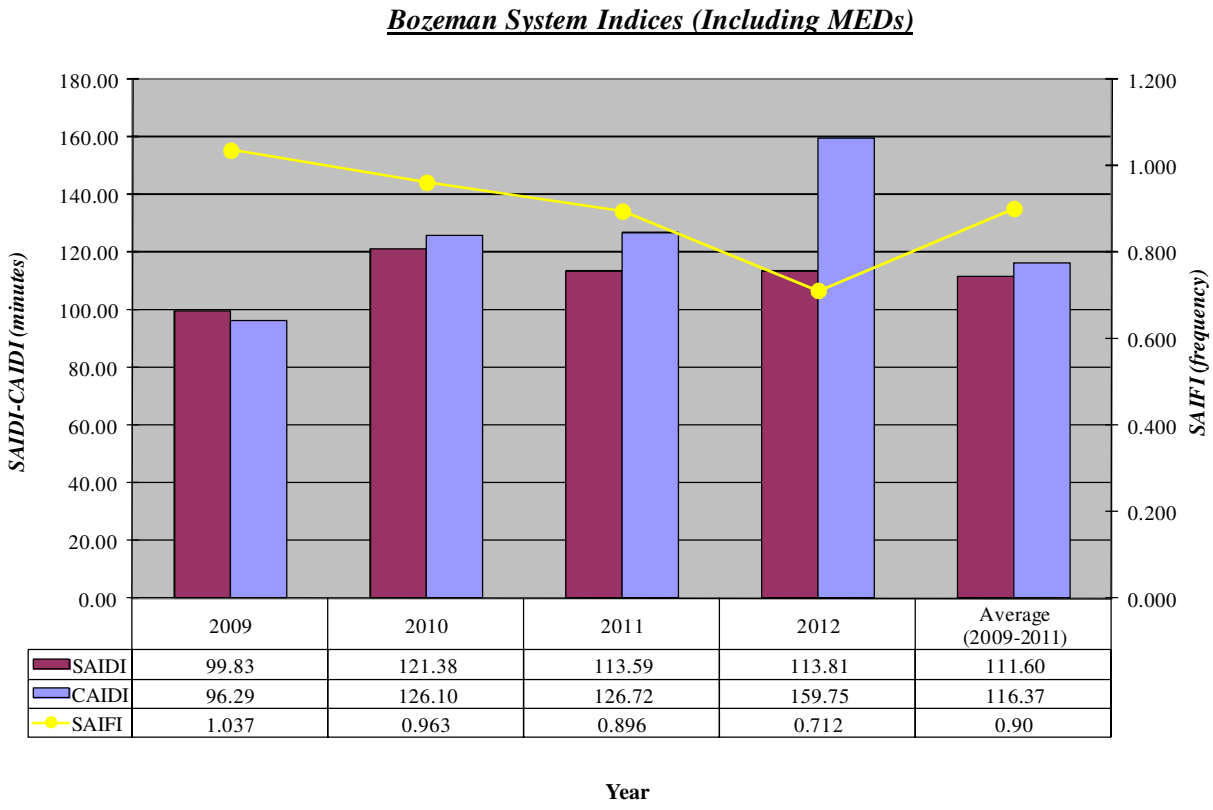
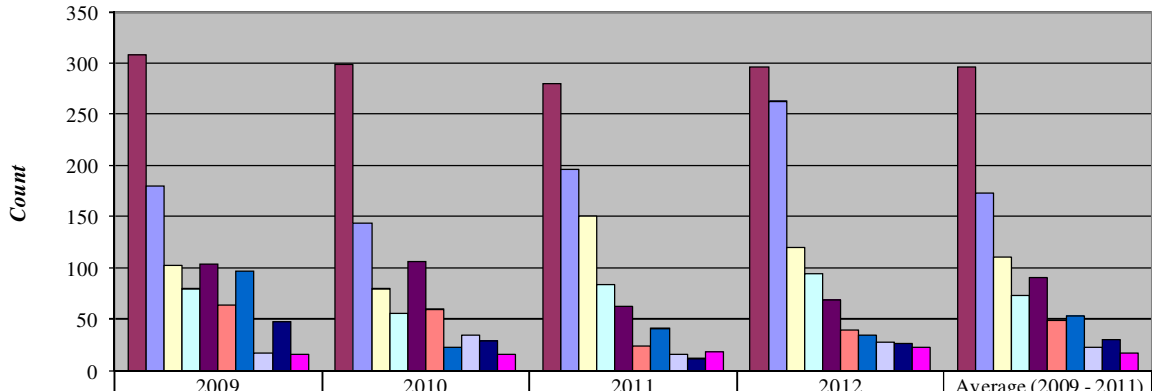


Figure 4.2 Bozeman system indices including major event days (MEDs) as defined in IEEE Standard 1366-2003.

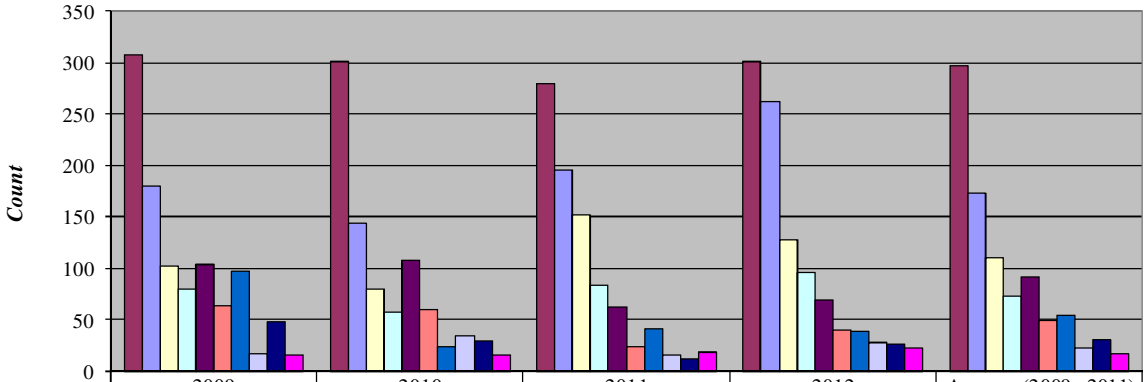
Bozeman saw some outages during the two Major Event Days, but was not largely impacted.

Bozeman - Outages By Top Ten Causes (Excluding MEDs)



	2009	2010	2011	2012	Average (2009 - 2011)
Equipment Failure	308	299	280	296	296
Unknown	180	144	196	262	173
Wind	102	79	151	120	111
Tree In Line	80	56	83	95	73
Lightning	104	106	62	69	91
Other Bird	64	60	24	40	49
Snow/Ice	97	22	41	34	53
Squirrel	17	34	15	27	22
Limb In Line	48	29	12	26	30
Vehicle Hit	16	15	18	22	16
DIVISION TOTAL	1,213	1,086	1,064	1,150	1,121

Figure 4.3 Bozeman system outages by top ten causes excluding major event days (MEDs) as defined in IEEE Standard 1366-2003.



	2009	2010	2011	2012	Average (2009 - 2011)
Equipment Failure	308	301	280	301	296
Unknown	180	144	196	262	173
Wind	102	79	151	127	111
Tree In Line	80	57	83	96	73
Lightning	104	107	62	69	91
Other Bird	64	60	24	40	49
Snow/Ice	97	23	41	38	54
Squirrel	17	34	15	27	22
Limb In Line	48	29	12	26	30
Vehicle Hit	16	15	18	22	16
DIVISION TOTAL	1,213	1,091	1,064	1,168	1,123

Figure 4.4 Bozeman system outages by top ten causes including major event days (MEDs) as defined in IEEE Standard 1366-2003.

5.0 BUTTE SYSTEM RELIABILITY

Butte Division saw increased SAIDI and SAIFI but slightly lower CAIDI in 2012. In June, a tree related outage took out a feeder from the Continental Drive Sub. An outage of the Montana Street substation on July 15th put 8,500 customers in the dark. Anaconda City had a number of feeder outages during the year. Equipment failures were down, but wind and tree related outages were up.

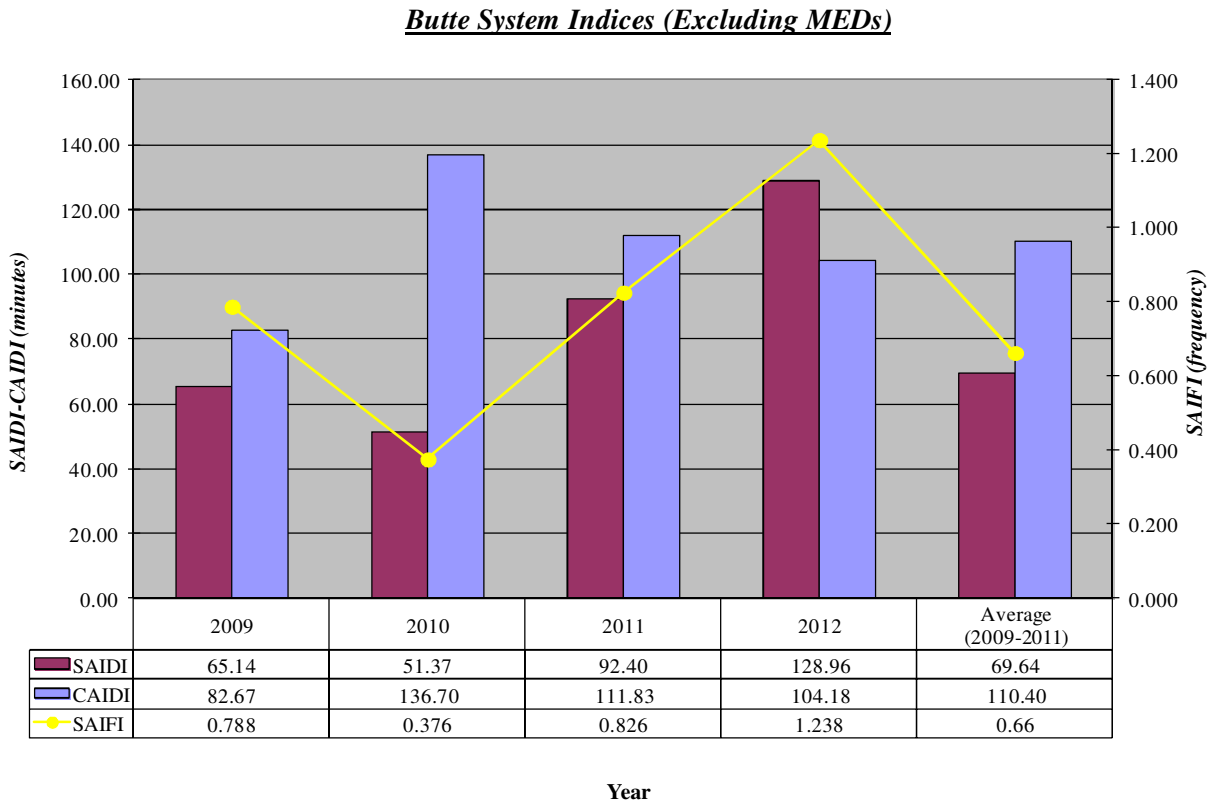


Figure 5.1 Butte system indices excluding major event days (MEDs) as defined in IEEE Standard 1366-2003.

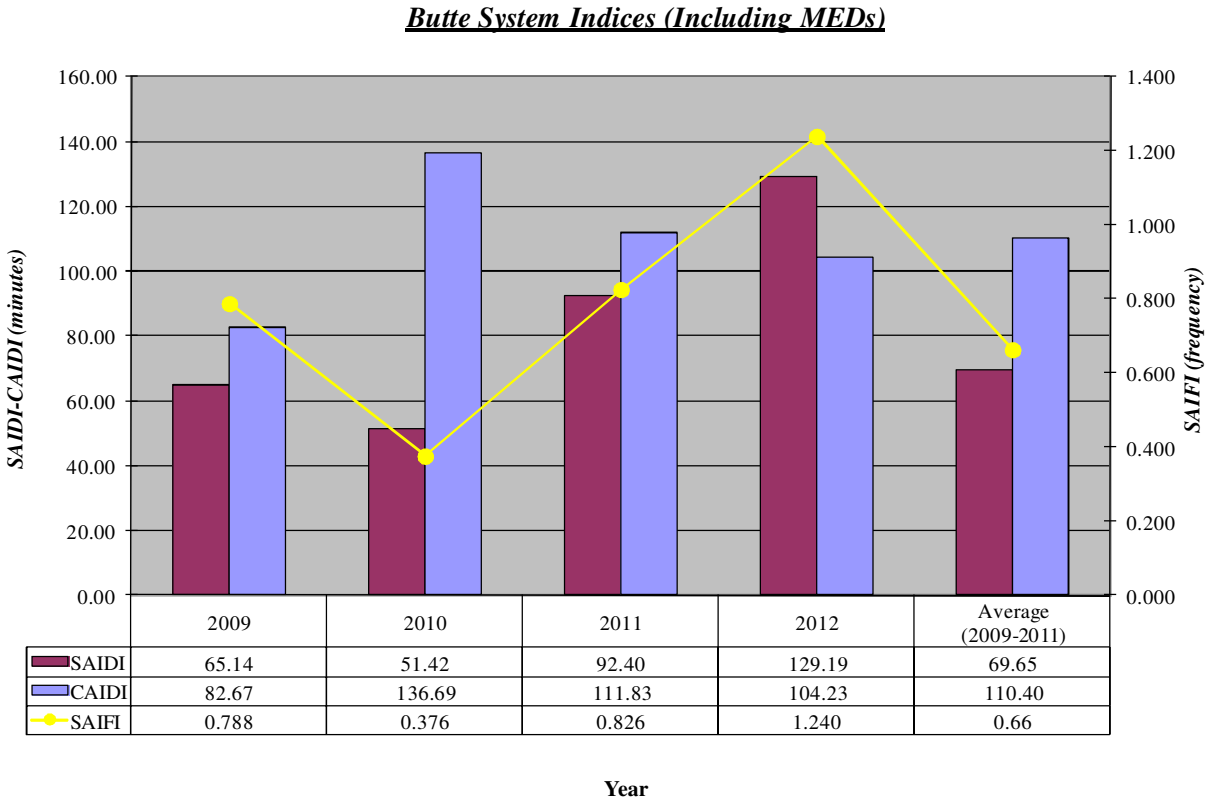
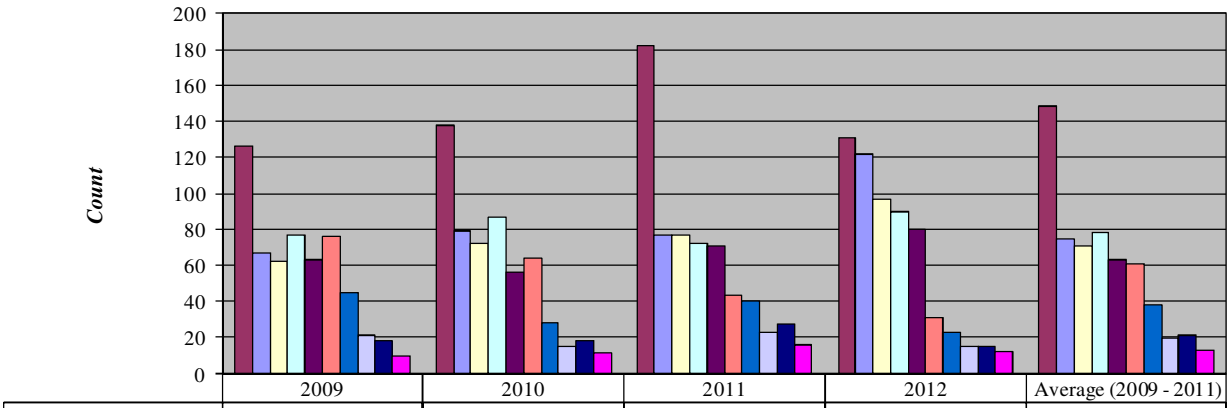
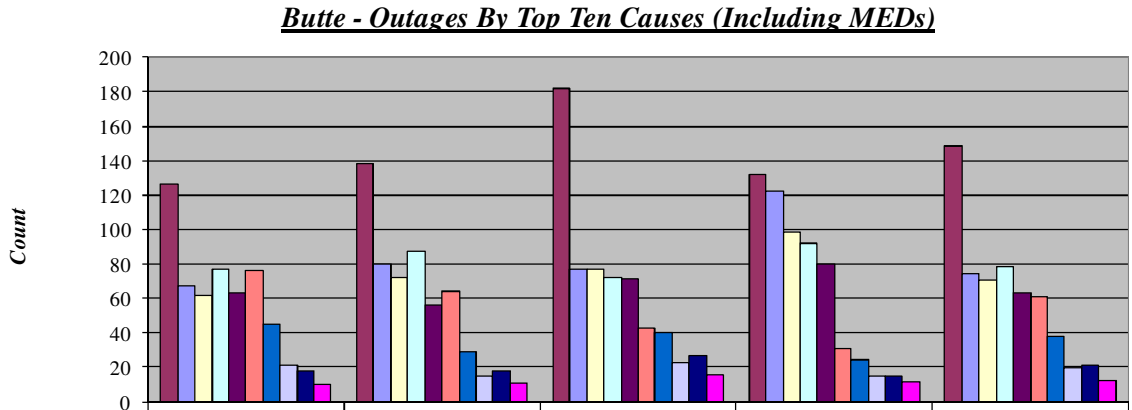


Figure 5.2 Butte system indices including major event days (MEDs) as defined in IEEE Standard 1366-2003.



	2009	2010	2011	2012	Average (2009 - 2011)
Equipment Failure	126	138	182	131	149
Unknown	67	79	77	122	74
Wind	62	72	77	97	70
Tree In Line	77	87	72	90	79
Other Bird	63	56	71	80	63
Lightning	76	64	43	31	61
Snow/Ice	45	28	40	23	38
Animal-Other	21	15	23	15	20
Scheduled Maintenance	18	18	27	15	21
System-Other	10	11	16	12	12
DIVISION TOTAL	691	669	725	692	695

Figure 5.3 Butte system outages by top ten causes excluding major event days (MEDs) as defined in IEEE Standard 1366-2003.



	2009	2010	2011	2012	Average (2009 - 2011)
Equipment Failure	126	138	182	132	149
Unknown	67	80	77	122	75
Wind	62	72	77	98	70
Tree In Line	77	87	72	92	79
Other Bird	63	56	71	80	63
Lightning	76	64	43	31	61
Snow/Ice	45	29	40	24	38
Animal-Other	21	15	23	15	20
Scheduled Maintenance	18	18	27	15	21
System-Other	10	11	16	12	12
DIVISION TOTAL	691	671	725	698	696

Figure 5.4 Butte system outages by top ten causes including major event days (MEDs) as defined in IEEE Standard 1366-2003.

6.0 GREAT FALLS SYSTEM RELIABILTY

Great Falls Division was hit with several wind and snow storms this year. SAIDI without MEDs was up 67 minutes from these storms. Two MEDs contributed an additional 56 minutes to the Great Falls SAIDI index. The Eastside Substation had three outages as well as several additional feeder lockouts. Storms and fires also resulted in transmission line losses that put several small towns in the dark until lines could be switched. Lightning and tree related outages were up from 2011.

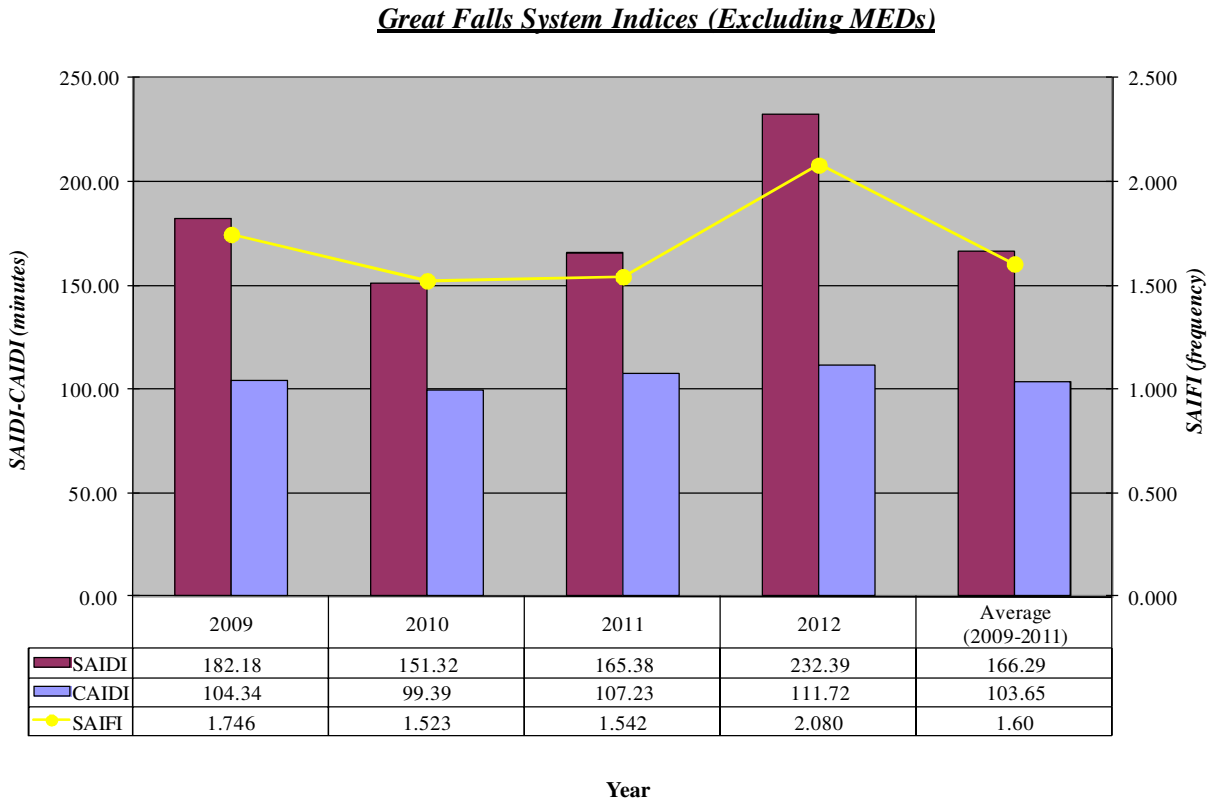
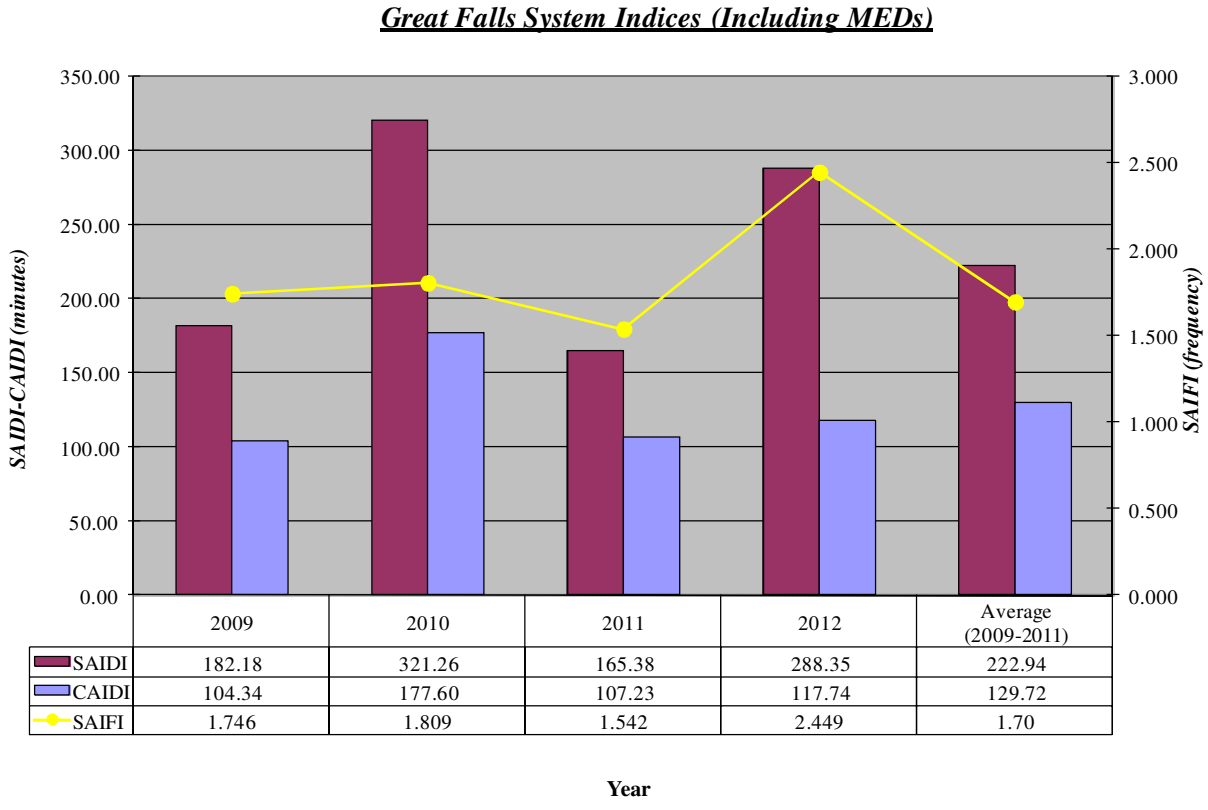
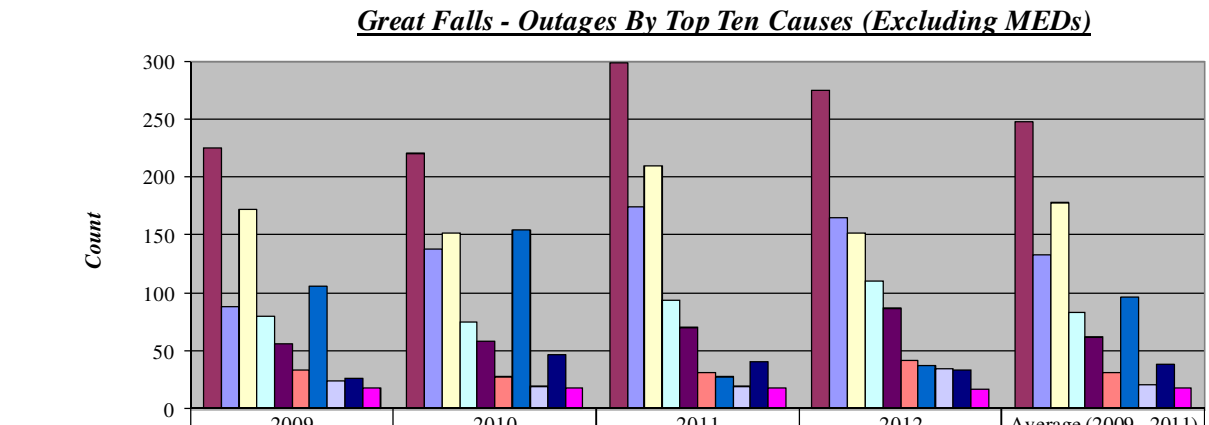


Figure 6.1 Great Falls system indices excluding major event days (MEDs) as defined in IEEE Standard 1366-2003.



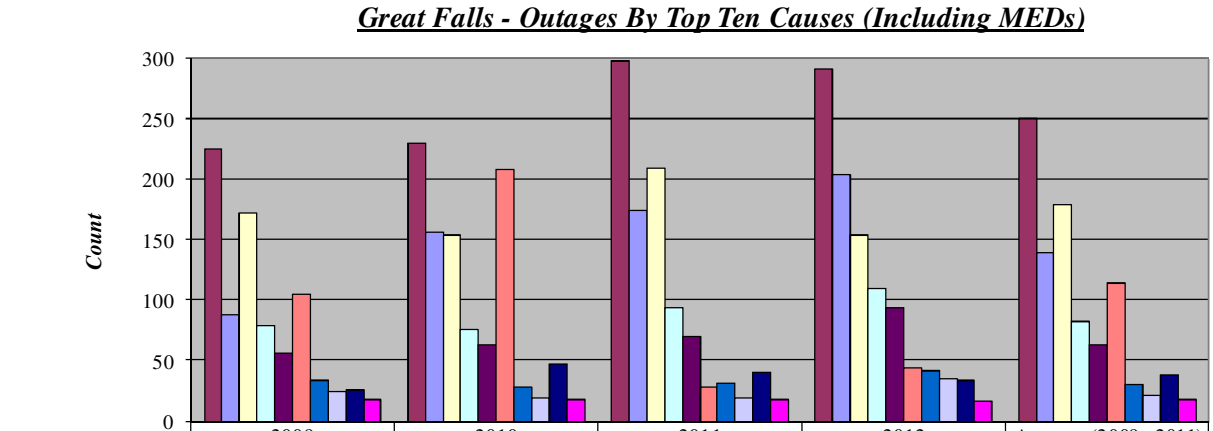
	2009	2010	2011	2012	Average (2009-2011)
SAIDI	182.18	321.26	165.38	288.35	222.94
CAIDI	104.34	177.60	107.23	117.74	129.72
SAIFI	1.746	1.809	1.542	2.449	1.70

Figure 6.2 Great Falls system indices including major event days (MEDs) as defined in IEEE Standard 1366-2003.



	2009	2010	2011	2012	Average (2009 - 2011)
Equipment Failure	225	220	298	275	248
Wind	88	137	174	165	133
Unknown	172	152	210	152	178
Lightning	79	75	94	110	83
Tree In Line	56	58	70	87	61
Squirrel	33	28	31	42	31
Snow/Ice	105	154	28	37	96
System-Other	24	19	19	35	21
Other Bird	26	47	40	34	38
Limb In Line	18	18	18	17	18
DIVISION TOTAL	948	1,047	1,109	1,085	1,035

Figure 6.3 Great Falls system outages by top ten causes excluding major event days (MEDs) as defined in IEEE Standard 1366-2003.

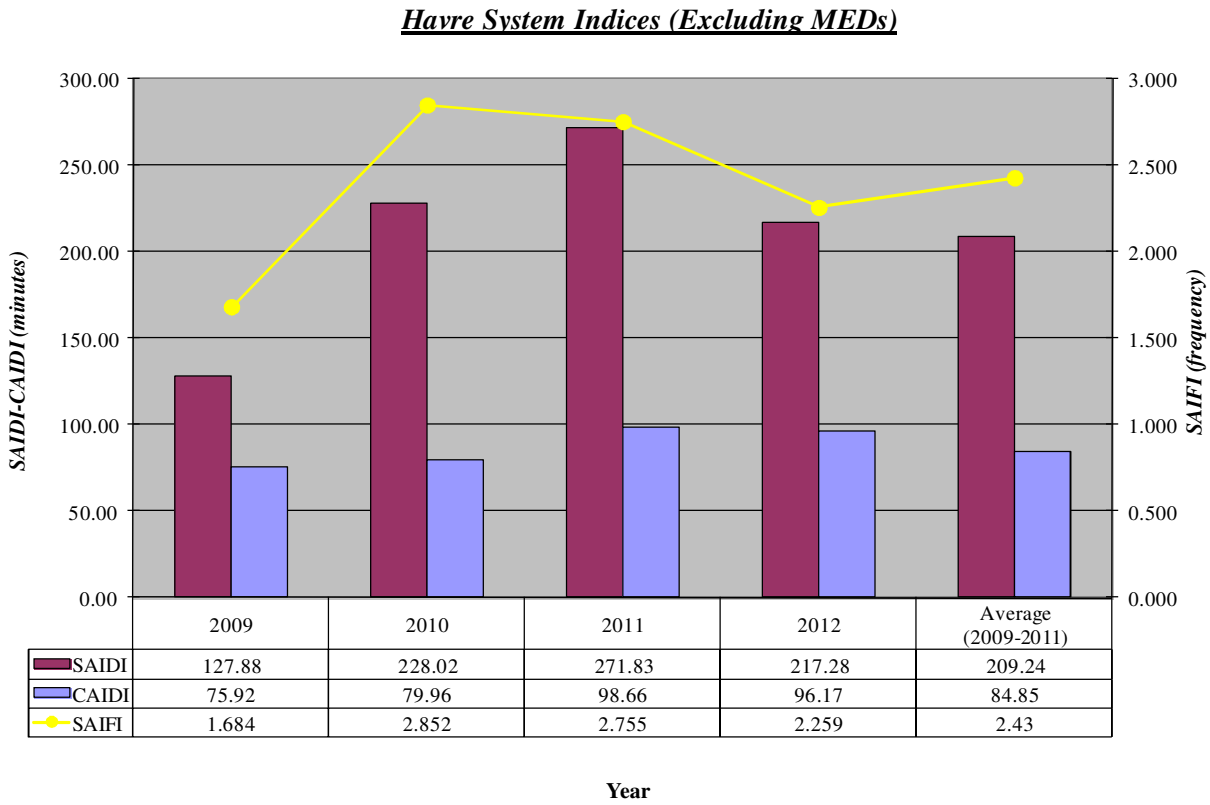


	2009	2010	2011	2012	Average (2009 - 2011)
Equipment Failure	225	230	298	291	251
Wind	88	156	174	204	139
Unknown	172	154	210	154	179
Lightning	79	75	94	110	83
Tree In Line	56	63	70	94	63
Snow/Ice	105	208	28	44	114
Squirrel	33	28	31	42	31
System-Other	24	19	19	35	21
Other Bird	26	47	40	34	38
Limb In Line	18	18	18	17	18
DIVISION TOTAL	948	1,137	1,109	1,156	1,065

Figure 6.4 Great Falls system outages by top ten causes including major event days (MEDs) as defined in IEEE Standard 1366-2003.

7.0 HAVRE SYSTEM RELIABILITY

Havre took the brunt of the outages caused by the March 19th MED. Several of the city subs were out for more than six hours, while some rural subs and customers were out for much longer. Nearly 50 poles went down and were replaced when the weather cleared up. Over 450 SAIDI minutes were added to the district's total from the MEDs. Other storms caused small town outages from transmission line outages. A failure in the Chinook Sub caused a six hour outage in November. Snow and ice caused outages were up for 2012, but most other outage causes were about the same or down for the year.



	2009	2010	2011	2012	Average (2009-2011)
SAIDI	127.88	228.02	271.83	217.28	209.24
CAIDI	75.92	79.96	98.66	96.17	84.85
SAIFI	1.684	2.852	2.755	2.259	2.43

Figure 7.1 Havre system indices excluding major event days (MEDs) as defined in IEEE Standard 1366-2003.

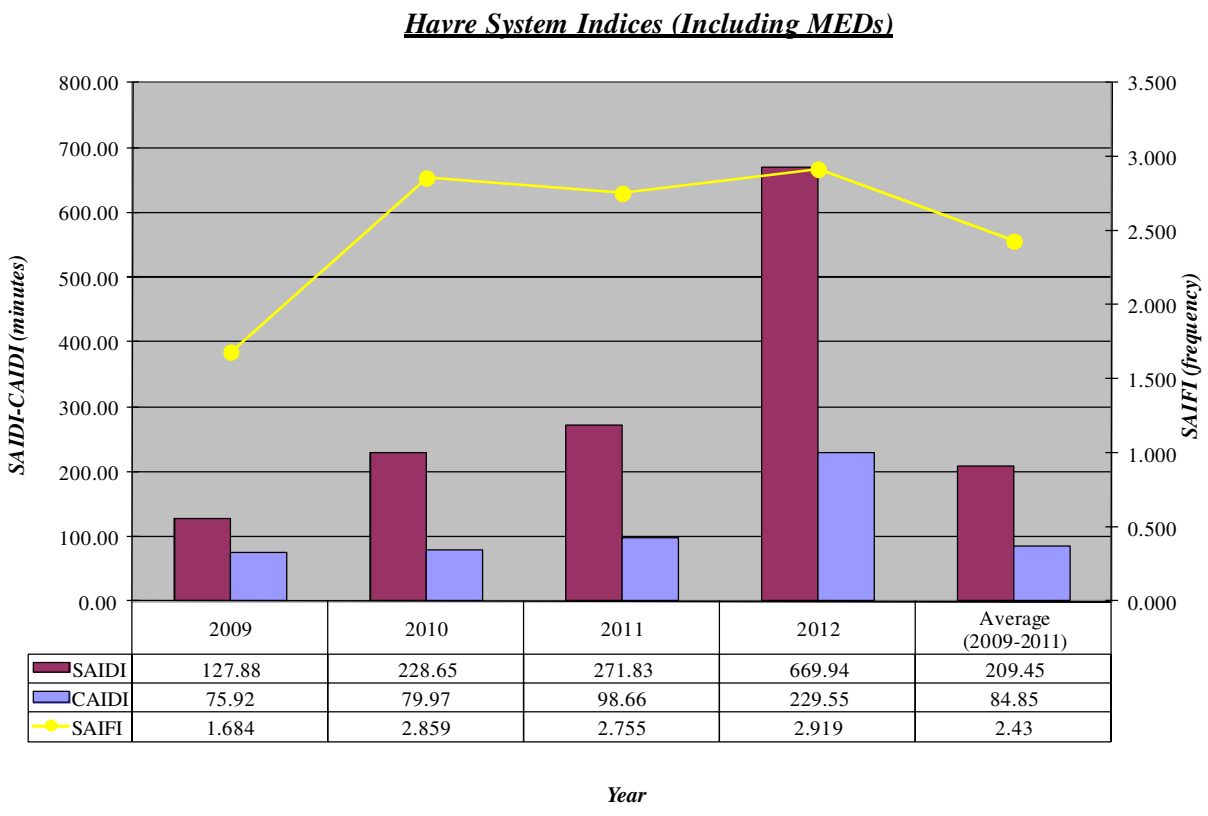
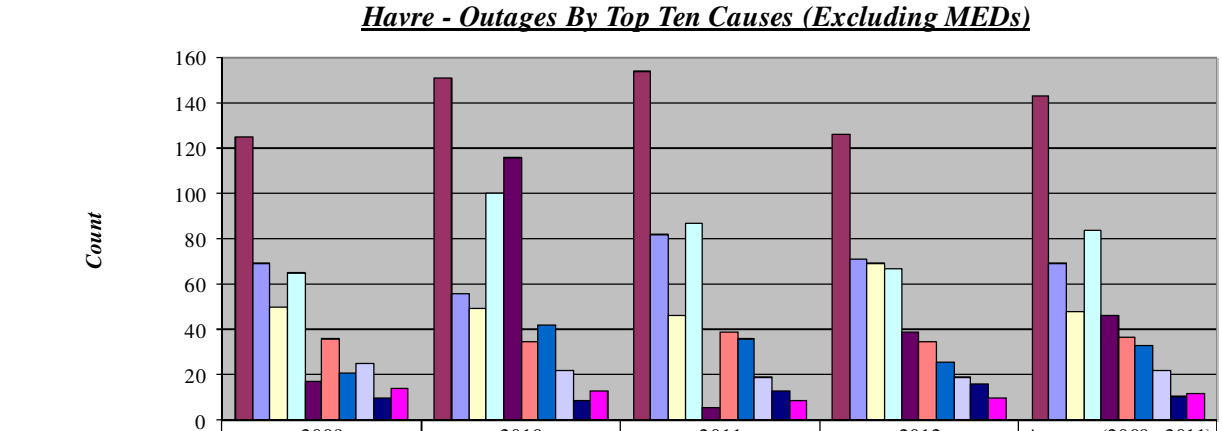
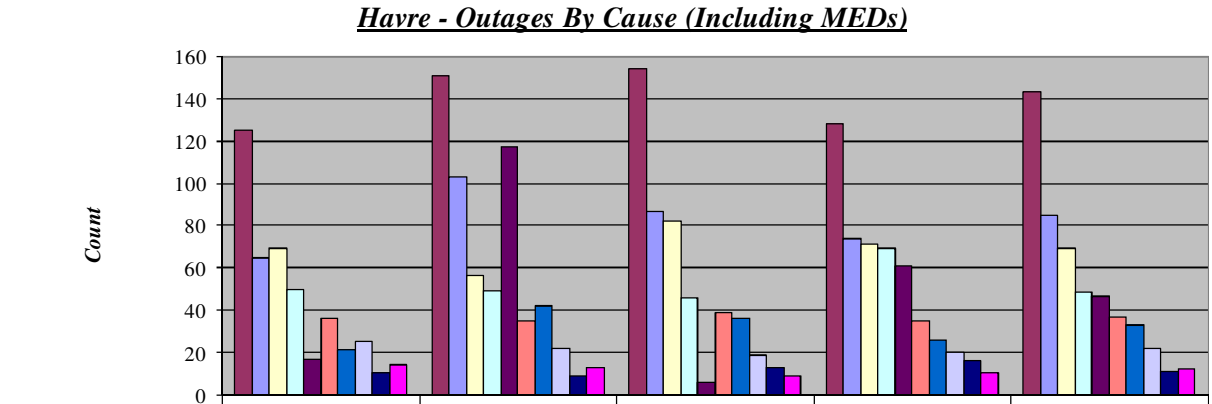


Figure 7.2 Havre system indices including major event days (MEDs) as defined in IEEE Standard 1366-2003.



	2009	2010	2011	2012	Average (2009 - 2011)
Equipment Failure	125	151	154	126	143
Lightning	69	56	82	71	69
Tree In Line	50	49	46	69	48
Wind	65	100	87	67	84
Snow/Ice	17	116	6	39	46
Unknown	36	35	39	35	37
Other Bird	21	42	36	26	33
Limb In Line	25	22	19	19	22
Raccoon	10	9	13	16	11
Scheduled Construction	14	13	9	10	12
DIVISION TOTAL	519	672	601	545	597

Figure 7.3 Havre system outages by top ten causes excluding major event days (MEDs) as defined in IEEE Standard 1366-2003.



	2009	2010	2011	2012	Average (2009 - 2011)
Equipment Failure	125	151	154	128	143
Wind	65	103	87	74	85
Lightning	69	56	82	71	69
Tree In Line	50	49	46	69	48
Snow/Ice	17	117	6	61	47
Unknown	36	35	39	35	37
Other Bird	21	42	36	26	33
Limb In Line	25	22	19	20	22
Raccoon	10	9	13	16	11
Scheduled Construction	14	13	9	10	12
DIVISION TOTAL	519	676	601	577	599

Figure 7.4 Havre system outages by top ten causes including major event days (MEDs) as defined in IEEE Standard 1366-2003.

8.0 HELENA SYSTEM RELIABILITY

Helena Division saw an increase of 13 minutes of SAIDI in 2012 compared to the prior year and almost the same for CAIDI. SAIFI remained stable. These numbers are close to the three-year averages. Large events for Helena include a tree related outage that took out the transmission line feeding the Southside sub, putting 4,400 customers in the dark, and fault during high winds that caused an outage for 2,700 customers fed from the East Helena Switchyard. Helena was not impacted by the MEDs, but saw typical storm problems. Equipment failures decreased but lightning outages increased in 2012 as compared to 2011, with other causes remaining close to average.

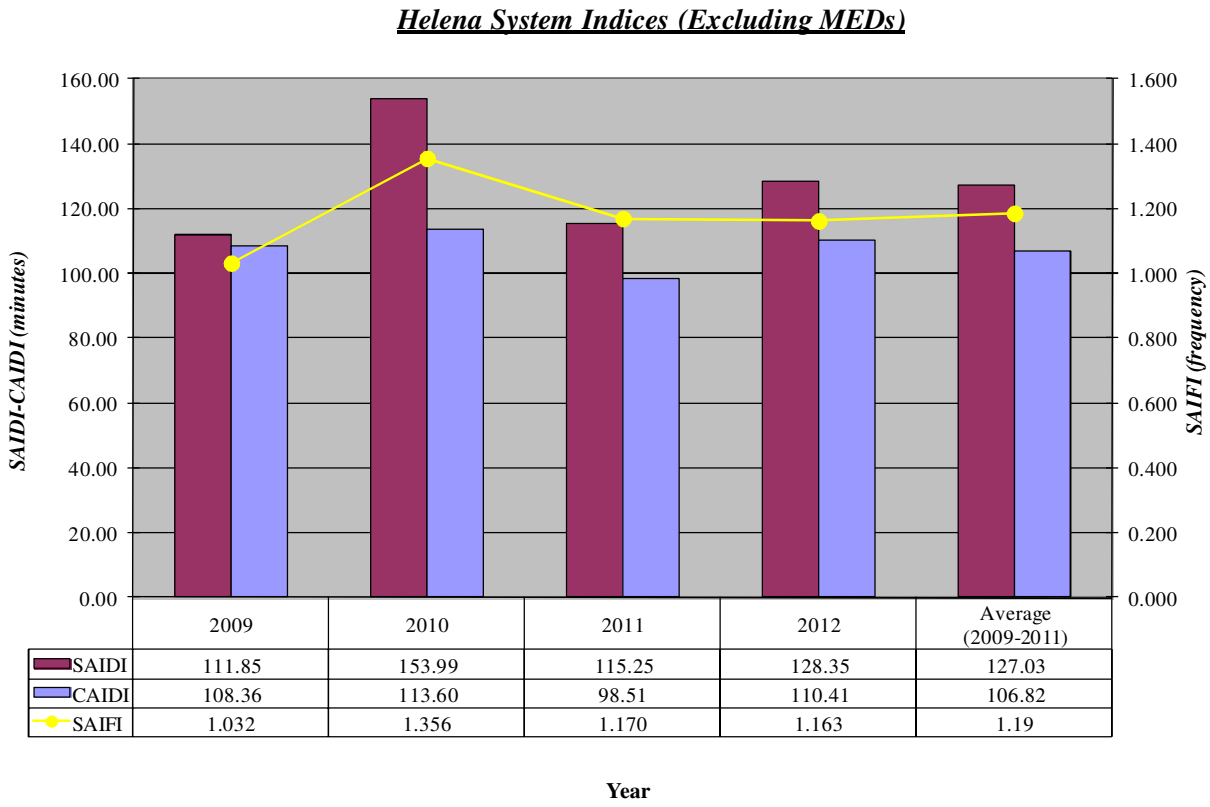


Figure 8.1 Helena system indices excluding major event days (MEDs) as defined in IEEE Standard 1366-2003.

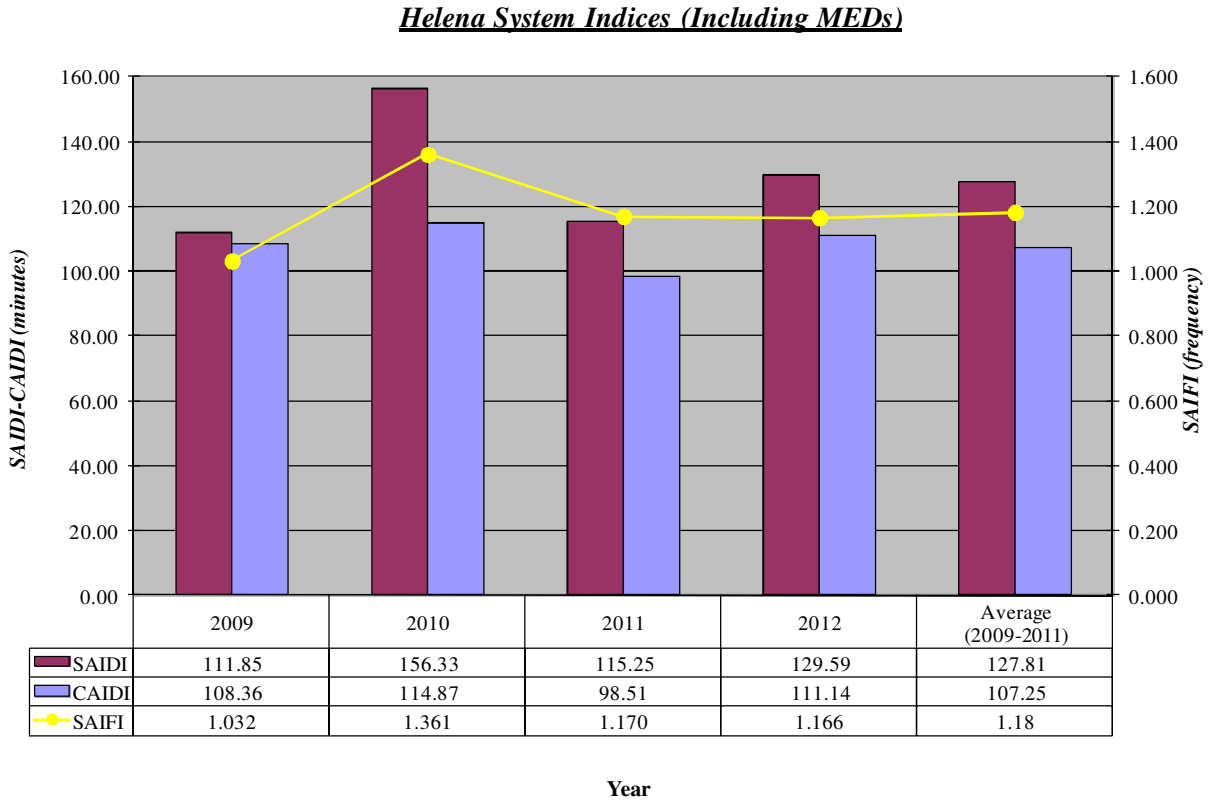
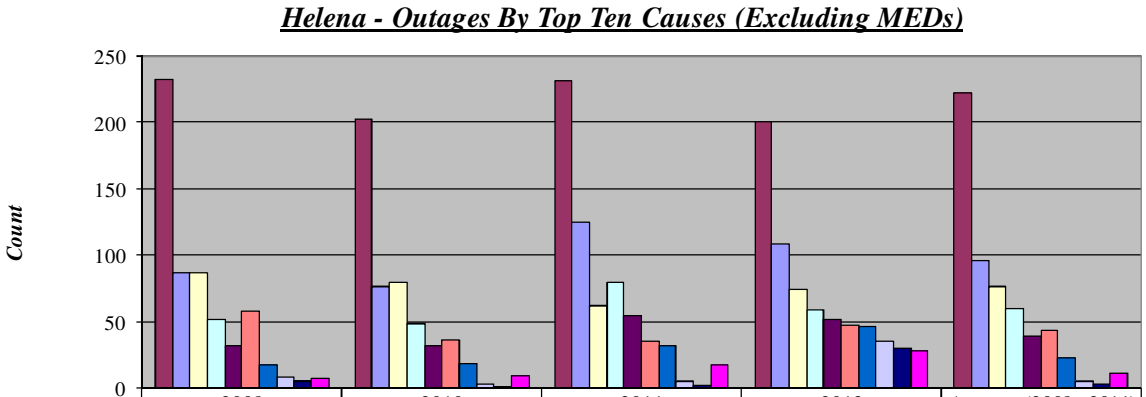
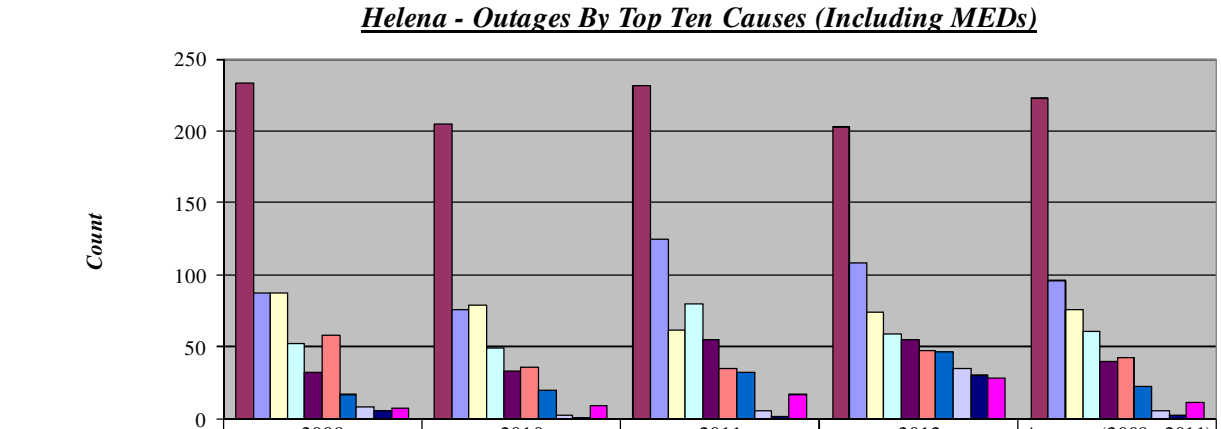


Figure 8.2 Helena system indices including major event days (MEDs) as defined in IEEE Standard 1366-2003.



	2009	2010	2011	2012	Average (2009 - 2011)
Equipment Failure	233	203	231	200	222
Tree In Line	87	76	125	108	96
Lightning	87	79	62	74	76
Squirrel	52	49	80	59	60
Wind	32	32	55	52	40
Other Bird	58	36	35	47	43
Scheduled Maintenance	17	19	32	46	23
Unknown	8	3	5	35	5
System-Other	5	1	2	30	3
Scheduled Construction	7	9	17	28	11
DIVISION TOTAL	791	653	806	811	750

Figure 8.3 Helena system outages by top ten causes excluding major event days (MEDs) as defined in IEEE Standard 1366-2003.

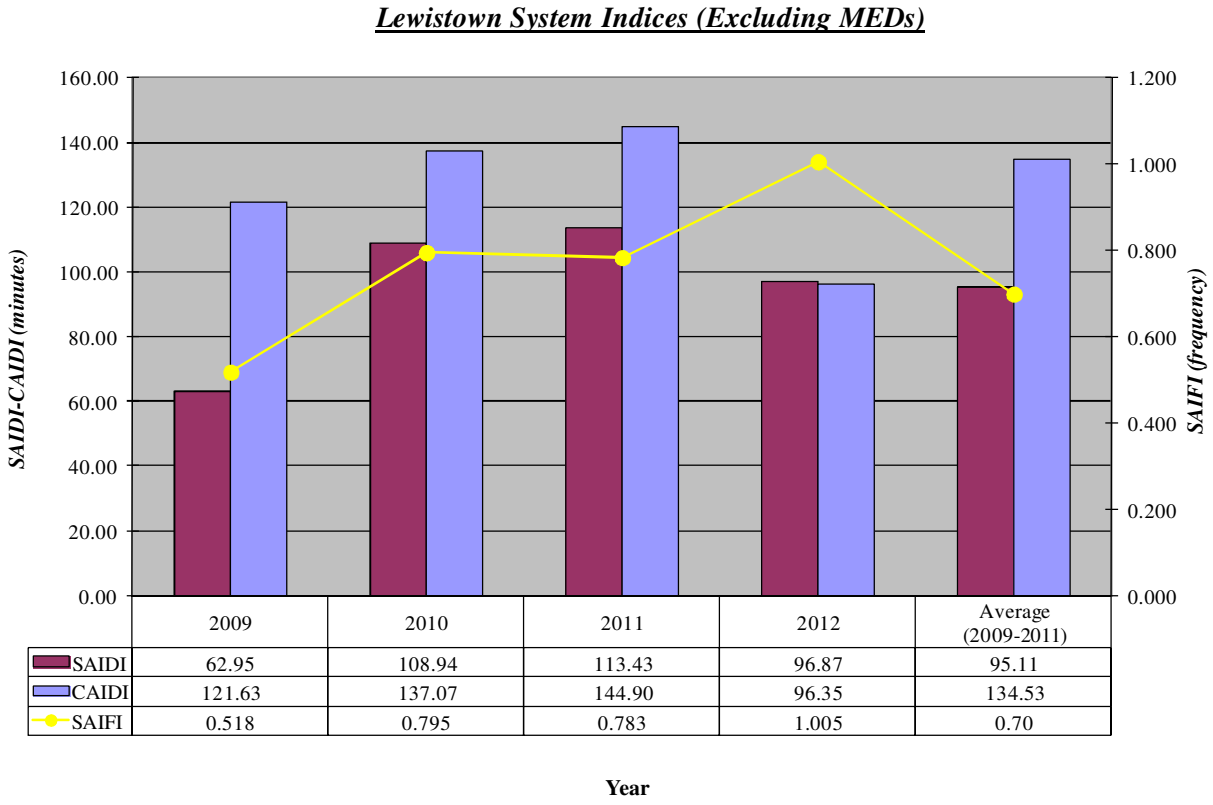


	2009	2010	2011	2012	Average (2009 - 2011)
Equipment Failure	233	205	231	203	223
Tree In Line	87	76	125	108	96
Lightning	87	79	62	74	76
Squirrel	52	49	80	59	60
Wind	32	33	55	55	40
Other Bird	58	36	35	47	43
Scheduled Maintenance	17	20	32	46	23
Unknown	8	3	5	35	5
System-Other	5	1	2	30	3
Scheduled Construction	7	9	17	28	11
DIVISION TOTAL	791	668	806	820	755

Figure 8.4 Helena system outages by top ten causes including major event days (MEDs) as defined in IEEE Standard 1366-2003.

9.0 LEWISTOWN SYSTEM RELIABILITY

Lewistown District improved SAIDI by 16.6 minutes and CAIDI by 48.6 minutes (excluding MEDs) compared to the 2011 reliability indices, even though SAIFI was up. Thirteen SAIDI minutes were added by the MEDs, but 2012 SAIDI was still below 2011 which had no MEDs. Besides the MED storms, larger outages were for scheduled construction and several fires that burned poles causing outages. Most outage causes were lower than in 2011 with lightning outages down by almost half. With MEDs, wind related outages were up.



	2009	2010	2011	2012	Average (2009-2011)
SAIDI	62.95	108.94	113.43	96.87	95.11
CAIDI	121.63	137.07	144.90	96.35	134.53
SAIFI	0.518	0.795	0.783	1.005	0.70

Figure 9.1 Lewistown system indices excluding major event days (MEDs) as defined in IEEE Standard 1366-2003.

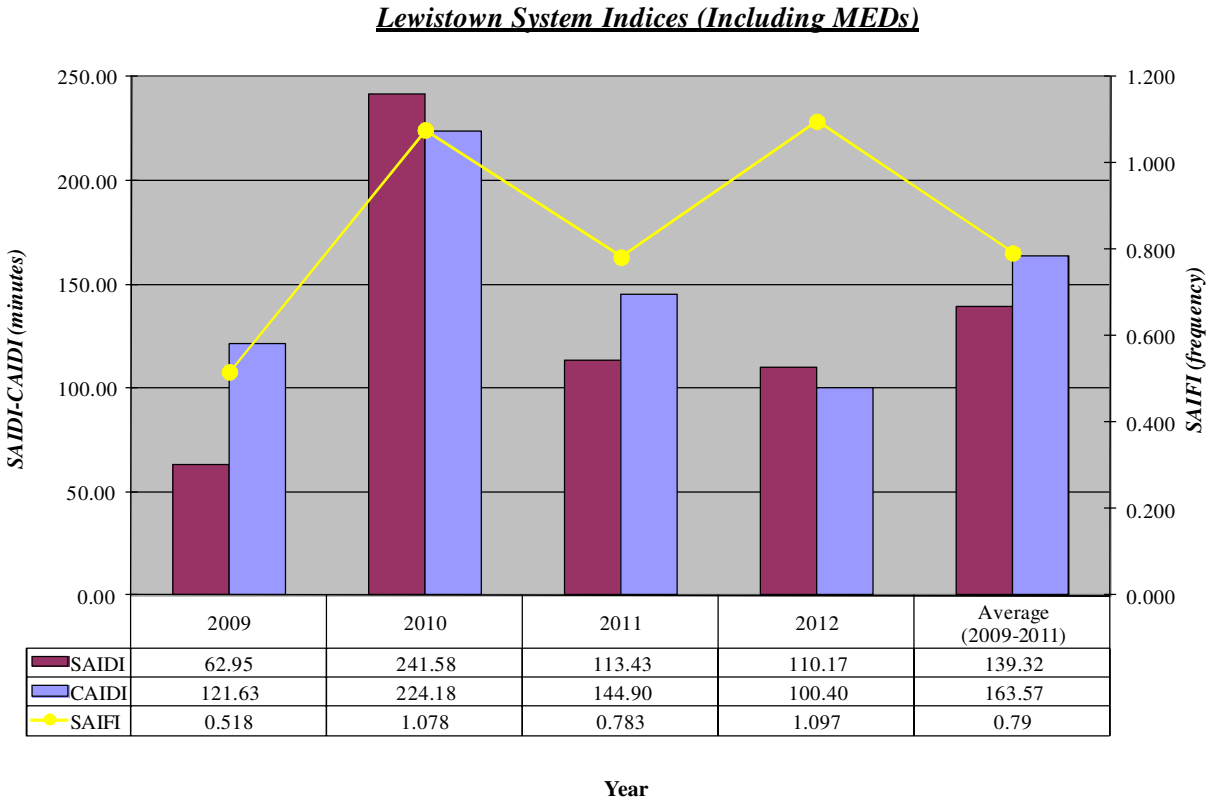
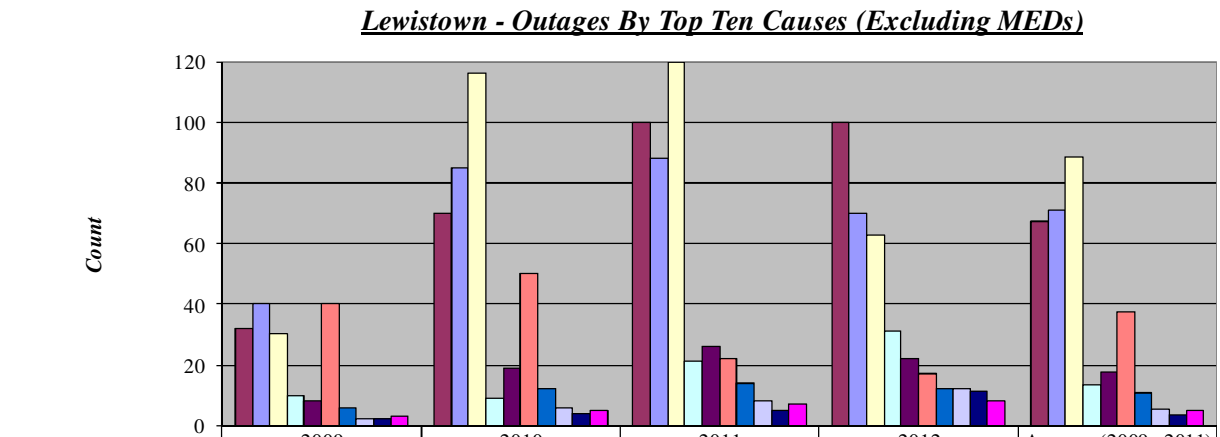
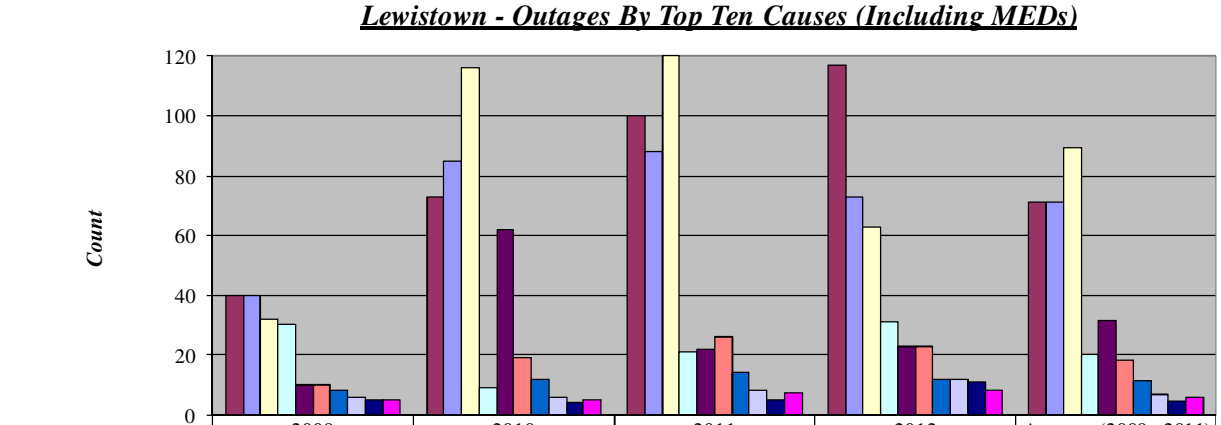


Figure 9.2 Lewistown system indices including major event days (MEDs) as defined in IEEE Standard 1366-2003.



	2009	2010	2011	2012	Average (2009 - 2011)
Wind	32	70	100	100	67
Equipment Failure	40	85	88	70	71
Lightning	30	116	120	63	89
Other Bird	10	9	21	31	13
Unknown	8	19	26	22	18
Snow/Ice	40	50	22	17	37
Raccoon	6	12	14	12	11
Animal-Other	2	6	8	12	5
Scheduled Construction	2	4	5	11	4
Tree In Line	3	5	7	8	5
DIVISION TOTAL	201	416	467	400	361

Figure 9.3 Lewistown system outages by top ten causes excluding major event days (MEDs) as defined in IEEE Standard 1366-2003.

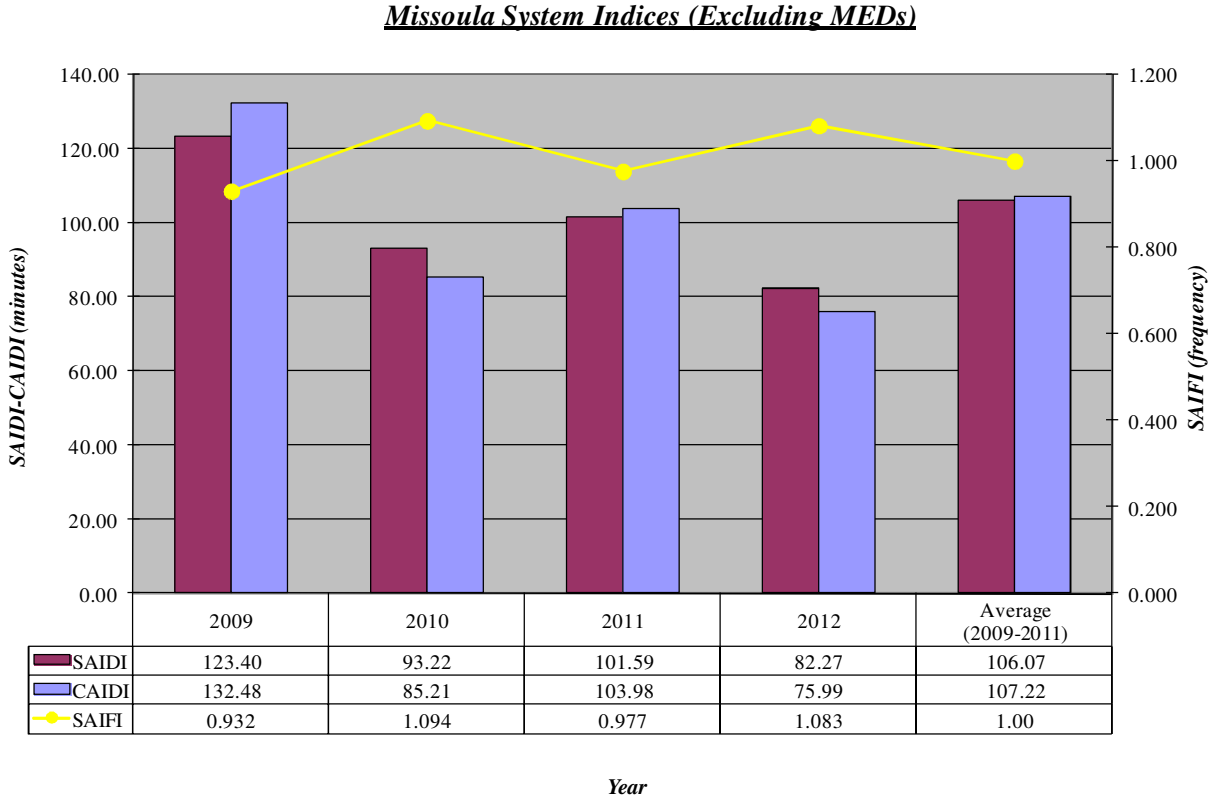


	2009	2010	2011	2012	Average (2009 - 2011)
Wind	40	73	100	117	71
Equipment Failure	40	85	88	73	71
Lightning	32	116	120	63	89
Other Bird	30	9	21	31	20
Snow/Ice	10	62	22	23	31
Unknown	10	19	26	23	18
Raccoon	8	12	14	12	11
Animal-Other	6	6	8	12	7
Scheduled Constructin	5	4	5	11	5
Tree In Line	5	5	7	8	6
DIVISION TOTAL	201	431	467	428	366

Figure 9.4 Lewistown system outages by top ten causes including major event days (MEDs) as defined in IEEE Standard 1366-2003.

10.0 MISSOULA SYSTEM RELIABILITY

Missoula Division saw marked reliability improvement for 2012 with a 19 minute decrease in SAIDI and a 28 minute drop in CAIDI (excluding MEDs). Both of these indices are the lowest in the last four years for both including and excluding MEDs. SAIFI rose slightly in 2012. The MEDs only contributed 3.2 minutes of SAIDI for Missoula, which is not significant. A wind and lightning storm on August 8th, caused several feeder outages. Regular storms caused feeder outages throughout the year, with most being restored quickly. These contributed to the higher SAIFI number for the year. Equipment, squirrels and tree related outages were all up, with the rest of the causes near average.



	2009	2010	2011	2012	Average (2009-2011)
SAIDI	123.40	93.22	101.59	82.27	106.07
CAIDI	132.48	85.21	103.98	75.99	107.22
SAIFI	0.932	1.094	0.977	1.083	1.00

Figure 10.1 Missoula system indices excluding major event days (MEDs) as defined in IEEE Standard 1366-2003.

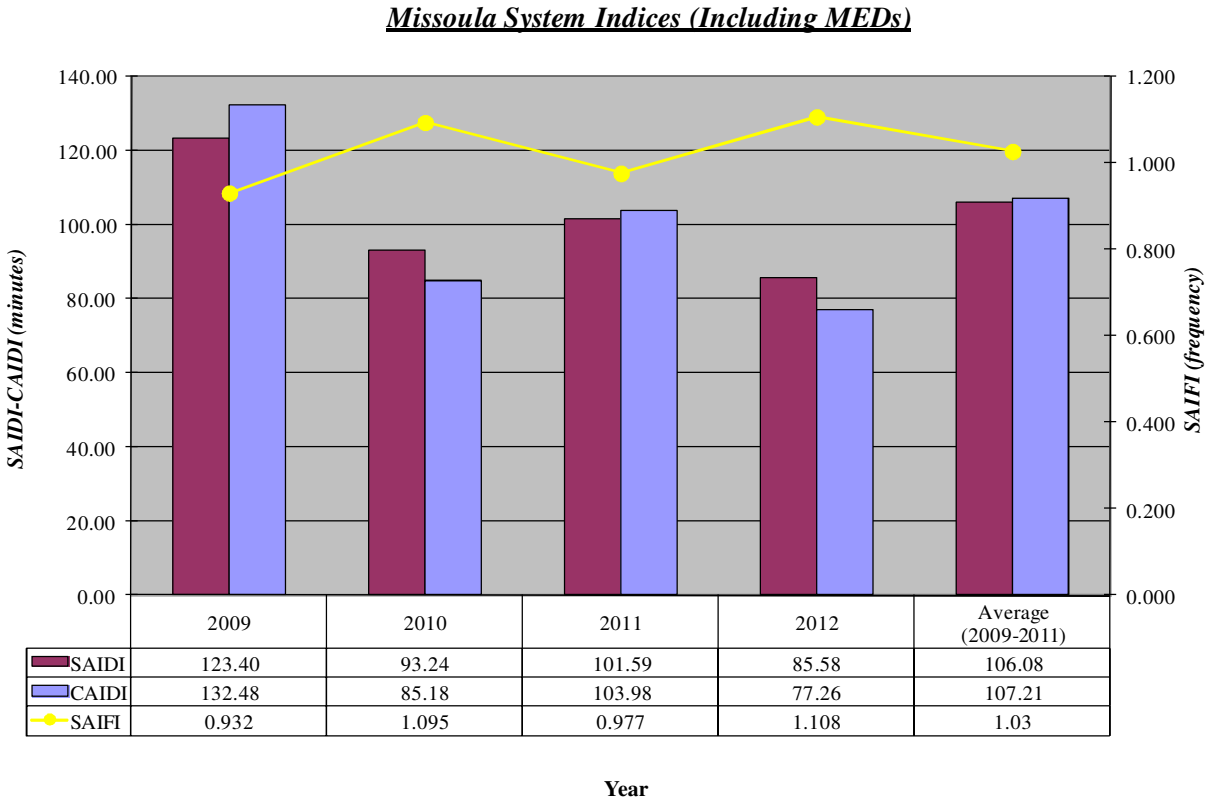
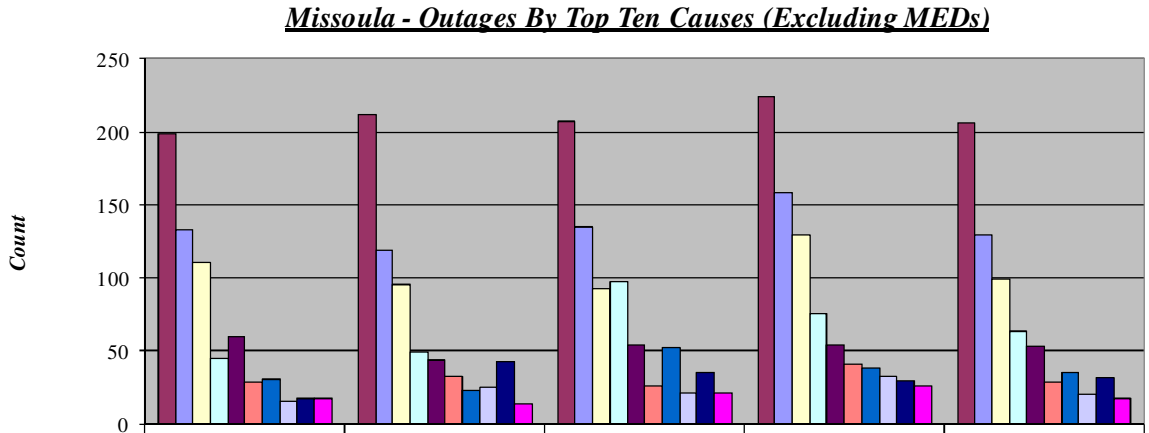
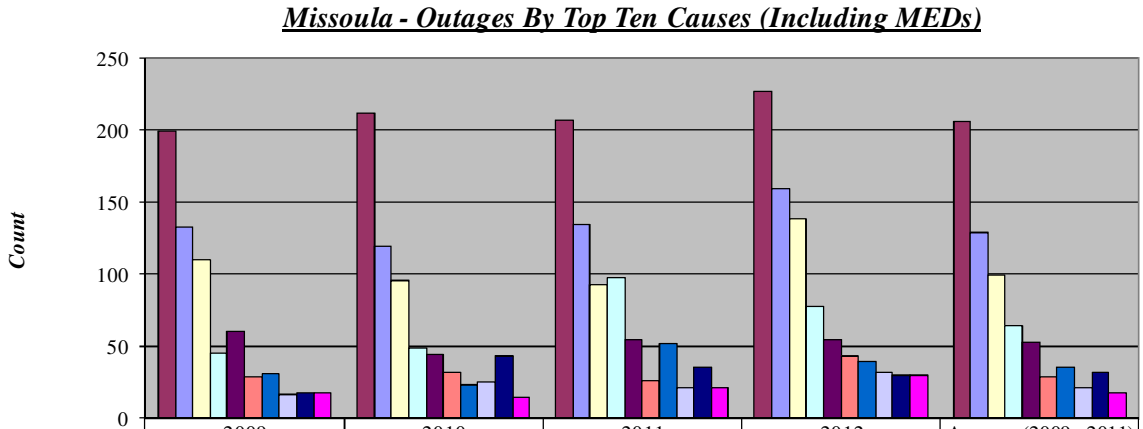


Figure 10.2 Missoula system indices including major event days (MEDs) as defined in IEEE Standard 1366-2003.



	2009	2010	2011	2012	Average (2009 - 2011)
Equipment Failure	199	212	207	224	206
Squirrel	133	119	135	158	129
Tree In Line	110	95	93	129	99
Unknown	45	49	97	76	64
Other Bird	60	44	54	54	53
Limb In Line	29	32	26	41	29
Snow/Ice	31	23	52	38	35
Scheduled Maintenance	16	25	21	32	21
Lightning	17	43	35	30	32
Wind	17	14	21	26	17
DIVISION TOTAL	761	773	899	933	811

Figure 10.3 Missoula system outages by top ten causes excluding major event days (MEDs) as defined in IEEE Standard 1366-2003.



	2009	2010	2011	2012	Average (2009 - 2011)
Equipment Failure	199	212	207	227	206
Squirrel	133	119	135	159	129
Tree In Line	110	95	93	138	99
Unknown	45	49	97	77	64
Other Bird	60	44	54	54	53
Limb In Line	29	32	26	43	29
Snow/Ice	31	23	52	39	35
Scheduled Maintenance	16	25	21	32	21
Lightning	17	43	35	30	32
Wind	17	14	21	30	17
DIVISION TOTAL	761	774	899	955	811

Figure 10.4 Missoula system outages by top ten causes including major event days (MEDs) as defined in IEEE Standard 1366-2003.

11.0 CONCLUSION

The weather in Montana for 2012 started out warm and windy with a January wind storm causing outages when the weather is normally cold and calm. This was followed by a snow and ice storm that hit the Hi-Line hard. With these two Major Event Days, Great Falls ended the year with 288 minutes of SAIDI while the Havre District had a whopping 670 minutes! The spring and summer continued to be dry and windy, with early fires and a large number of weather related outages. Later in the year, the weather settled down and the last two months had better than average reliability.

Increased efforts in line patrol and repairs as well as vegetation work should improve reliability going forward as well as reduce the impact from major storms. Additionally, with the implementation of reliability projects under the Distribution System Infrastructure Project (DSIP), stability, if not improvement in electric system reliability should be realized. Substation and other asset improvements resulted in a higher number of scheduled outages, but careful planning kept these outages to a minimum and this work will avoid equipment failures and help serve future loads. With continued upgrades and planning, diligent work, and sincere effort, NorthWestern Energy strives to provide safe, reliable electric service to our customers, now and into the future.

ANNEX A: TRANSMISSION DATA AND GRAPHS

Attached below are graphs showing the electric transmission cumulative outage duration, cumulative outage frequency, ASAI and SAIFI. Each graph shows the 2009-2011 average and 2012 year end. Also included are graphs showing the outage cause duration and frequency by year from 2008 through 2012.

The 2012 outage duration was about **73 hours more** than the 2009-2011 average. The 2012 outage frequency was about **126 less** than the 2009-2011 average.

ASAI

Year		Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
2012	Monthly	99.966	99.949	99.914	99.955	99.960	99.934	99.886	99.912	99.937	99.901	99.978	99.891
2009-2011	Monthly	99.960	99.956	99.922	99.894	99.925	99.886	99.890	99.925	99.978	99.953	99.952	99.950
2012	YTD	99.966	99.958	99.943	99.946	99.949	99.946	99.938	99.934	99.935	99.931	99.935	99.932
2009-2011	YTD	99.960	99.958	99.946	99.933	99.931	99.924	99.919	99.919	99.926	99.929	99.931	99.932

SAIFI

Year		Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
2012	Monthly	2.0557	1.7834	2.2244	3.9341	2.6094	3.6688	4.6199	3.3366	1.0609	2.5238	1.2819	2.6522
2009-2011	Monthly	2.5052	2.0557	3.0357	4.0160	3.4145	4.6673	5.5423	4.3665	2.1559	2.1593	1.9901	2.4220
2012	YTD	2.0557	1.9240	2.0264	2.4995	2.5219	2.7110	2.9889	3.0331	2.8171	2.7873	2.6525	2.6524
2009-2011	YTD	2.5052	2.2919	2.5481	2.9153	3.0179	3.2923	3.6232	3.7186	3.5458	3.4037	3.2761	3.2032

Outage Duration

Year		Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
2012	YTD	70.5	168.4	344.1	433.4	515.9	646.6	881.0	1061.2	1185.9	1388.4	1431.9	1656.6
2009-2011	YTD	79.7	158.3	313.0	515.8	665.0	885.6	1104.6	1254.7	1296.7	1390.6	1484.5	1584.0

Outage Count

Year		Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
2012	YTD	48.0	87.0	139.0	228.0	289.0	372.0	480.0	558.0	582.0	641.0	670.0	732.0
2009-2011	YTD	56.7	98.7	167.3	255.3	332.7	435.3	561.7	661.3	709.0	758.3	802.3	857.7

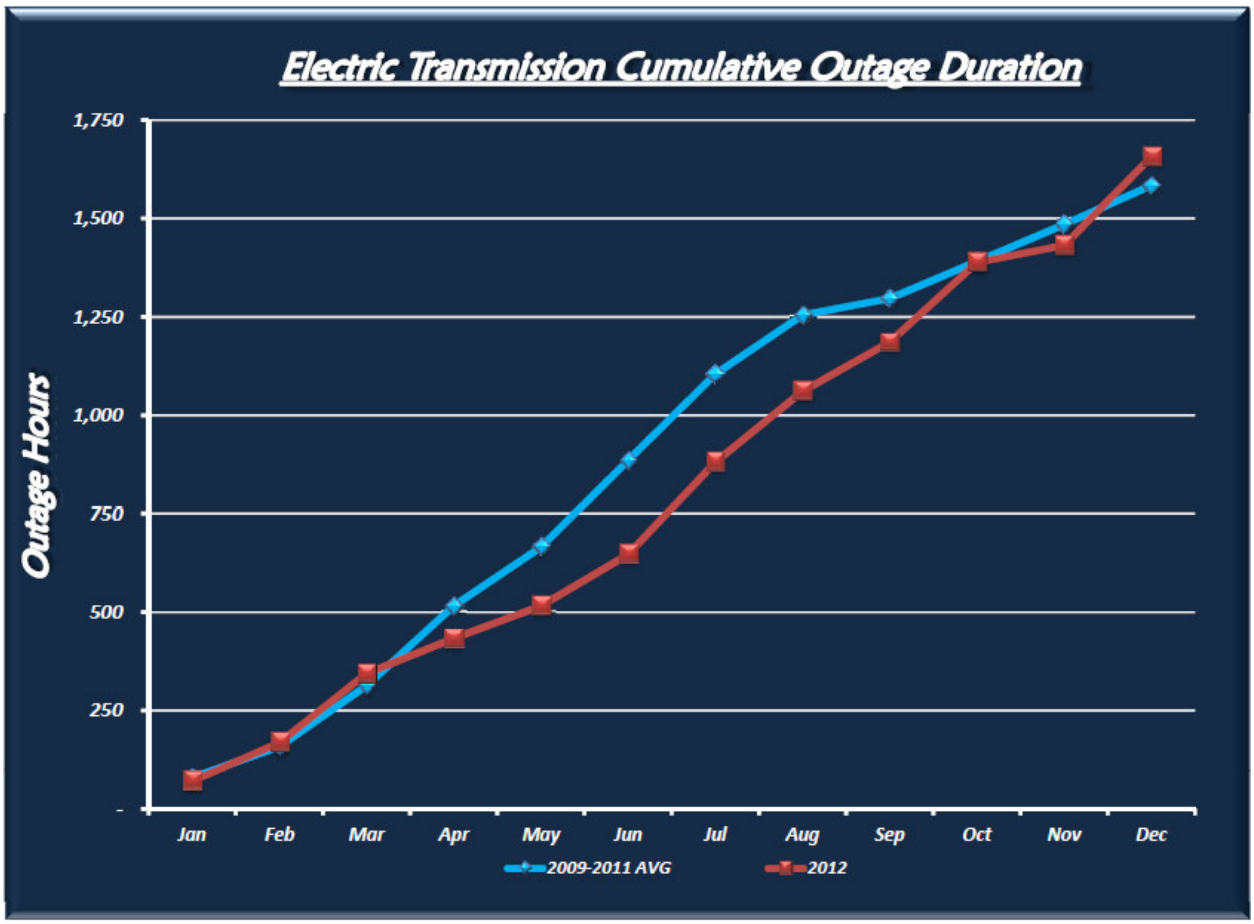


Figure A.1 Electric transmission cumulative outage duration.

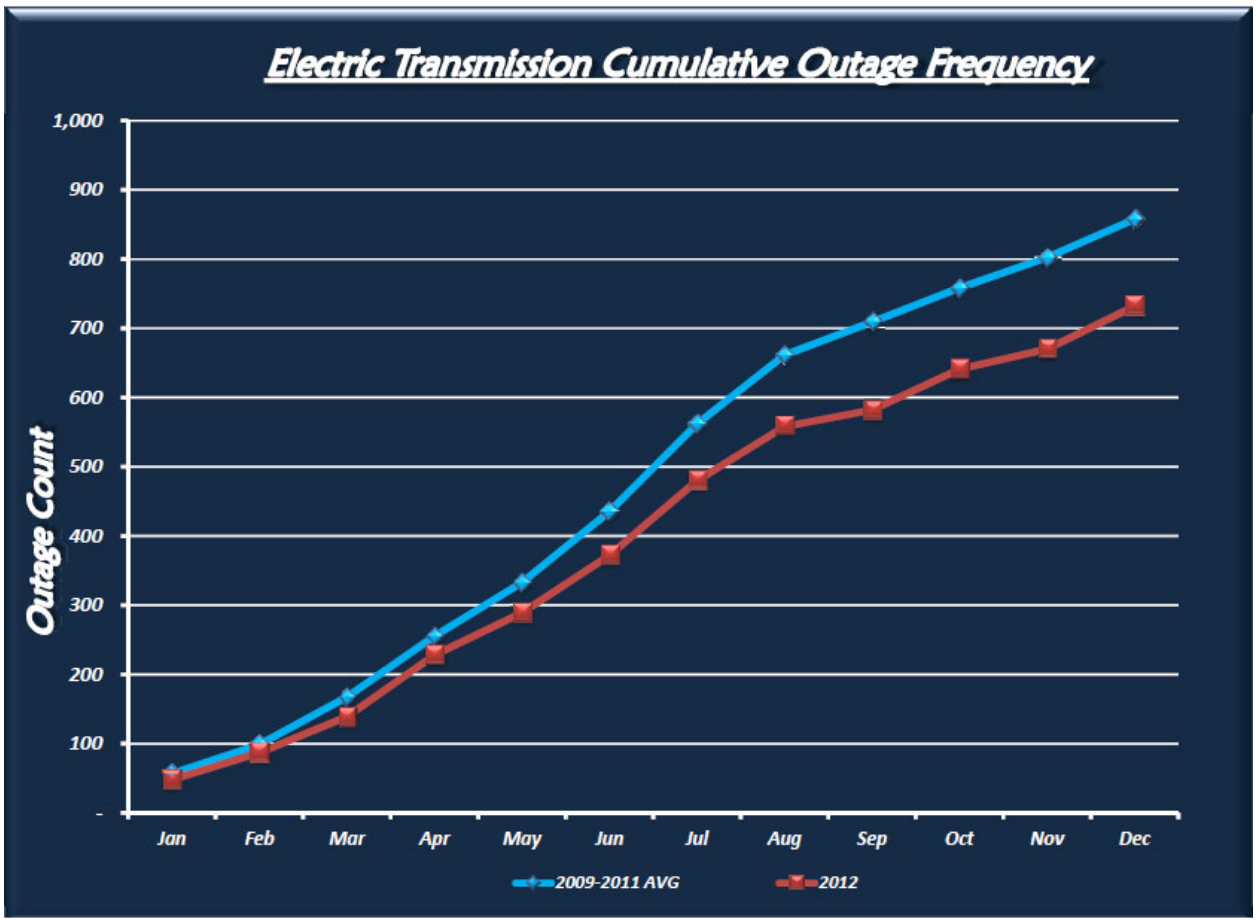


Figure A.2 Electric transmission cumulative outage frequency.

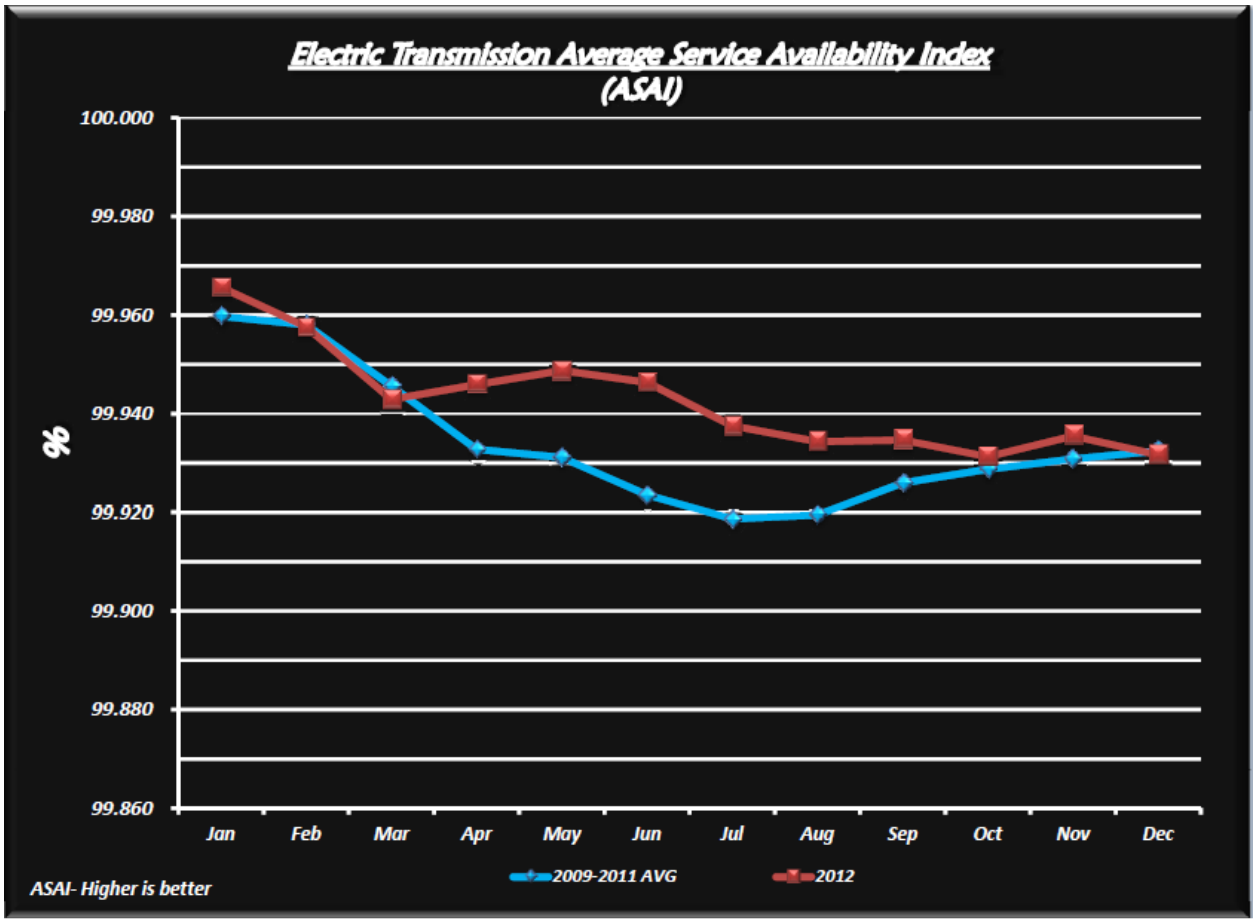


Figure A.3 Electric transmission Average Service Availability Index (ASAI).

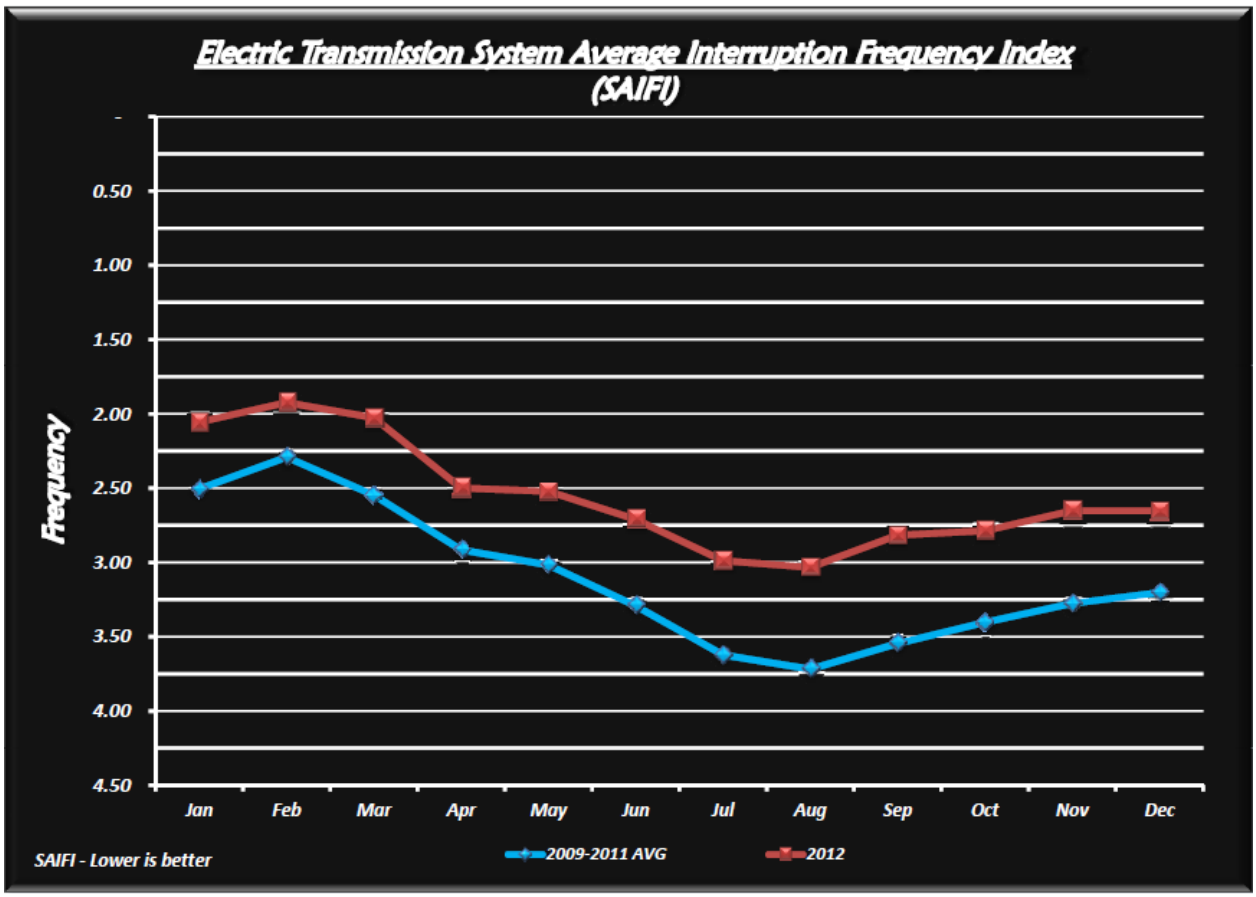


Figure A.4 Electric transmission System Average Interruption Frequency Index (SAIFI).

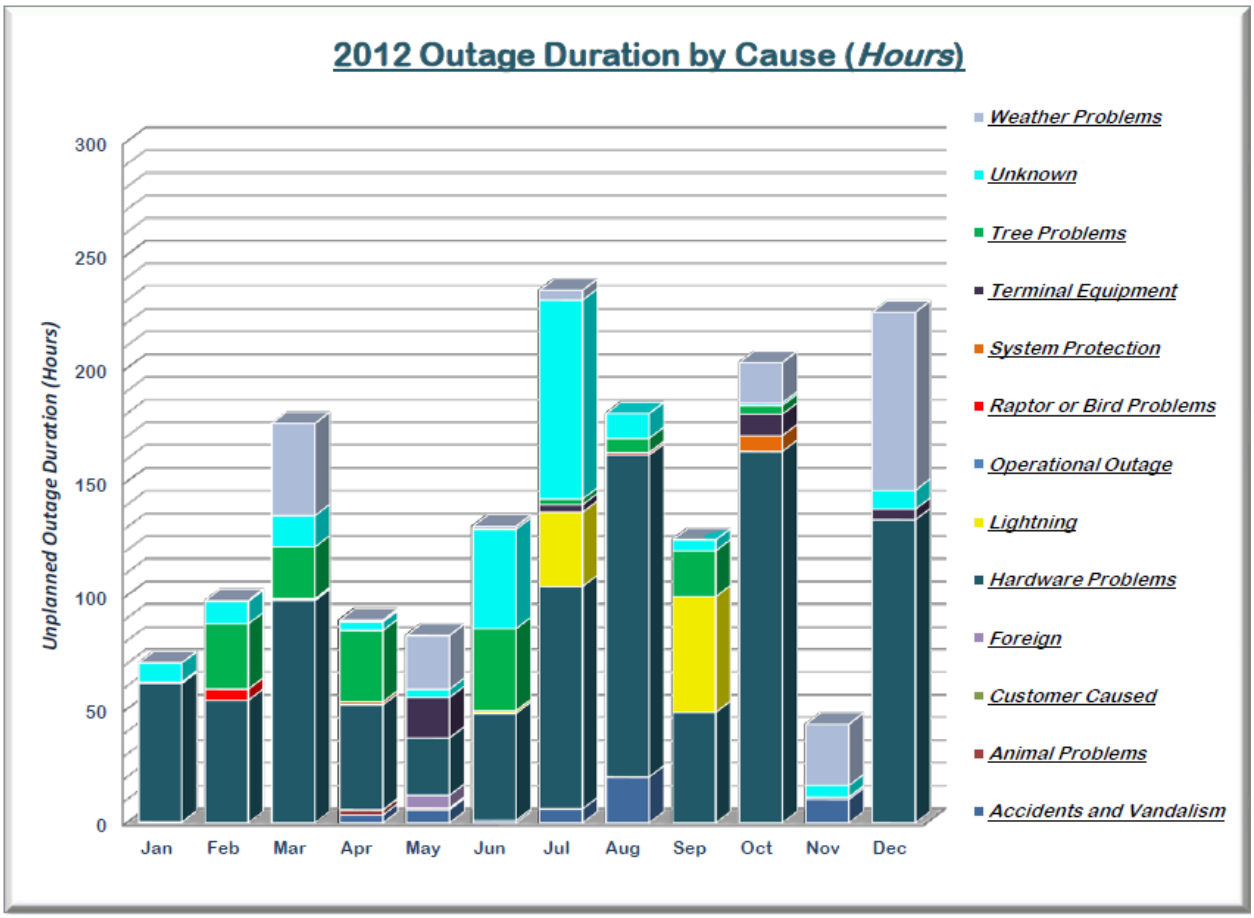


Figure A.5 Electric transmission 2012 outage duration by cause.

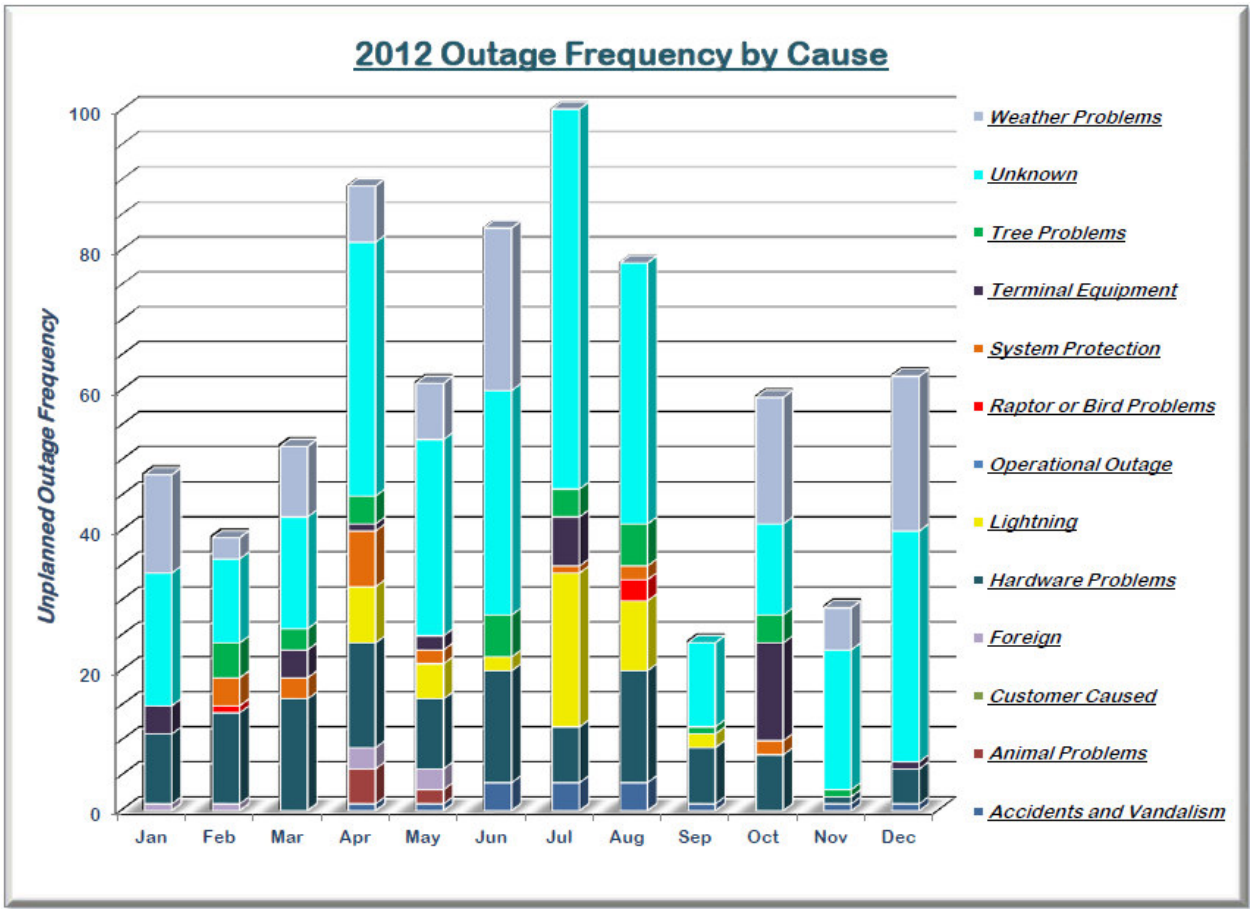


Figure A.6 Electric transmission 2012 outage frequency by cause.

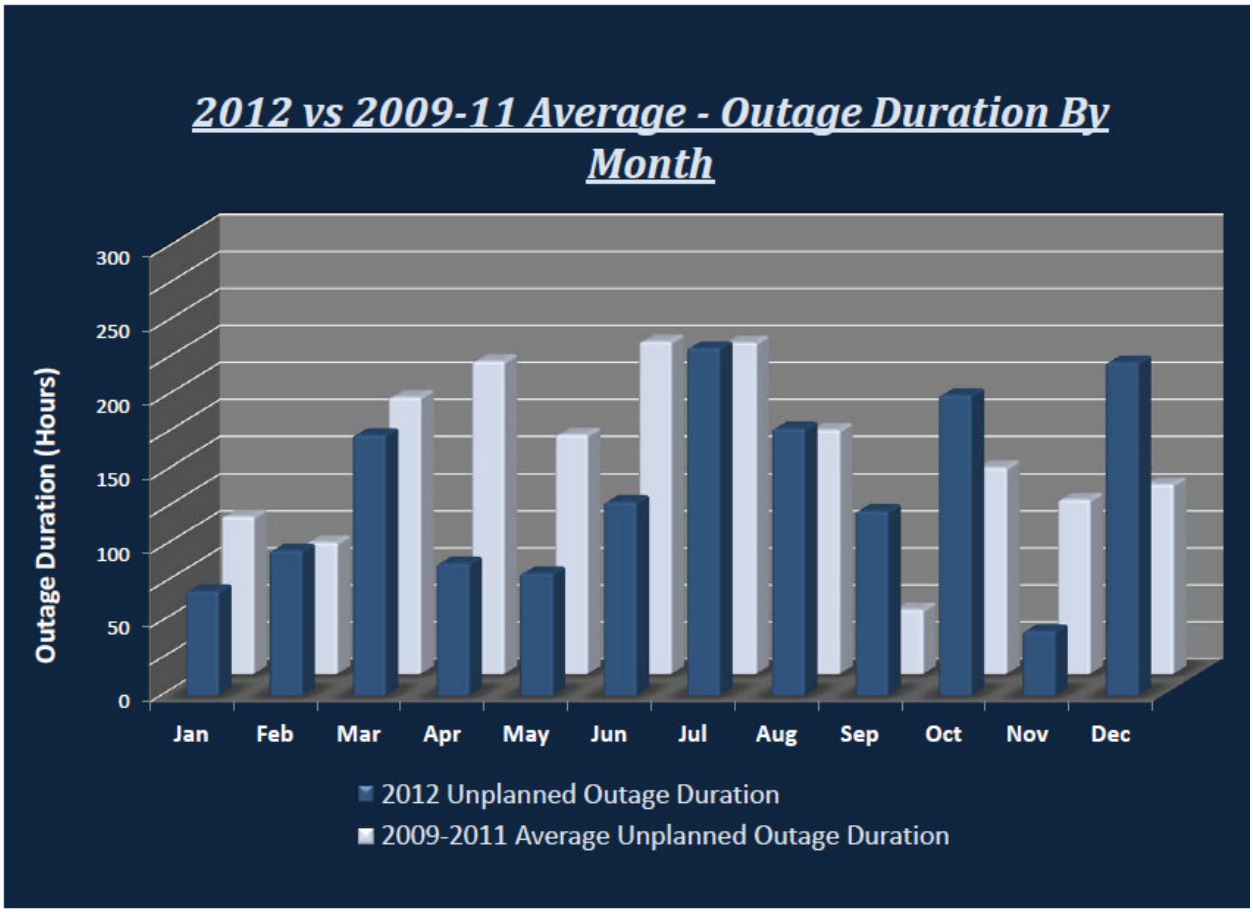


Figure A.7 Comparison of 2012 outage duration to previous three-year average.

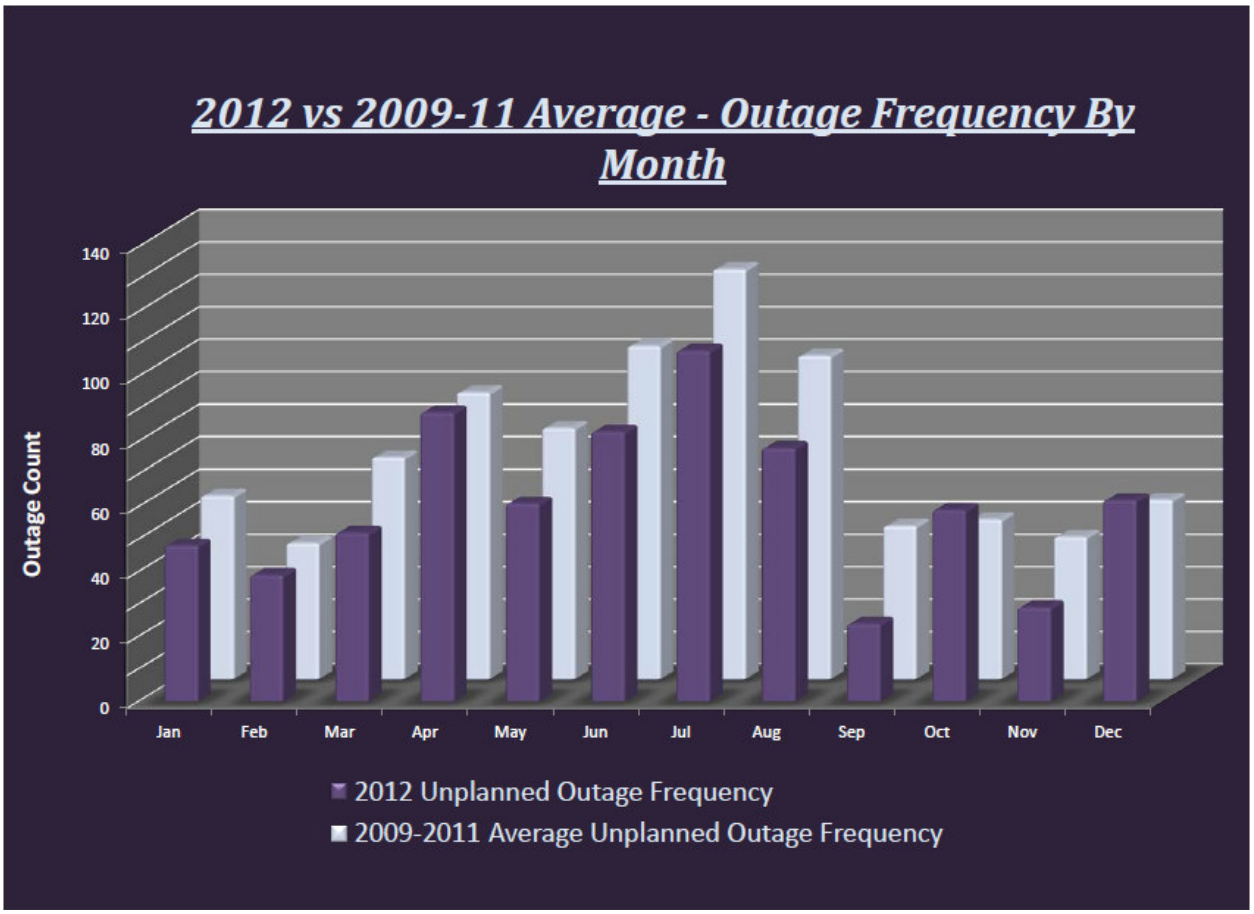


Figure A.8 Comparison of 2012 outage frequency to previous three-year average.

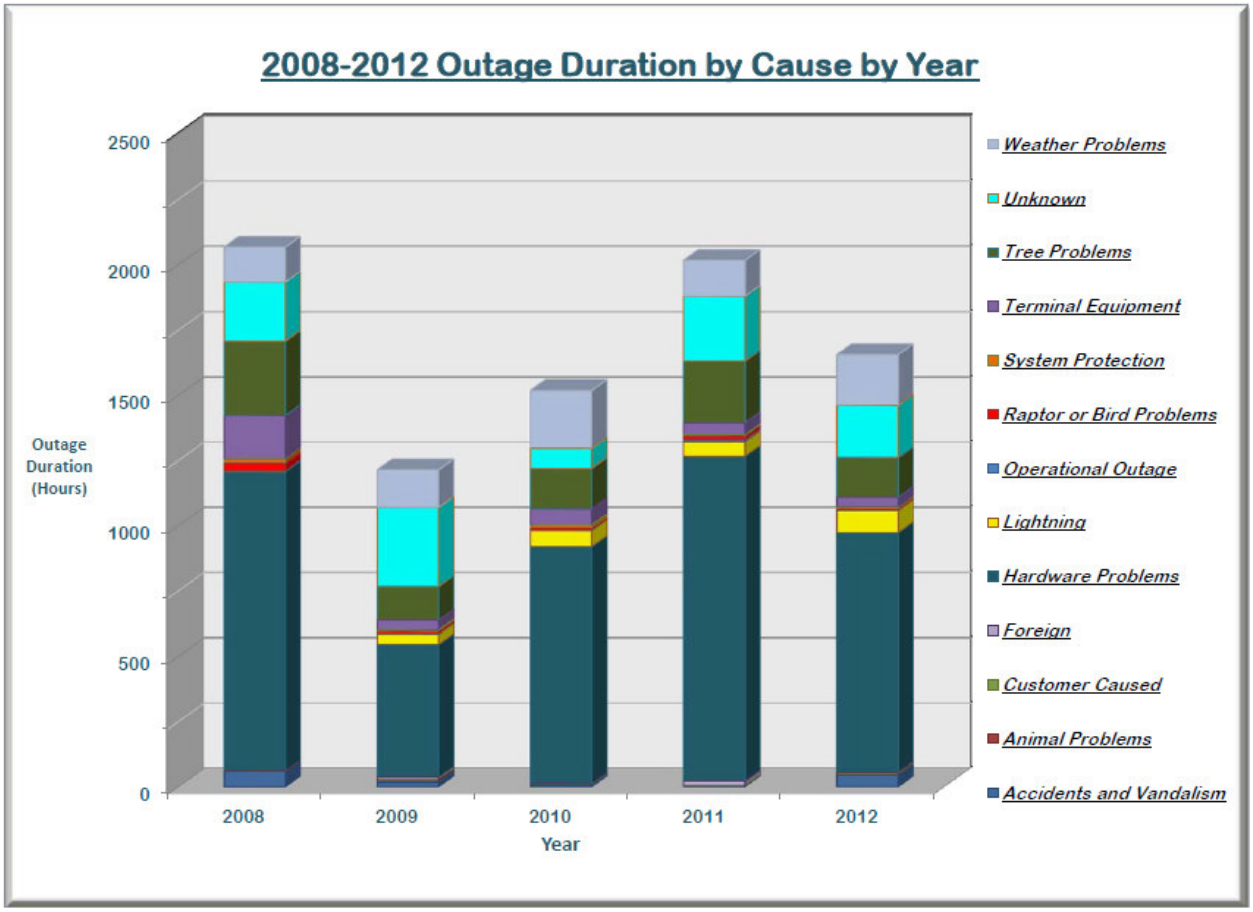


Figure A.9 Outage duration by cause by year for 2008-2012.

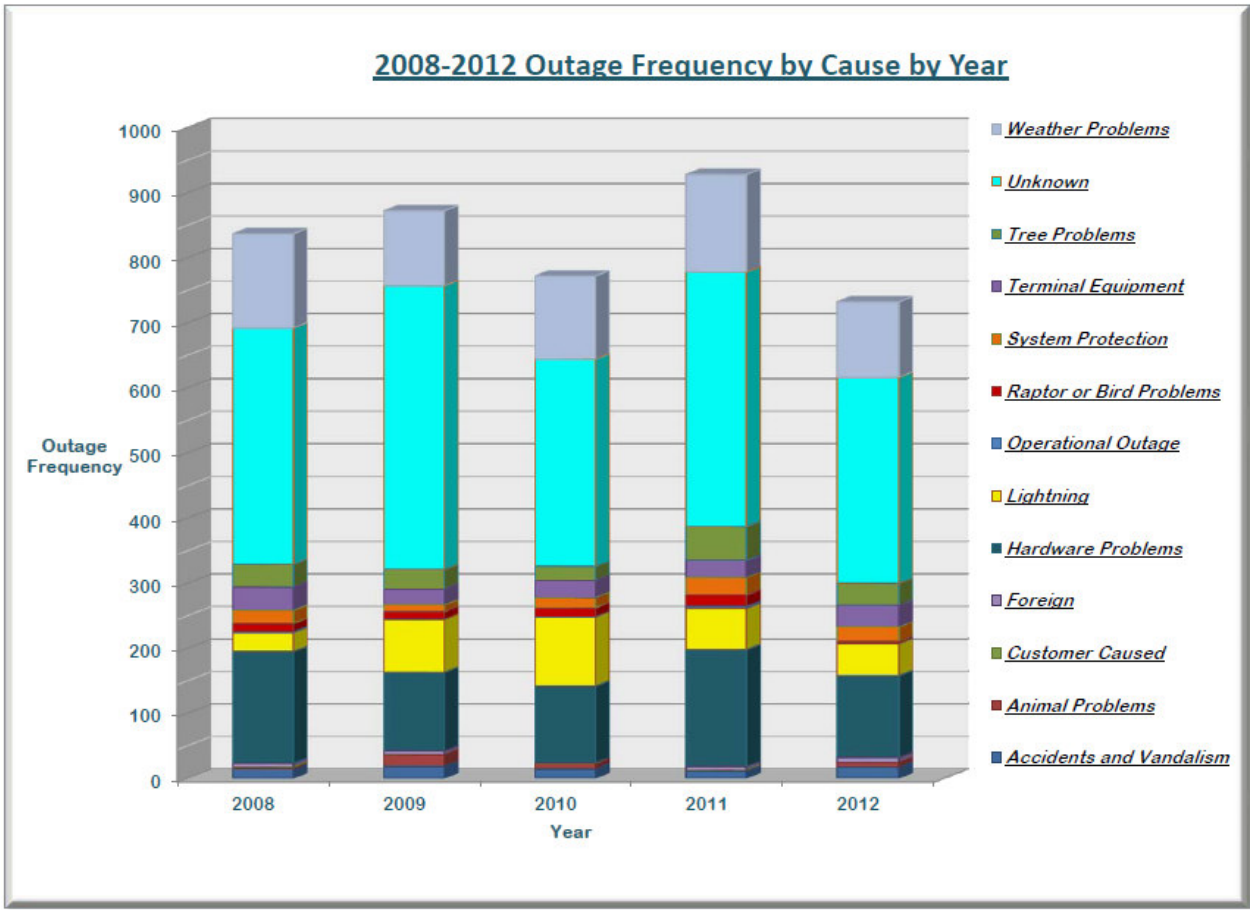


Figure A.10 Outage frequency by cause by year for 2008-2012.