NorthWestern® Energy
Delivering a Bright Future

February 27, 2015

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

RE: 2014 Annual Electric Reliability Report

Dear Ms. Whitney:

With this letter, NorthWestern Energy (NWE) submits the 2014 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. 1366-2012)* for definition of major events and the appropriate reliability indices. Similar to the previous four 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:

Nate Linder
Manager, Electric System Integrity
NorthWestern Energy
1313 North Last Chance Gulch
Helena, Montana 59601-2909
(406) 443-8930
Nate.Linder@northwestern.com

Sincerely,

NATE LINDER

Nate Linder, P.E.
Manager, Electric System Integrity

Enclosure: 2014 Annual Electric Reliability Report

NorthWestern® Energy

2014
-Montana-
Electric Distribution/Transmission
Annual Reliability Report

March 2015

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EXECUTIVE SUMMARY

This report provides information and insights into NorthWestern Energy's (NWE) 2014 Electric Distribution and Transmission System reliability indices for the Montana region, in accordance with 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 definitions, 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 1366-2012 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 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 2014, there were no Major Event Days,** but the "Including MEDs" graphs are shown for previous years' comparisons and consistency. By comparison, there were no MED's in 2009, one in 2010, none in 2011, two in 2012 and two in 2013. For the Montana region, it took 6.52 SAIDI minutes in 2014 to declare an MED. In Montana, a larger MED event could be 20 SAIDI minutes or more.

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

1. GENERAL

1.1 Reliability indices calculation

The calculation of SAIDI and CAIDI, (in minutes) and SAIFI (in outages per customer) are based on the following IEEE formulas:

$$SAIDI = \frac{sum\ of\ all\ customer\ outage\ durations(minutes)}{total\ number\ of\ customers\ served}$$

$$SAIFI = \frac{total\ number\ of\ customers\ experiencing\ outages}{total\ number\ of\ customers\ served}$$

$$CAIDI = \frac{sum\ of\ all\ customer\ outage\ duration(minutes)}{total\ number\ of\ customers\ experiencing\ outages} = \frac{SAIDI}{SAIFI}$$

In laymen's terms, SAIDI represents the average outage in minutes for each customer served. SAIFI is the average number of interruptions that a customer would typically experience in a year. CAIDI is the average outage duration any given customer would experience. CAIDI is also typically thought of as the average restoration time.

1.2 Additional Notable Events

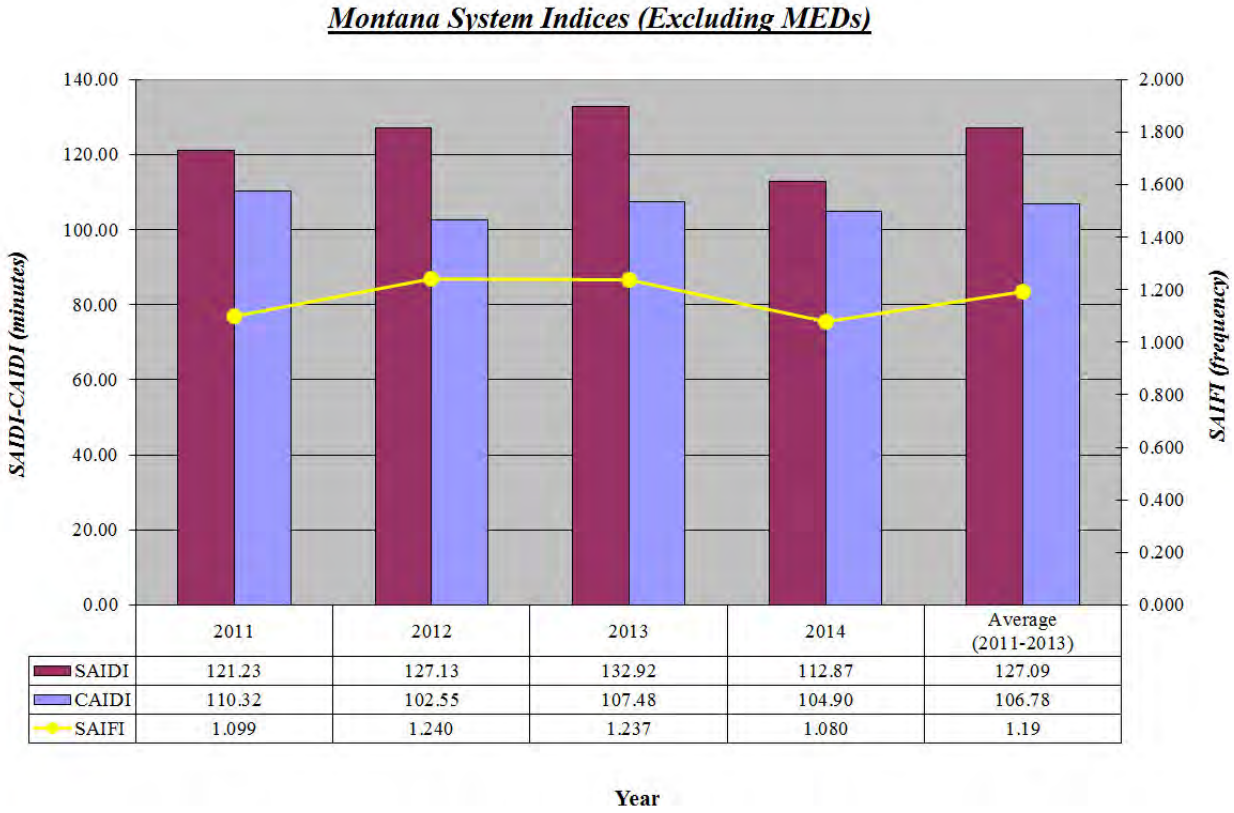
There were three days with a "Customer-Minutes Interrupted" (CMI) number greater than one million (an MED for 2014 required 2.23 million CMI). Please see table below, listed in descending CMI. These storm events, while not being MEDs, added significantly to the SAIDI minutes for 2014. For comparison, there were nine days in 2013 with over a million CMI, not including the two MEDs.

Date	CMI	Divisions impacted	Majority Causes
11/26/2014	2205689	Billings, Bozeman, Butte, Great Falls, Helena, Havre, Lewistown, Missoula	Lightning, Wind, Equipment Failure, Human Error/Accident
1/13/2014	1729426	Billings, Bozeman, Butte, Great Falls, Helena, Havre, Lewistown	Limb In Line, Tree In Line, Wind, Equipment Failure
6/17/2014	1250748	Billings, Bozeman, Butte, Great Falls, Havre	Lightning, Equipment Failure, Equipment Overload
8/20/2014	1079796	Billings, Bozeman, Butte, Great Falls, Helena, Missoula	Wind, Human Error/Accident, Equipment Failure

Table 1: Additional Notable Events (2014)

Further details on these events are provided in the operating area discussions below.

2. MONTANA SYSTEM RELIABILITY



	2011	2012	2013	2014	Average (2011-2013)
SAIDI	121.23	127.13	132.92	112.87	127.09
CAIDI	110.32	102.55	107.48	104.90	106.78
SAIFI	1.099	1.240	1.237	1.080	1.19

Figure 2.1 Montana system indices excluding major event days (MEDs) as defined in IEEE Standard 1366-2012.

The figure above displays NorthWestern Energy's Montana region indices for the years 2011-2014. Region indices shown for 2011 to 2014 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**, 2014 SAIDI, CAIDI and SAIFI were all lower than 2013. Also, all three indices in 2014 were lower than the previous three-year averages.

Contributing factors to the improved 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 in previous years.

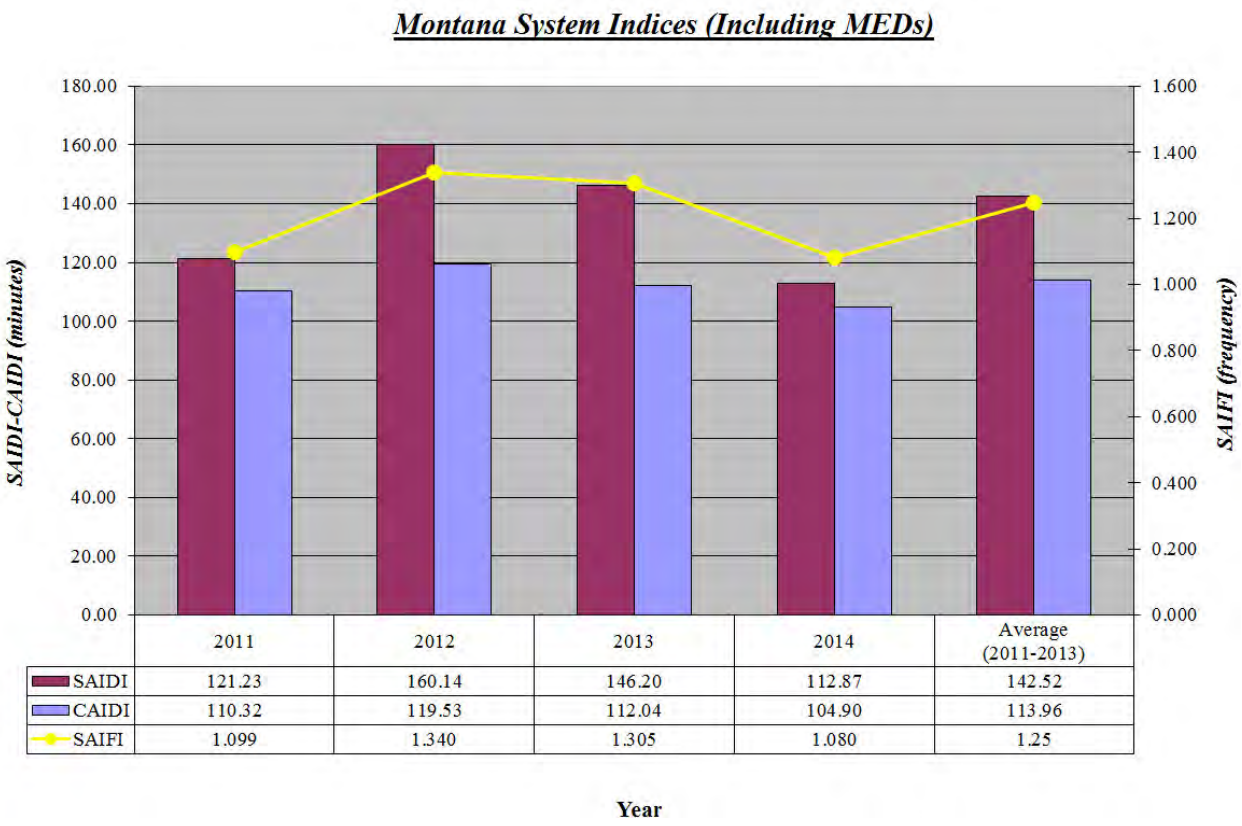
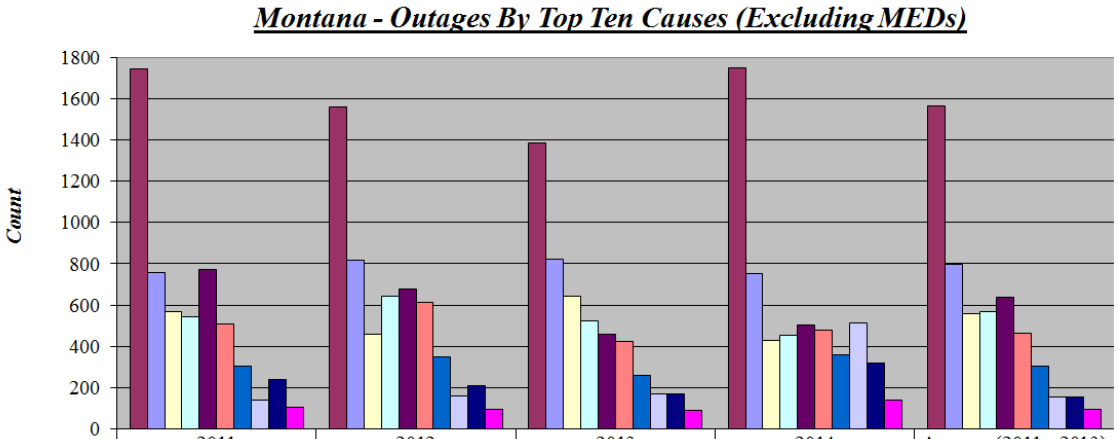


Figure 2.2 Montana system indices including major event days (MEDs) as defined in IEEE Standard 1366-2012.

As there were no MEDs in 2014, the graph values for 2014 are identical in both graphs. You can see how the year relates to previous years containing MEDs.

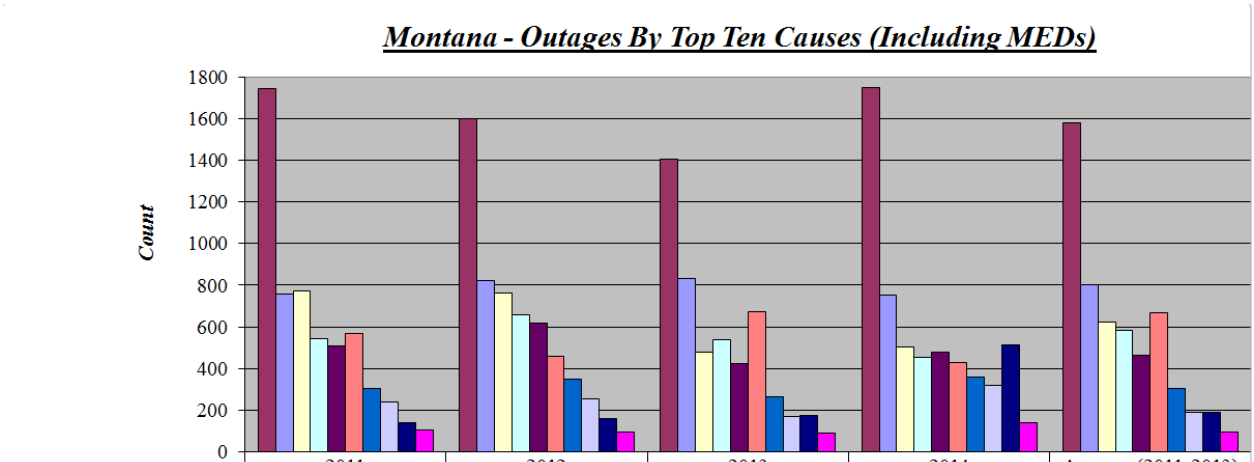
Outages by cause (excluding MEDs) are shown in **Figure 2.3**.



	2011	2012	2013	2014	Average (2011 - 2013)
Equipment Failure	1744	1559	1385	1749	1563
Unknown	756	816	823	753	798
Lightning	570	456	642	428	556
Tree In Line	545	641	525	451	570
Wind	771	679	457	502	636
Squirrel	507	615	422	479	462
Other Bird	302	348	261	360	304
Scheduled Maintenance	138	159	171	511	156
Snow/Ice	241	209	168	320	154
Public - Vehicle Hit	104	93	88	139	95
MT REGION TOTAL	6771	6643	5843	6724	6317

Figure 2.3 Montana system outages by top ten causes excluding major event days (MEDs) as defined in IEEE Standard 1366-2012.

The outage causes represented in this table are the top ten major contributors for customer outages on the NorthWestern Energy Electric Distribution and Transmission system. Overall outages reported increased 15% to 6,724. The top ten outage counts increased from 4,990 in 2013 to 5,692 in 2014. Nature related outages such as wind, lightning and snow/ice went down by 17 outages. Overall Equipment Failure outages increased 364. 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. Scheduled Maintenance outages also went up 340 outages. In the past, small planned outages, where the crew notified the customers of the pending outage were not well documented but they are now. It is anticipated that this will increase outage counts for scheduled maintenance noticeably, but have a minimal impact on SAIDI (1-2 minutes additional for the year).



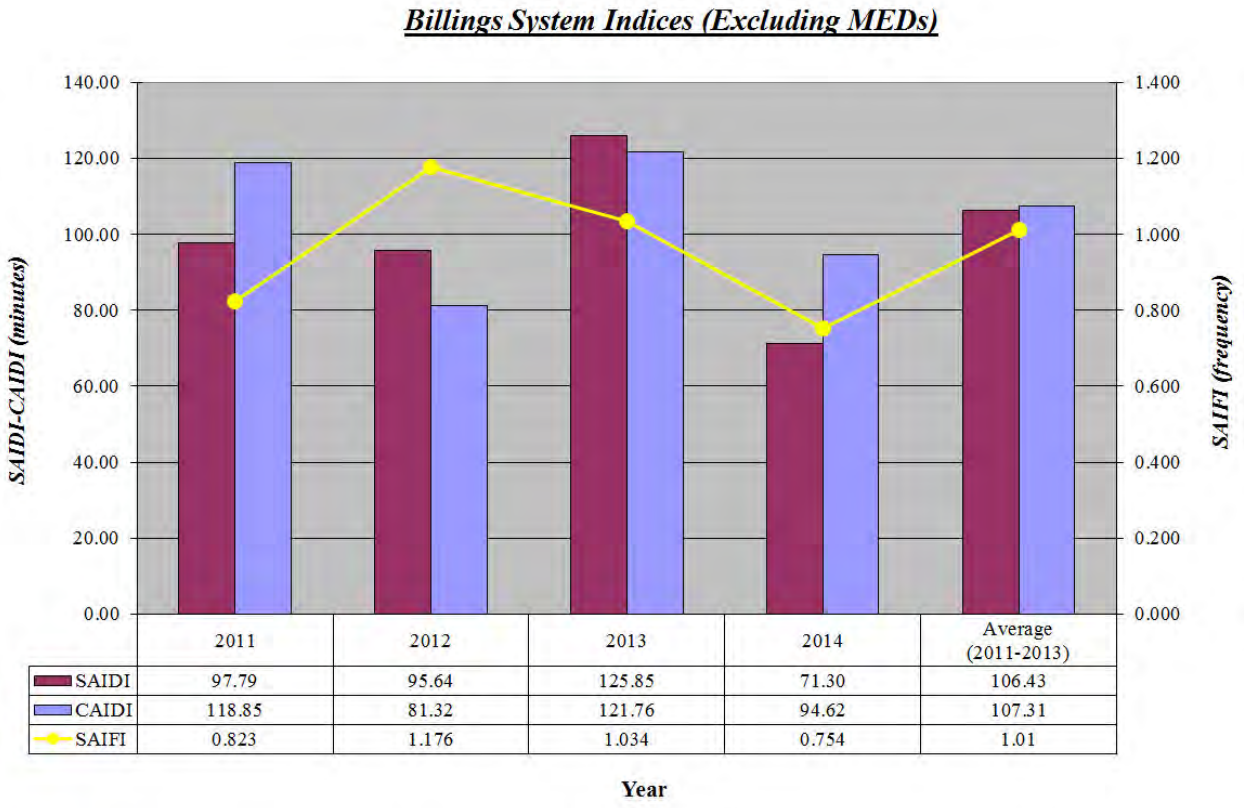
	2011	2012	2013	2014	Average (2011-2013)
Equipment Failure	1744	1597	1402	1749	1581
Unknown	756	821	833	753	803
Wind	771	760	476	502	621
Tree In Line	545	660	540	451	582
Squirrel	507	616	425	479	463
Lightning	570	456	670	428	667
Other Bird	302	348	263	360	304
Snow/Ice	241	255	168	320	187
Scheduled Maintenance	138	159	173	511	189
Public - Vehicle Hit	104	93	90	139	96
MT REGION TOTAL	6771	6844	5966	6724	6529

Figure 2.4 Montana system outages by top ten causes including major event days (MEDs) as defined in IEEE Standard 1366-2012.

The graph and table above show outage causes with MEDs. As stated above, there were no MEDs in Montana for 2014. One change of note is the Tree In Line category with a decrease of 89 outages. That may possibly be attributed to the proactive vegetation management program instituted by NorthWestern Energy, as well as a less severe wind year.

3. BILLINGS SYSTEM RELIABILITY

Billings saw considerable improvement in all three indices for 2014 as compared to 2013 and the three-year average. Storm problems were down appreciably from 2013 and although equipment outage counts were up, the SAIDI impact was lower. Larger outages for the year were a bad lightning arrestor that took out a feeder and two "vehicle hit pole" incidents. Squirrels still cause a large number of outages, but tree problem outages are down considerably, most likely due to fewer storms and increased trimming efforts.



	2011	2012	2013	2014	Average (2011-2013)
SAIDI	97.79	95.64	125.85	71.30	106.43
CAIDI	118.85	81.32	121.76	94.62	107.31
SAIFI	0.823	1.176	1.034	0.754	1.01

Figure 3.1 Billings system indices excluding major event days (MEDs) as defined in IEEE Standard 1366-2012.

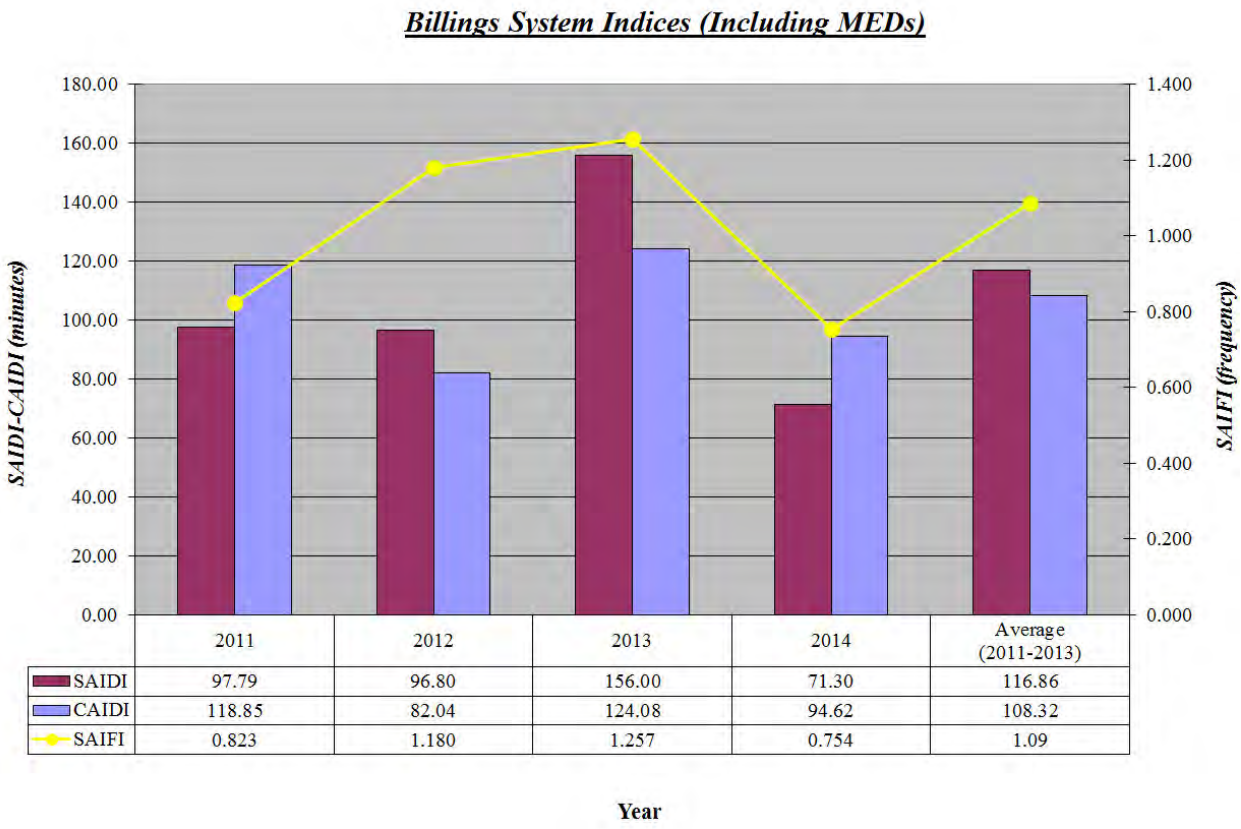
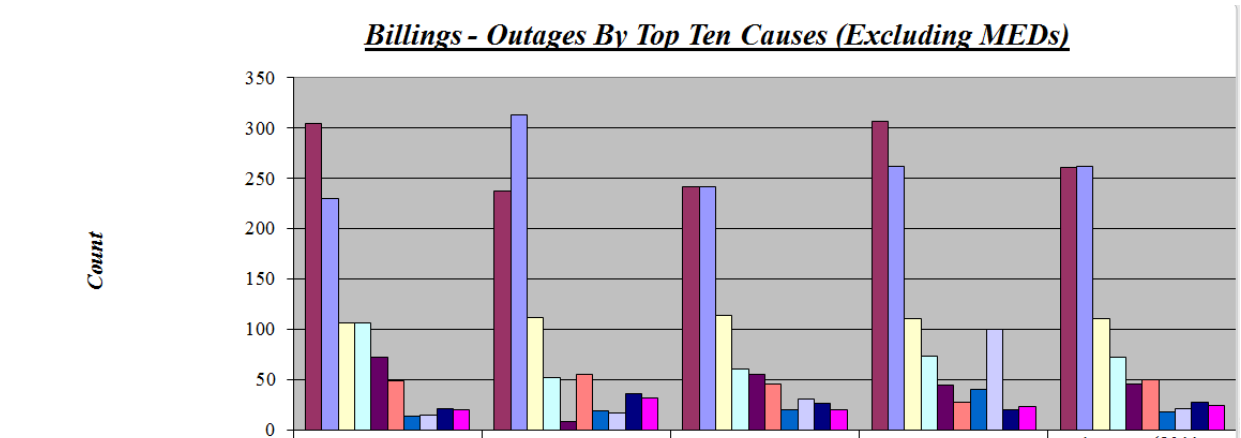
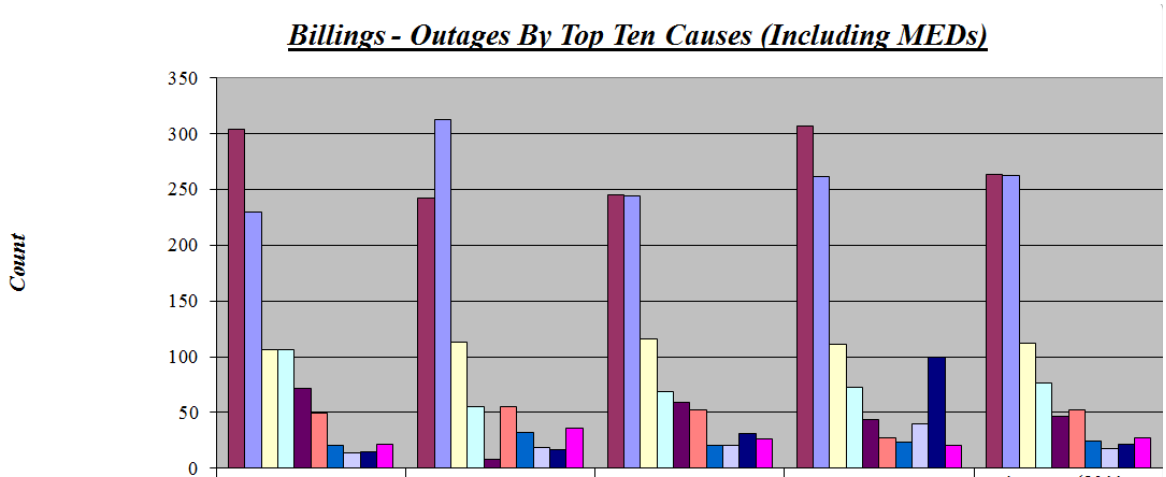


Figure 3.2 Billings system indices including major event days (MEDs) as defined in IEEE Standard 1366-2012.



	2011	2012	2013	2014	Average (2011-2013)
System-Equipment Failure	304	237	242	307	261
Animal-Squirrel	230	313	242	262	262
Unknown	106	112	114	111	111
Nature-Wind	106	52	60	73	73
Nature-Lightning	72	8	55	44	45
Nature-Tree In Line	49	55	46	27	50
Public - Vehicle Hit	14	19	20	40	18
System-Scheduled Maintenance	15	17	31	100	21
Animal-Other Bird	21	36	26	20	28
Animal - Raccoon	20	32	20	23	24
DIVISION TOTAL	1,100	1,027	1,024	1,166	1,042

Figure 3.3 Billings system outages by top ten causes excluding major event days (MEDs) as defined in IEEE Standard 1366-2012.

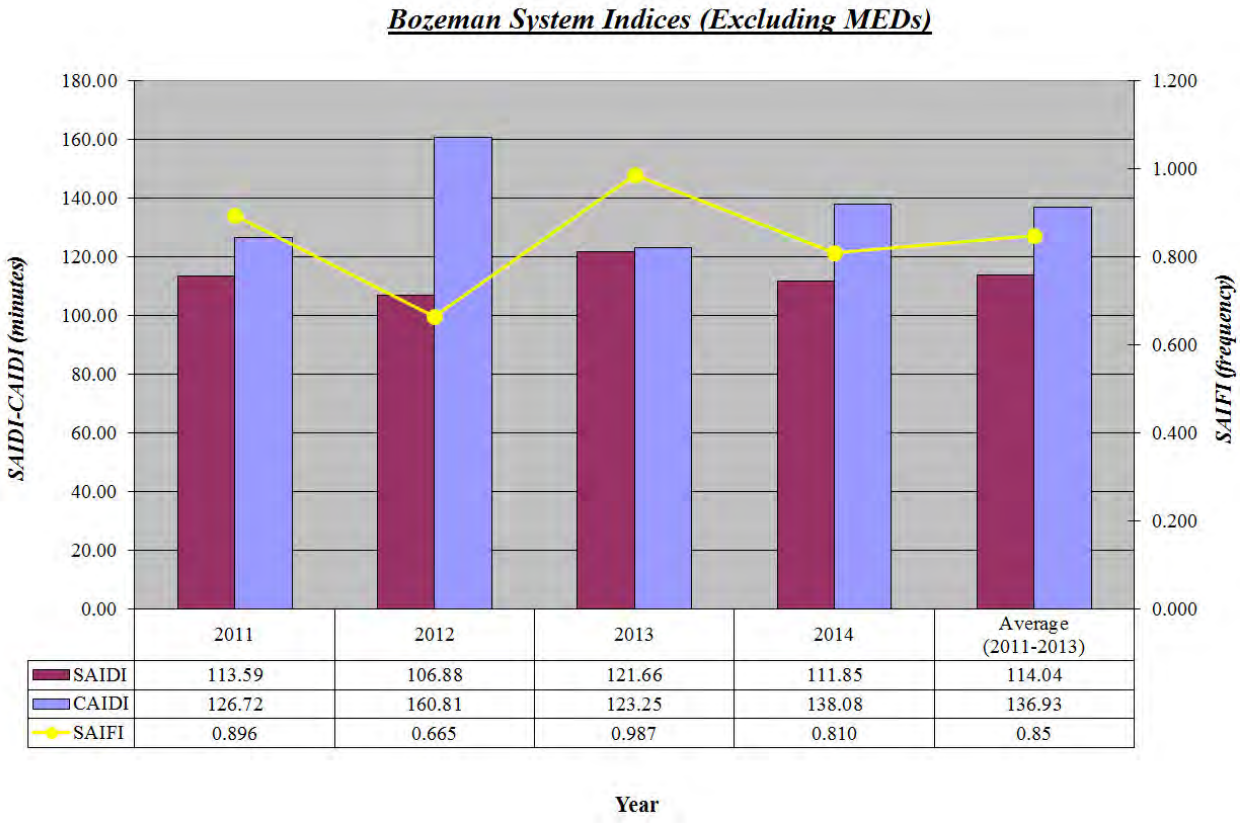


	2011	2012	2013	2014	Average (2011 - 2013)
System-Equipment Failure	304	242	245	307	264
Animal-Squirrel	230	313	244	262	262
Unknown	106	113	116	111	112
Nature-Wind	106	55	69	73	77
Nature-Lightning	72	8	59	44	46
Nature-Tree In Line	49	55	52	27	52
Animal - Raccoon	20	32	20	23	24
Public - Vehicle Hit	14	19	20	40	18
System-Scheduled Maintenance	15	17	31	100	21
Animal-Other Bird	21	36	26	20	28
DIVISION TOTAL	1,100	1,042	1,068	1,166	1,070

Figure 3.4 Billings system outages by top ten causes including major event days (MEDs) as defined in IEEE Standard 1366-2012.

4. BOZEMAN SYSTEM RELIABILITY

Bozeman division indices for 2014 saw an increase in CAIDI from 2013 but decreases in SAIDI and SAIFI. Larger events in the area were a planned outage on Big Sky Meadow Substation to repair equipment and an outage at Ennis Auto Sub. Equipment failure outage counts were up, but both tree and wind related outage counts were down appreciably.



	2011	2012	2013	2014	Average (2011-2013)
SAIDI	113.59	106.88	121.66	111.85	114.04
CAIDI	126.72	160.81	123.25	138.08	136.93
SAIFI	0.896	0.665	0.987	0.810	0.85

Figure 4.1 Bozeman system indices excluding major event days (MEDs) as defined in IEEE Standard 1366-2012.

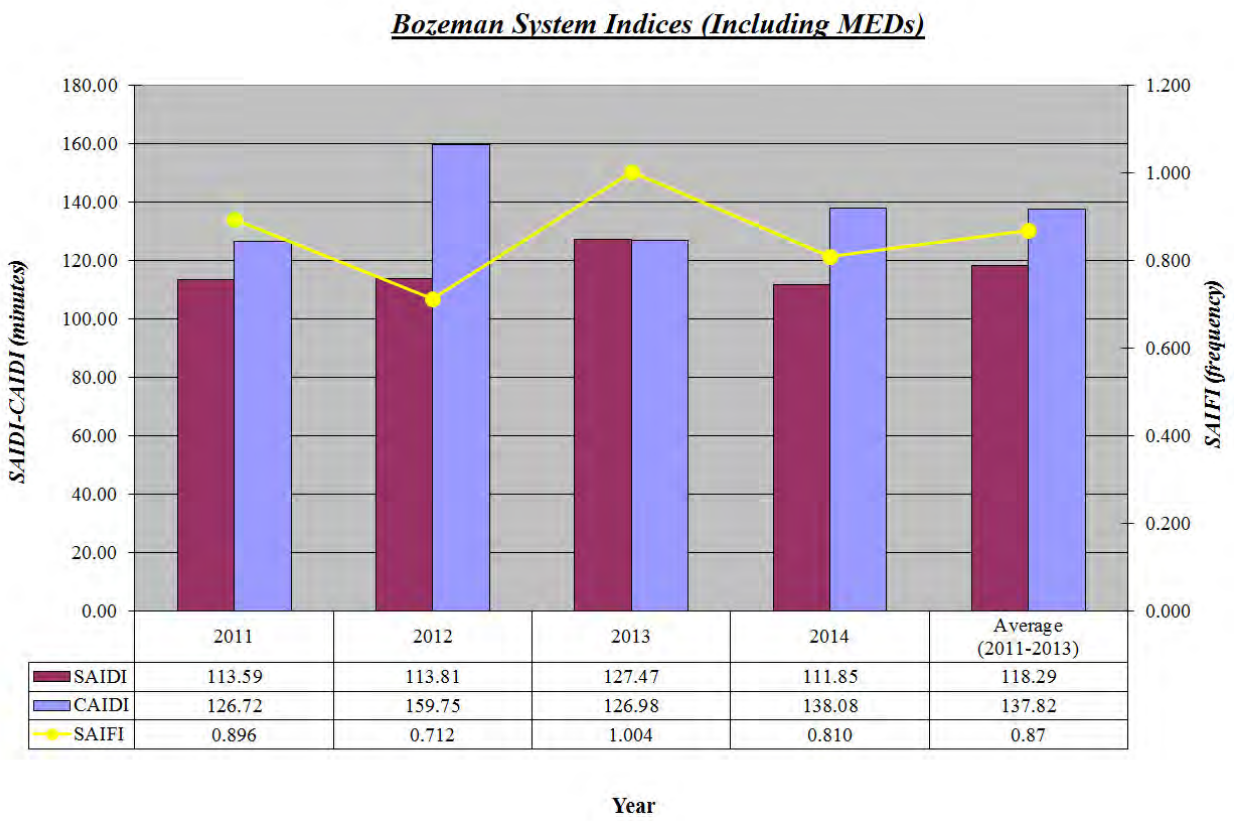
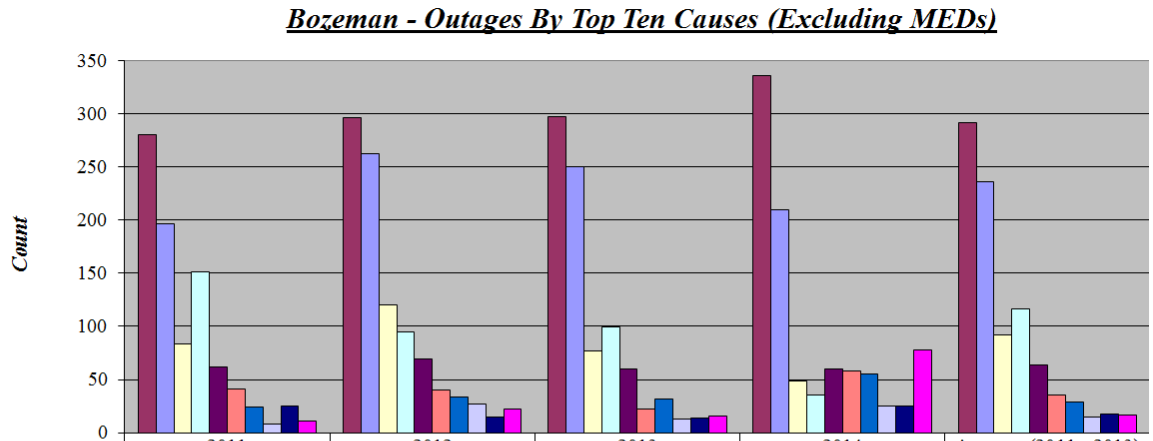
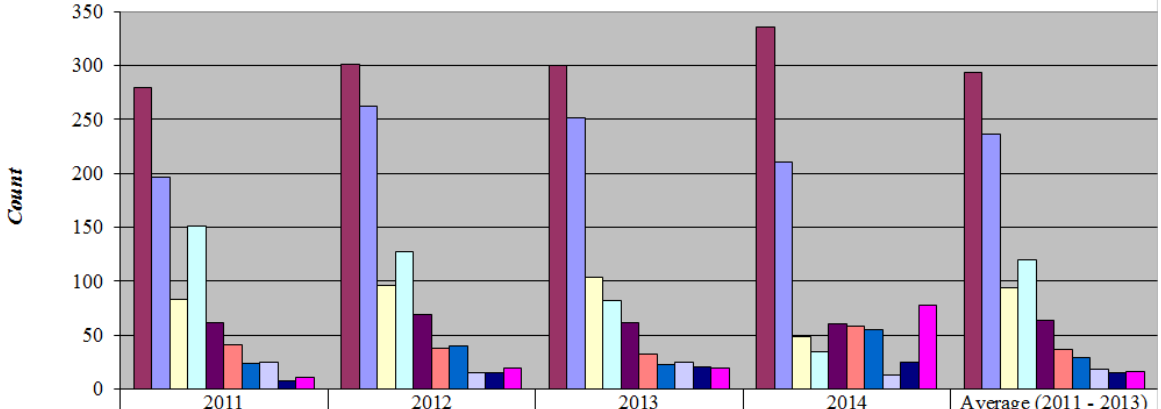


Figure 4.2 Bozeman system indices including major event days (MEDs) as defined in IEEE Standard 1366-2012.



	2011	2012	2013	2014	Average (2011 - 2013)
Equipment Failure	280	296	297	336	291
Unknown	196	262	250	210	236
Tree In Line	83	120	77	49	92
Wind	151	95	99	35	116
Lightning	62	69	60	60	64
Snow/Ice	41	40	22	58	36
Other Bird	24	34	32	55	29
Construction	8	27	13	25	15
Equipment Overload	25	15	14	25	18
Maintenance	11	22	16	78	16
DIVISION TOTAL	1,064	1,150	1,046	1,094	1,087

Figure 4.3 Bozeman system outages by top ten causes excluding major event days (MEDs) as defined in IEEE Standard 1366-2012.

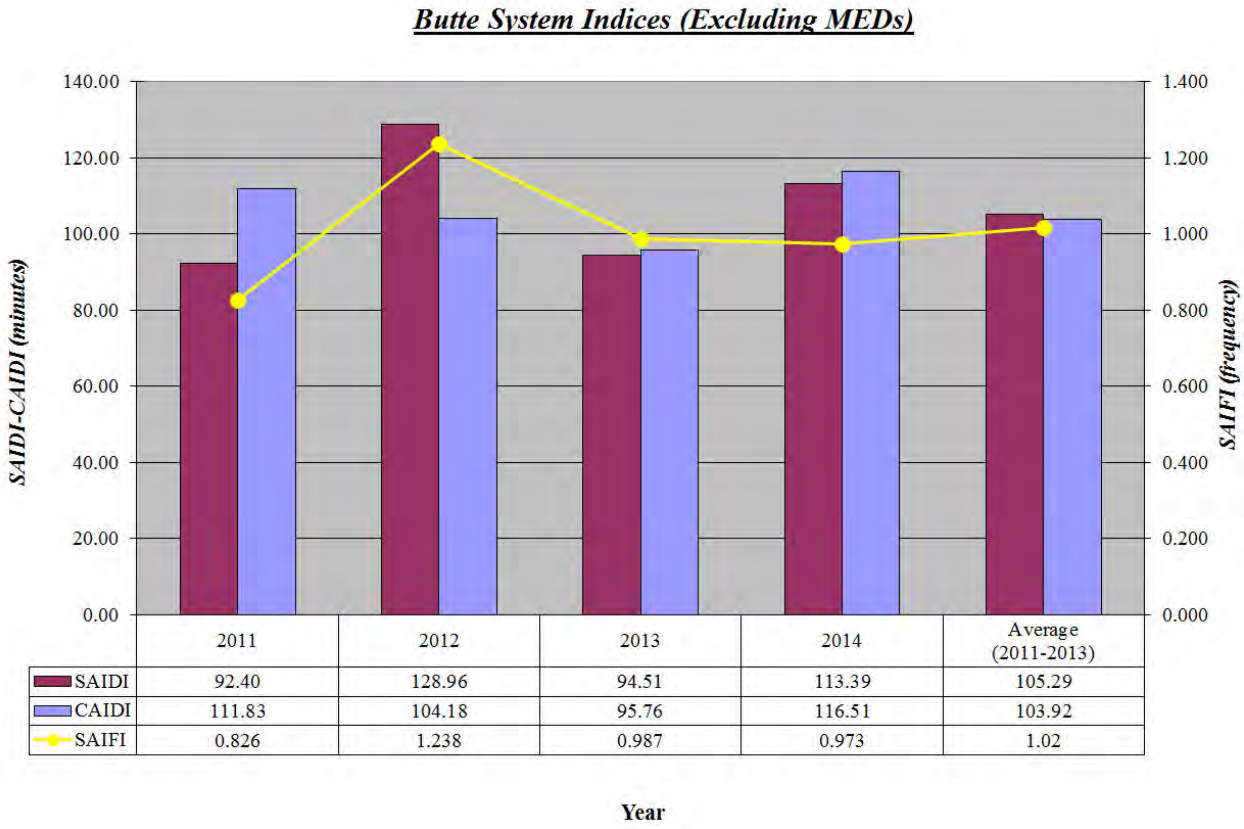


	2011	2012	2013	2014	Average (2011 - 2013)
Equipment Failure	280	301	300	336	294
Unknown	196	262	251	210	236
Tree In Line	83	96	104	49	94
Wind	151	127	82	35	120
Lightning	62	69	61	60	64
Snow/Ice	41	38	32	58	37
Other Bird	24	40	23	55	29
Equipment Overload	25	15	25	13	18
Construction	8	15	21	25	15
Maintenance	11	19	19	78	16
DIVISION TOTAL	1,064	1,168	1,064	1,094	1,099

Figure 4.4 Bozeman system outages by top ten causes including major event days (MEDs) as defined in IEEE Standard 1366-2012.

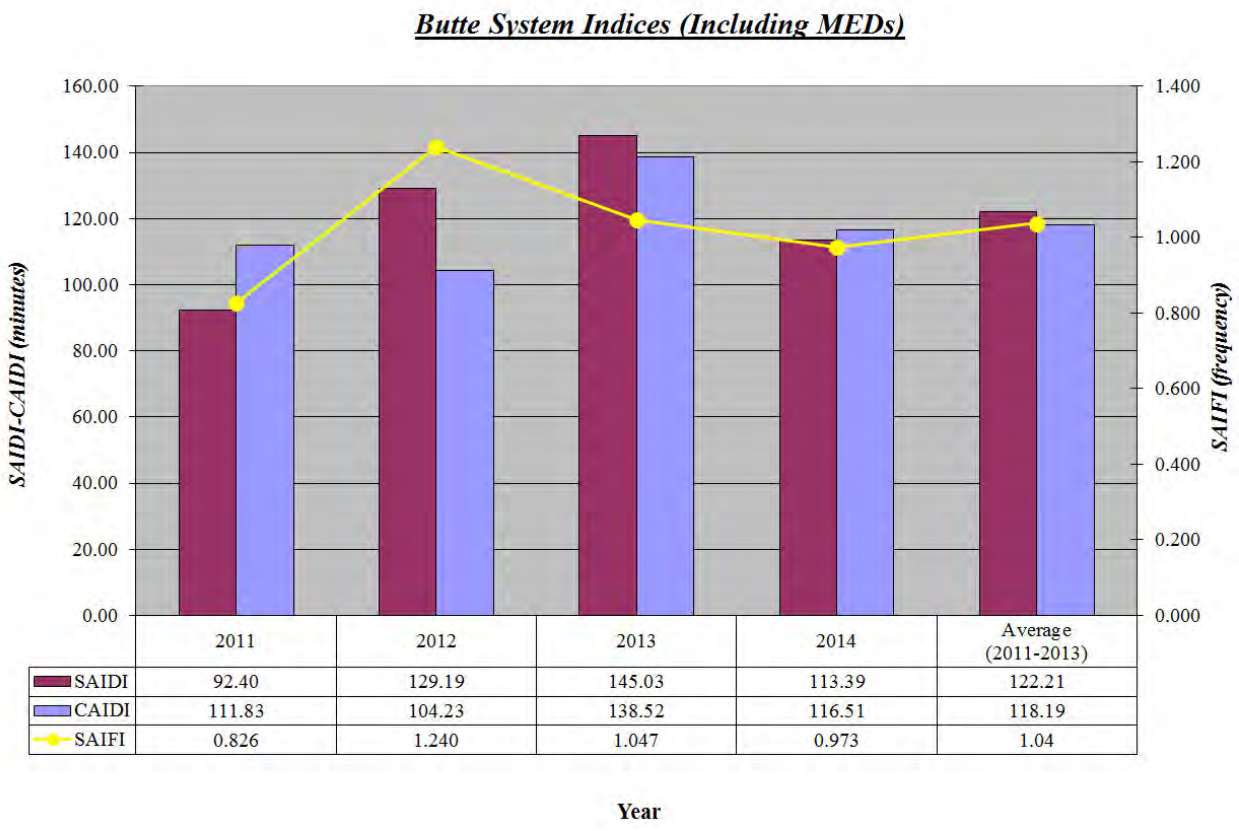
5. BUTTE SYSTEM RELIABILITY

For 2014, SAIDI and CAIDI increased and SAIFI held about the same for the Butte Division, excluding Major Event Days. An insulator failure on a Philipsburg feeder and the loss of a Butte Montana Street feeder, both during storms, were the two largest single events for the division. Equipment outages were up considerably for Butte as well as bird related outages to a lesser degree. But tree outages were down, likely from less wind for the year.



	2011	2012	2013	2014	Average (2011-2013)
SAIDI	92.40	128.96	94.51	113.39	105.29
CAIDI	111.83	104.18	95.76	116.51	103.92
SAIFI	0.826	1.238	0.987	0.973	1.02

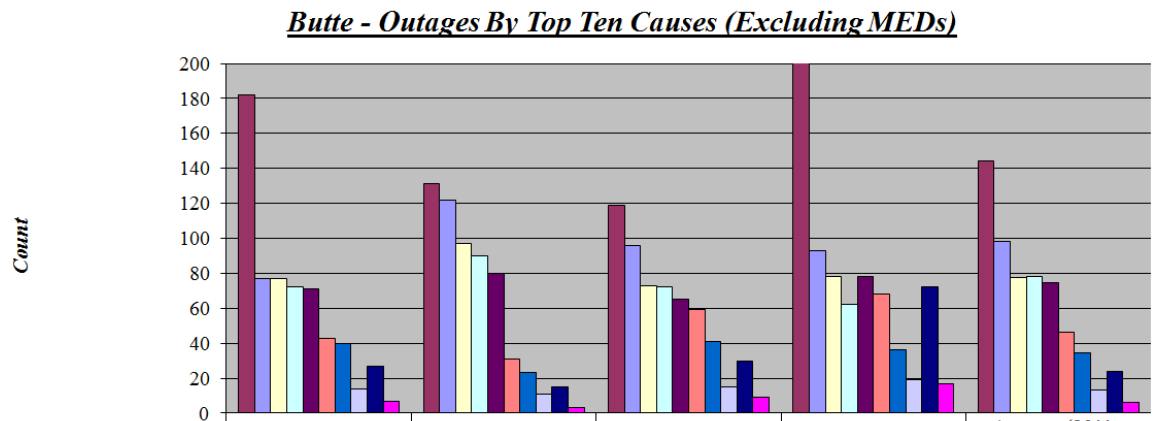
Figure 5.1 Butte system indices excluding major event days (MEDs) as defined in IEEE Standard 1366-2012.



	2011	2012	2013	2014	Average (2011-2013)
SAIDI	92.40	129.19	145.03	113.39	122.21
CAIDI	111.83	104.23	138.52	116.51	118.19
SAIFI	0.826	1.240	1.047	0.973	1.04

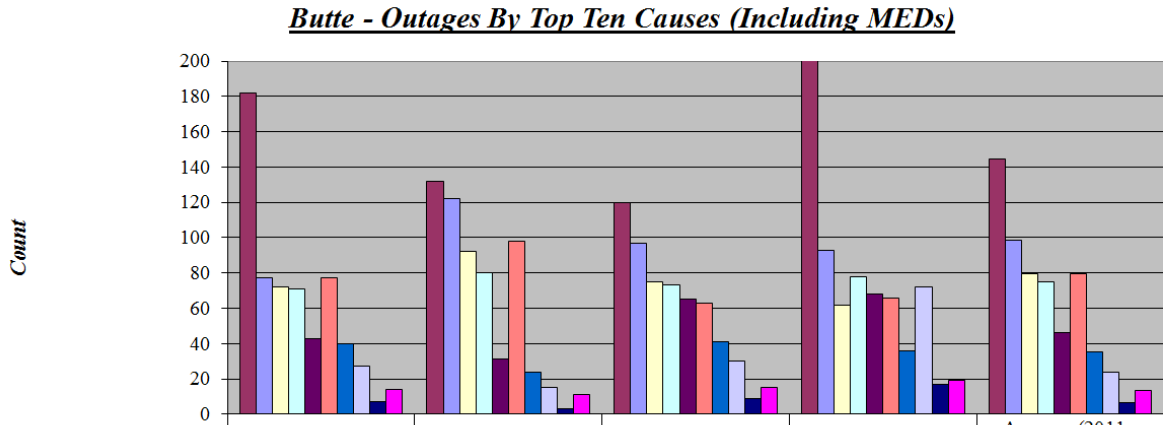
Figure 5.2 Butte system indices including major event days (MEDs) as defined in IEEE Standard 1366-2012.

Butte Division was heavily impacted by the August 1st, 2013 Major Event Day, so the 2014 numbers (without any MED) dropped noticeably.



	2011	2012	2013	2014	Average (2011 - 2013)
Equipment Failure	182	131	119	208	144
Unknown	77	122	96	93	98
Wind	77	97	73	78	78
Tree In Line	72	90	72	62	78
Other Bird	71	80	65	78	75
Lightning	43	31	59	68	46
Snow/Ice	40	23	41	36	35
Raccoon	14	11	15	19	13
Scheduled Maintenance	27	15	30	72	24
System - Scheduled Construction	7	3	9	17	6
DIVISION TOTAL	725	692	691	837	703

Figure 5.3 Butte system outages by top ten causes excluding major event days (MEDs) as defined in IEEE Standard 1366-2012.

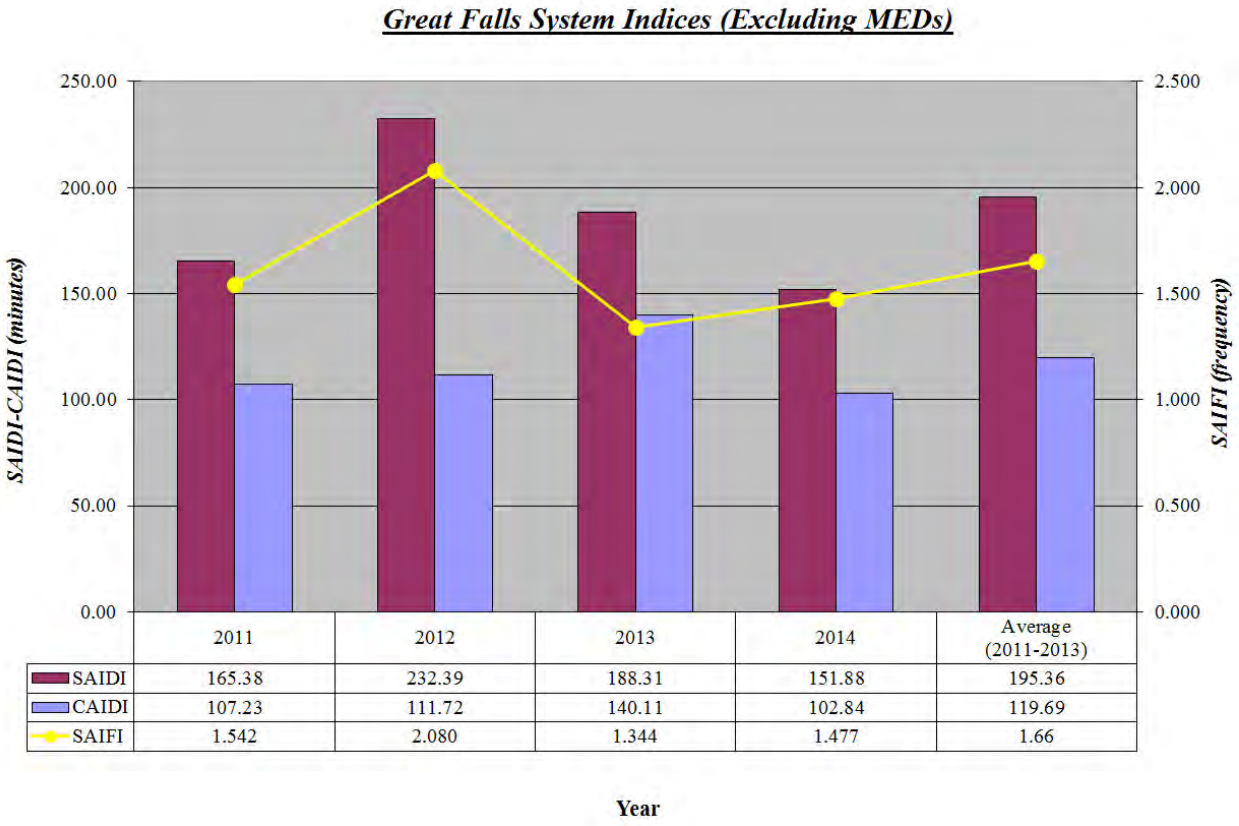


	2011	2012	2013	2014	Average (2011 - 2013)
Equipment Failure	182	132	120	208	145
Unknown	77	122	97	93	99
Tree In Line	72	92	75	62	80
Other Bird	71	80	73	78	75
Lightning	43	31	65	68	46
Wind	77	98	63	66	79
Snow/Ice	40	24	41	36	35
Scheduled Maintenance	27	15	30	72	24
System - Scheduled Construction	7	3	9	17	6
Raccoon	14	11	15	19	13
DIVISION TOTAL	725	698	703	836	709

Figure 5.4 Butte system outages by top ten causes including major event days (MEDs) as defined in IEEE Standard 1366-2012.

6. GREAT FALLS SYSTEM RELIABILTY

Great Falls Division saw a decrease in SAIDI and CAIDI and an increase in SAIFI for 2014. Snow/Ice, and Scheduled outages were up, but Lightning related outages were much lower. The larger outages for the division were a substation differential at GF Eastside sub, the loss of the Conrad and Choteau subs due to transmission problems, loss of a City feeder from a loose connection, and several planned outages to facilitate substation upgrades.



	2011	2012	2013	2014	Average (2011-2013)
SAIDI	165.38	232.39	188.31	151.88	195.36
CAIDI	107.23	111.72	140.11	102.84	119.69
SAIFI	1.542	2.080	1.344	1.477	1.66

Figure 6.1 Great Falls system indices excluding major event days (MEDs) as defined in IEEE Standard 1366-2012.

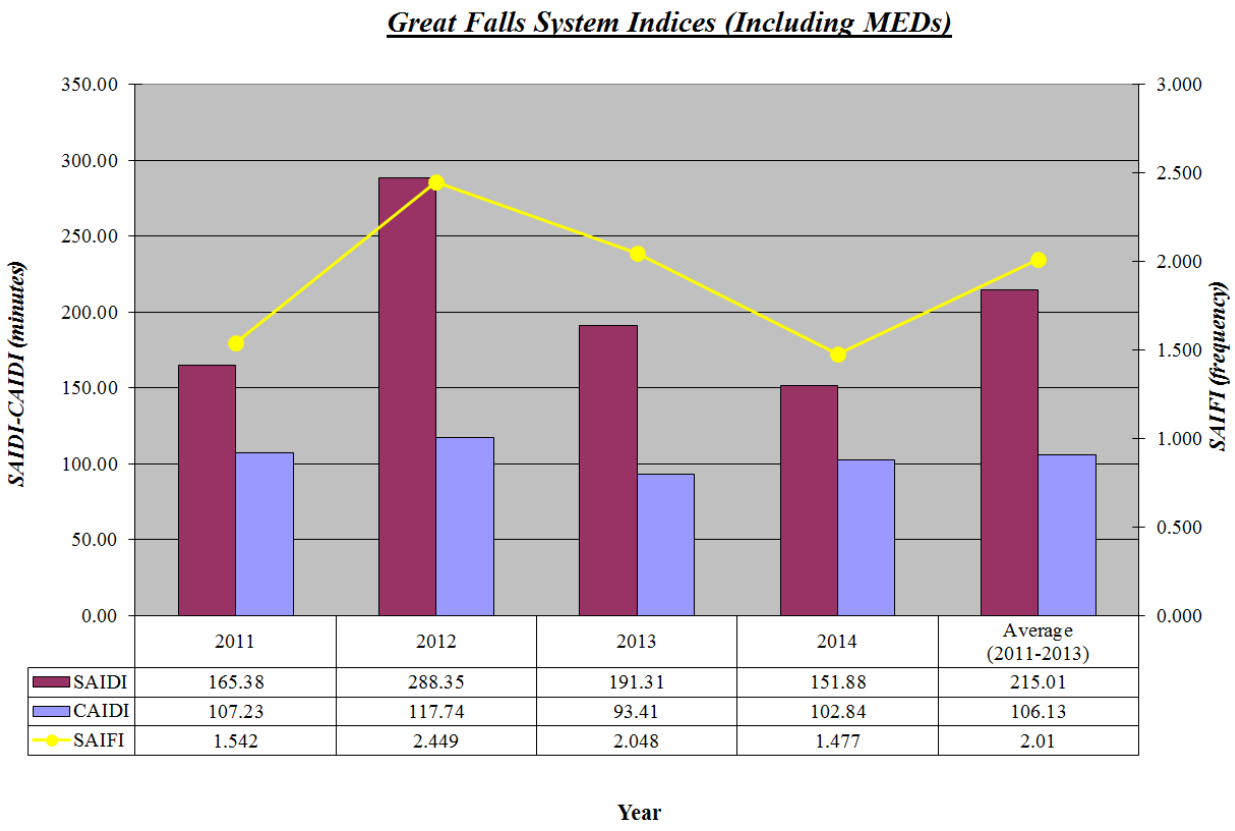
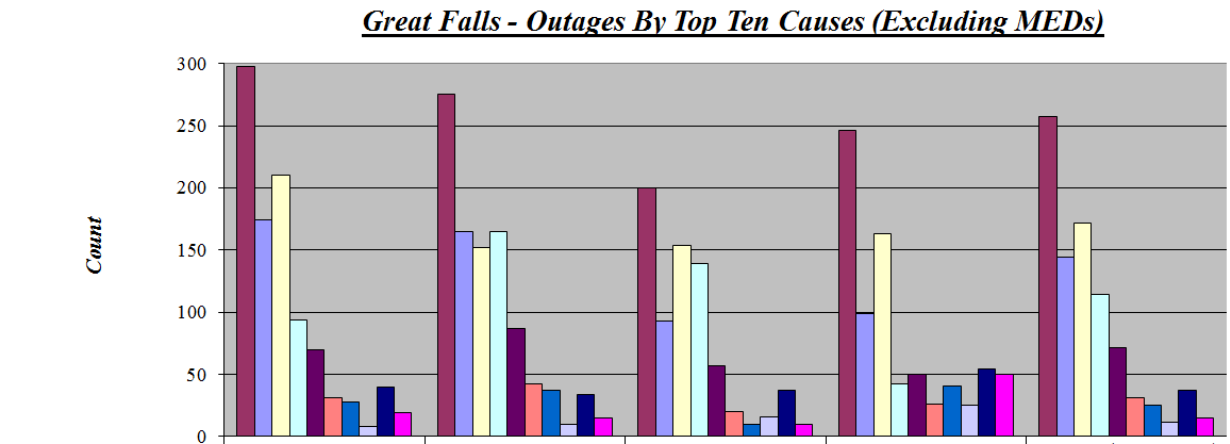
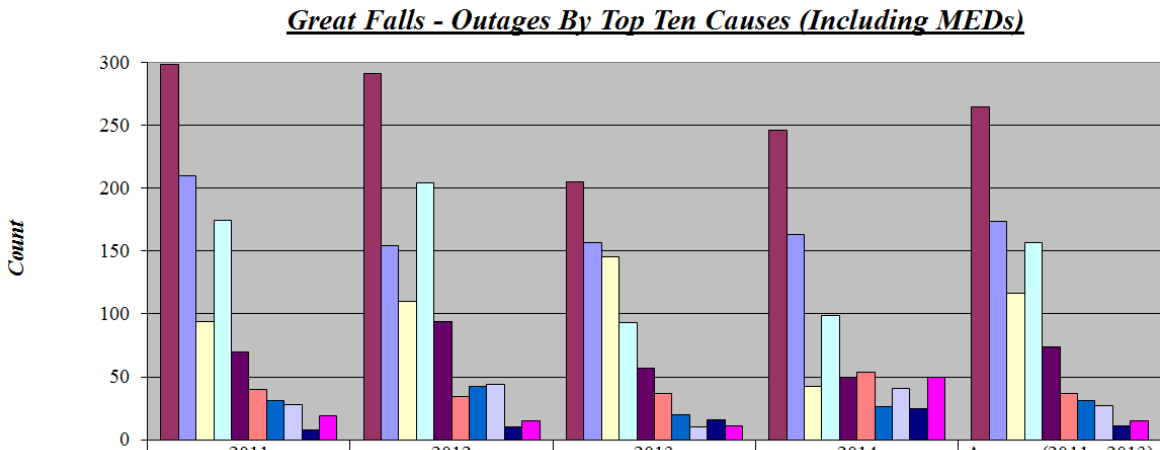


Figure 6.2 Great Falls system indices including major event days (MEDs) as defined in IEEE Standard 1366-2012.



	2011	2012	2013	2014	Average (2011 - 2013)
Equipment Failure	298	275	200	246	258
Wind	174	165	93	99	144
Unknown	210	152	154	163	172
Lightning	94	165	139	42	114
Tree In Line	70	87	57	50	71
Squirrel	31	42	20	26	31
Snow/Ice	28	37	10	41	25
Scheduled Construction	8	10	16	25	11
Other Bird	40	34	37	54	37
Scheduled Maintenance	19	15	10	50	15
DIVISION TOTAL	1,109	1,085	853	920	1,016

Figure 6.3 Great Falls system outages by top ten causes excluding major event days (MEDs) as defined in IEEE Standard 1366-2012.

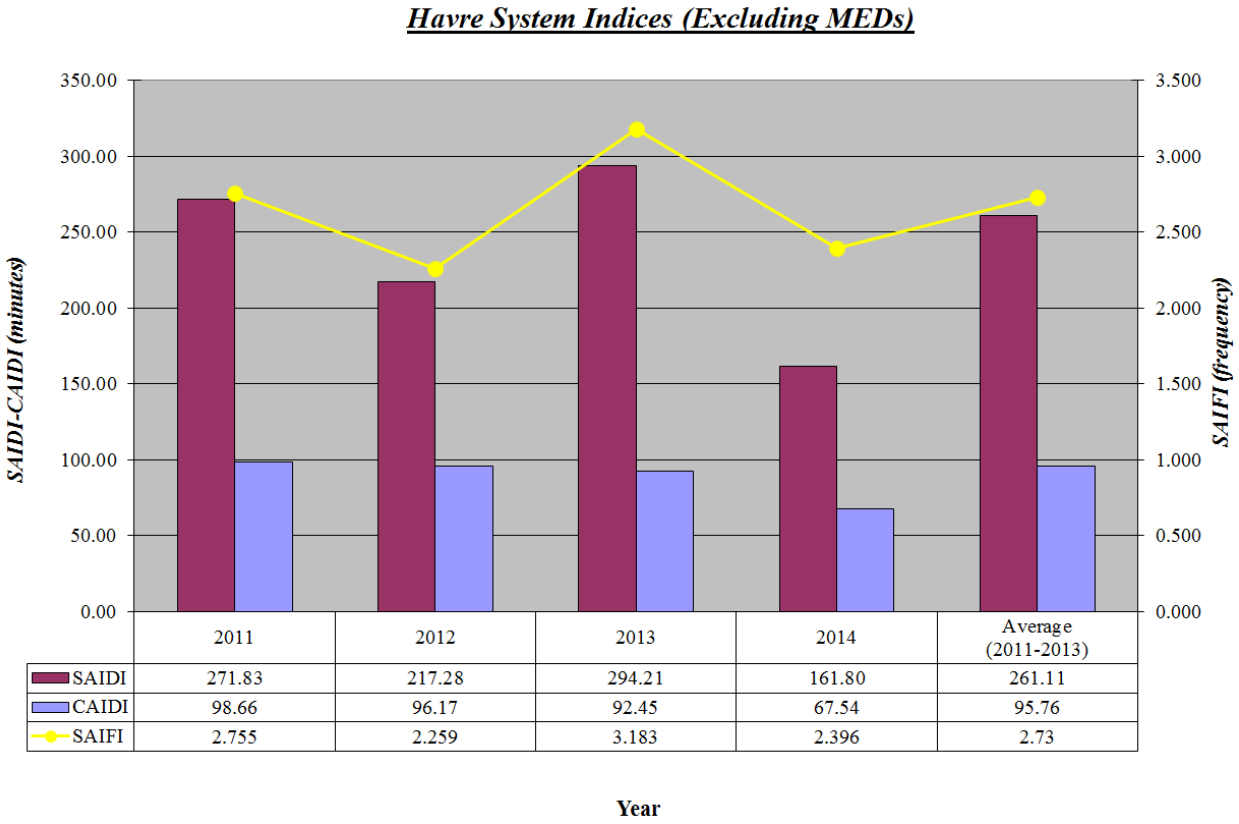


	2011	2012	2013	2014	Average (2011 - 2013)
Equipment Failure	298	291	205	246	265
Unknown	210	154	157	163	174
Lightning	94	110	145	42	116
Wind	174	204	93	99	157
Tree In Line	70	94	57	50	74
Other Bird	40	34	37	54	37
Squirrel	31	42	20	26	31
Snow/Ice	28	44	10	41	27
Scheduled Construction	8	10	16	25	11
Scheduled Maintenance	19	15	11	50	15
DIVISION TOTAL	1,109	1,156	870	920	1,045

Figure 6.4 Great Falls system outages by top ten causes including major event days (MEDs) as defined in IEEE Standard 1366-2012.

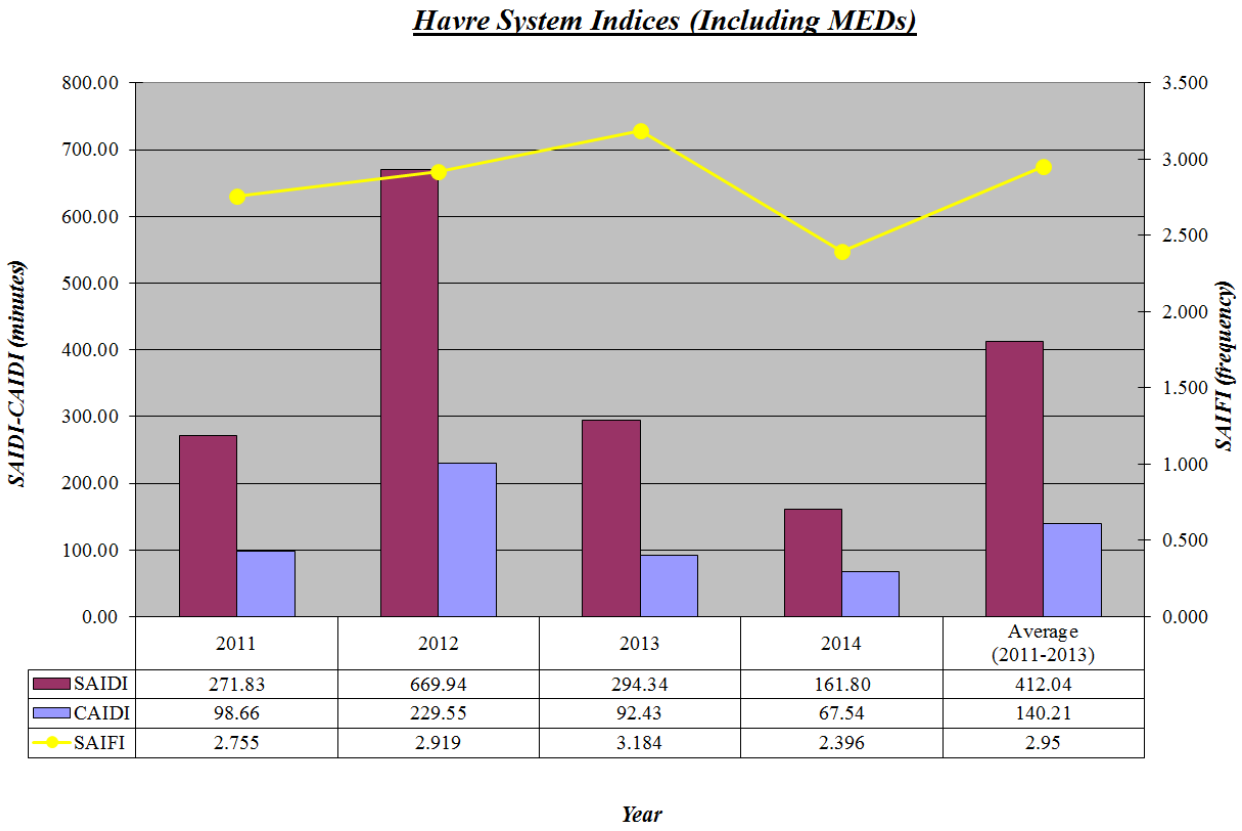
7. HAVRE SYSTEM RELIABILITY

Havre saw a 132 minute improvement in SAIDI and almost a 25 minute reduction in CAIDI for 2014 as compared to 2013, which had one large substation event that amounted to 109 SAIDI minutes. Both these indices are lower than for the previous three years though. Larger outages were a Chinook City Substation regulator failure and a subsequent planned outage a couple days later to replace the damaged equipment and a transmission insulator failure that took out two Havre City subs. Lightning and unknown outages were notably down, scheduled maintenance and vehicle hits were notably higher.



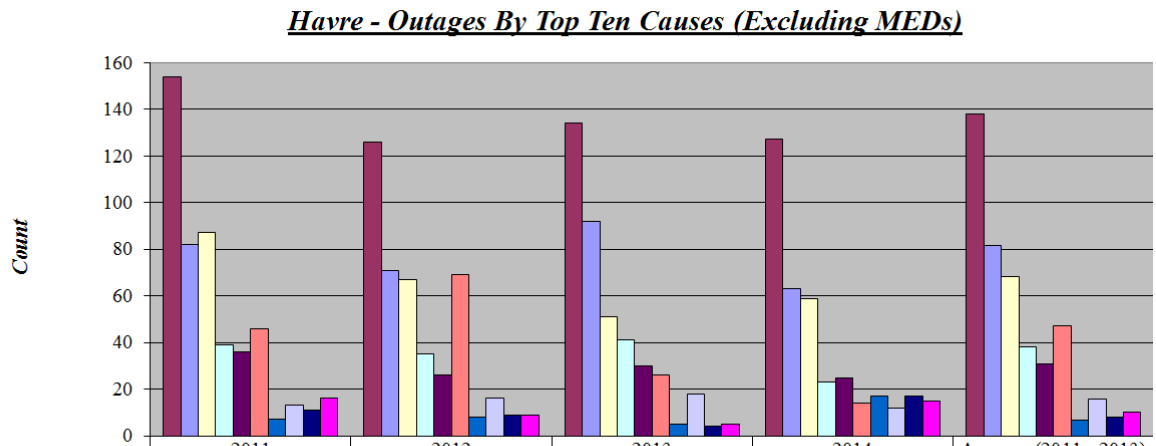
	2011	2012	2013	2014	Average (2011-2013)
SAIDI	271.83	217.28	294.21	161.80	261.11
CAIDI	98.66	96.17	92.45	67.54	95.76
SAIFI	2.755	2.259	3.183	2.396	2.73

Figure 7.1 Havre system indices excluding major event days (MEDs) as defined in IEEE Standard 1366-2012.



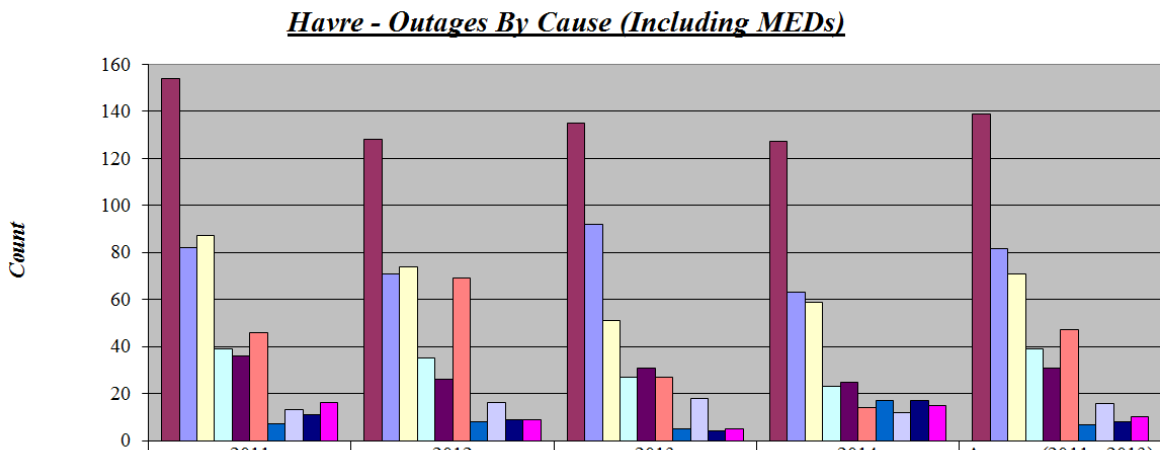
	2011	2012	2013	2014	Average (2011-2013)
SAIDI	271.83	669.94	294.34	161.80	412.04
CAIDI	98.66	229.55	92.43	67.54	140.21
SAIFI	2.755	2.919	3.184	2.396	2.95

Figure 7.2 Havre system indices including major event days (MEDs) as defined in IEEE Standard 1366-2012.



	2011	2012	2013	2014	Average (2011 - 2013)
Equipment Failure	154	126	134	127	138
Lightning	82	71	92	63	82
Wind	87	67	51	59	68
Unknown	39	35	41	23	38
Other Bird	36	26	30	25	31
Tree in Line	46	69	26	14	47
Scheduled Maintenance	7	8	5	17	7
Raccoon	13	16	18	12	16
Public - Vehicle Hit	11	9	4	17	8
System - Other	16	9	5	15	10
DIVISION TOTAL	601	545	486	427	544

Figure 7.3 Havre system outages by top ten causes excluding major event days (MEDs) as defined in IEEE Standard 1366-2012.

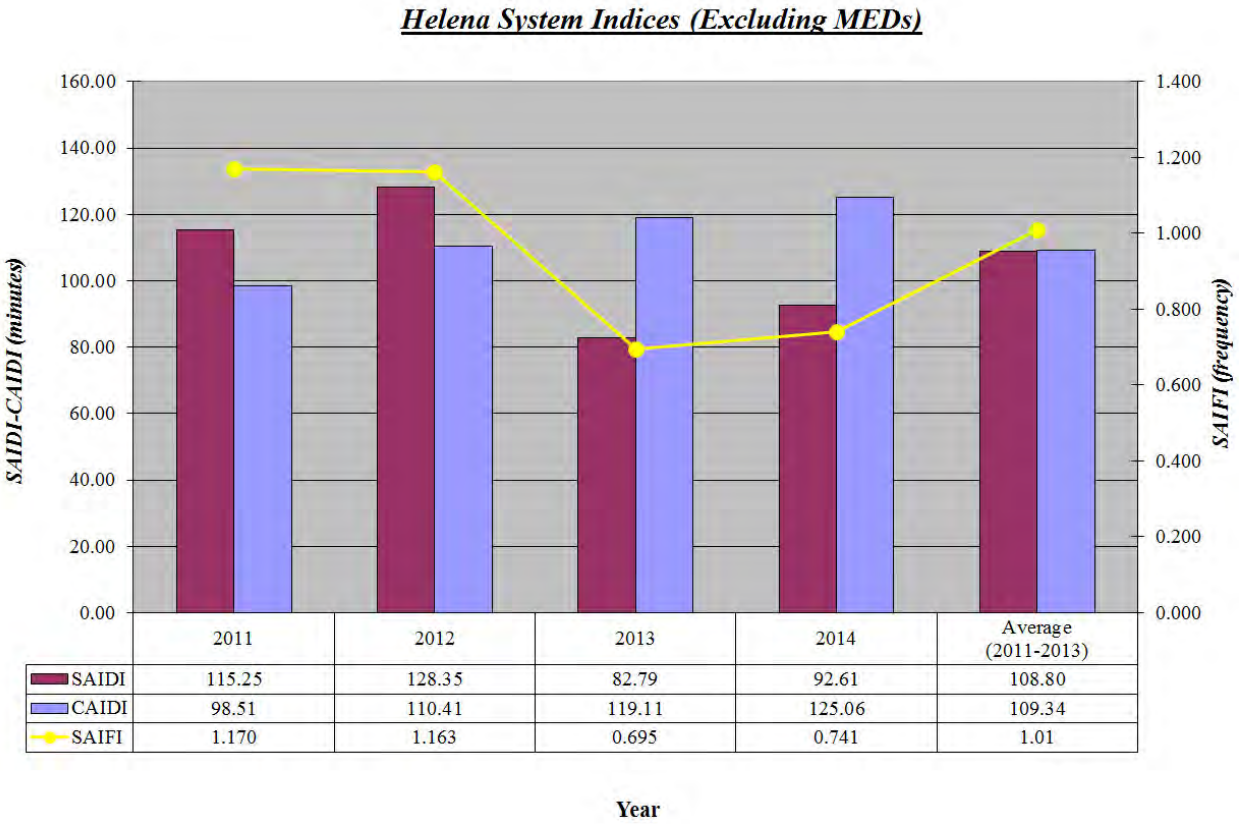


	2011	2012	2013	2014	Average (2011 - 2013)
Equipment Failure	154	128	135	127	139
Lightning	82	71	92	63	82
Wind	87	74	51	59	71
Unknown	39	35	27	23	39
Other Bird	36	26	31	25	31
Tree In Line	46	69	27	14	47
Scheduled Maintenance	7	8	5	17	7
Raccoon	13	16	18	12	16
Public - Vehicle Hit	11	9	4	17	8
System - Other	16	9	5	15	10
DIVISION TOTAL	601	577	491	427	556

Figure 7.4 Havre system outages by top ten causes including major event days (MEDs) as defined in IEEE Standard 1366-2012.

8. HELENA SYSTEM RELIABILITY

Helena Division saw a moderate increase of all three indices for 2014 over 2013 values, though only CAIDI was above the previous three-year average. Landers Fork Sub feeder had extended outages in January due to high winds and the Helena Valley Sub had two larger outages from equipment failures during December. Equipment failure and scheduled outages were higher. The scheduled work is largely due to system improvements.



	2011	2012	2013	2014	Average (2011-2013)
SAIDI	115.25	128.35	82.79	92.61	108.80
CAIDI	98.51	110.41	119.11	125.06	109.34
SAIFI	1.170	1.163	0.695	0.741	1.01

Figure 8.1 Helena system indices excluding major event days (MEDs) as defined in IEEE Standard 1366-2012.

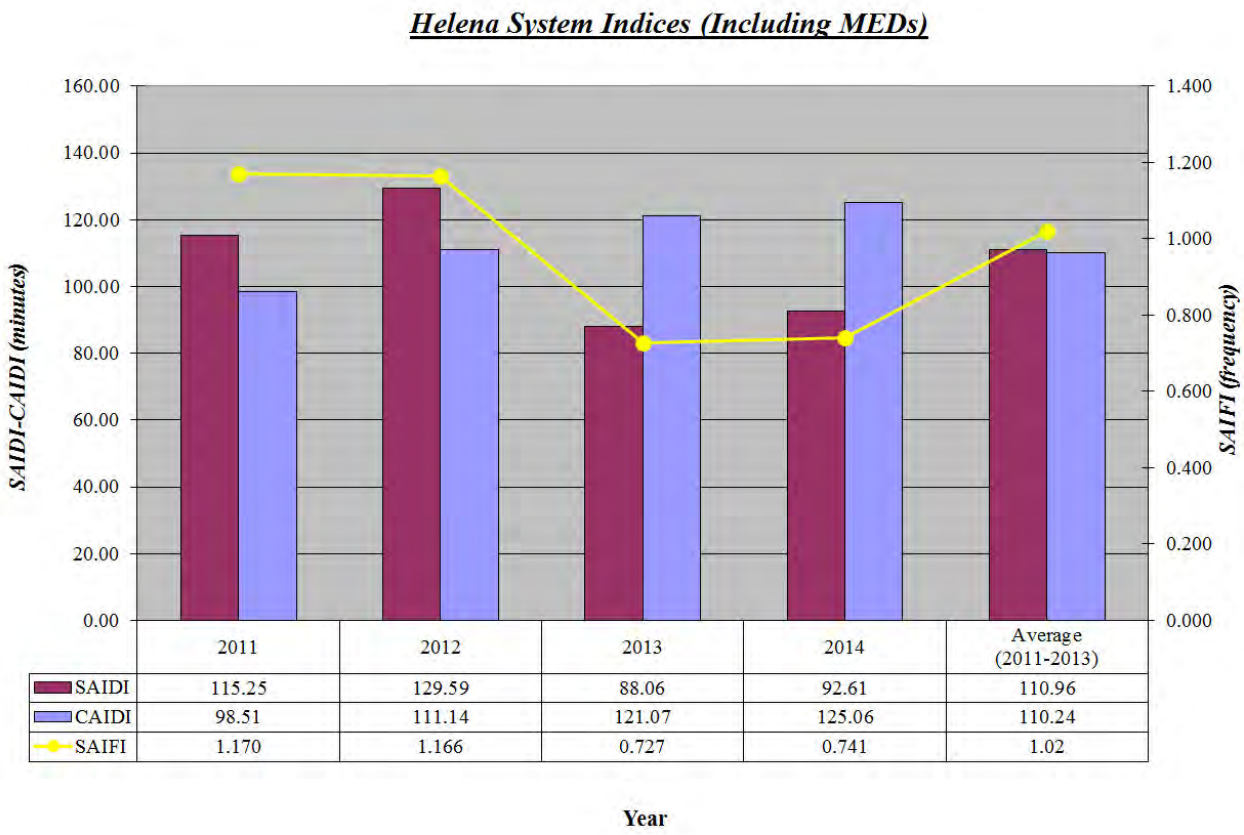
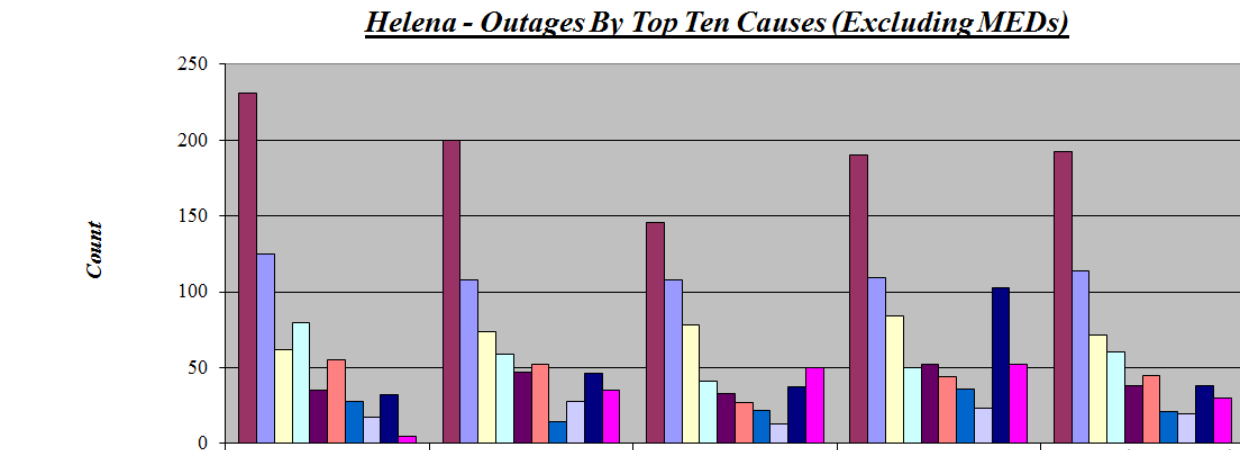
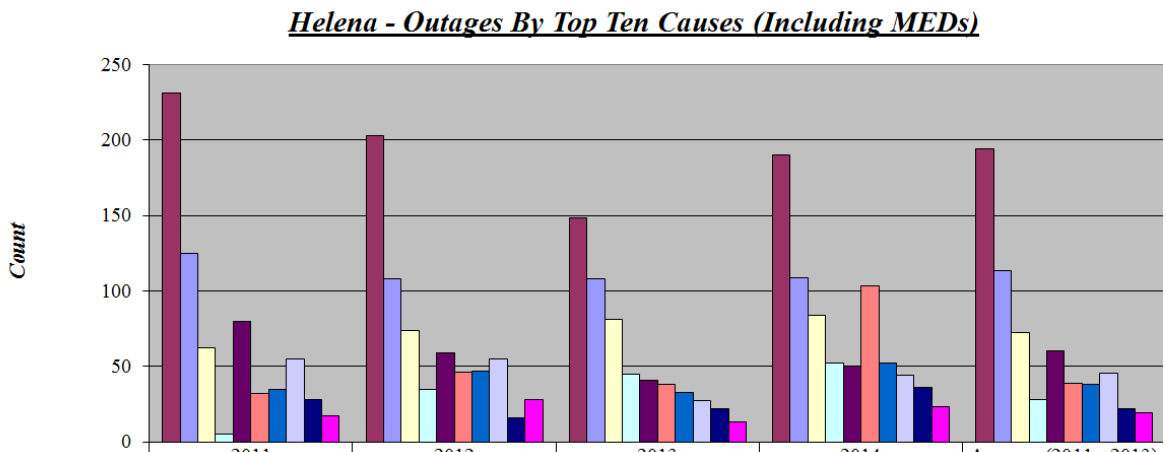


Figure 8.2 Helena system indices including major event days (MEDs) as defined in IEEE Standard 1366-2012.



	2011	2012	2013	2014	Average (2011 - 2013)
Equipment Failure	231	200	146	190	192
Tree In Line	125	108	108	109	114
Lightning	62	74	78	84	71
Squirrel	80	59	41	50	60
Other Bird	35	47	33	52	38
Wind	55	52	27	44	45
Snow/Ice	28	14	22	36	21
Scheduled Construction	17	28	13	23	19
Scheduled Maintenance	32	46	37	103	38
Unknown	5	35	50	52	30
DIVISION TOTAL	806	811	636	845	751

Figure 8.3 Helena system outages by top ten causes excluding major event days (MEDs) as defined in IEEE Standard 1366-2012.

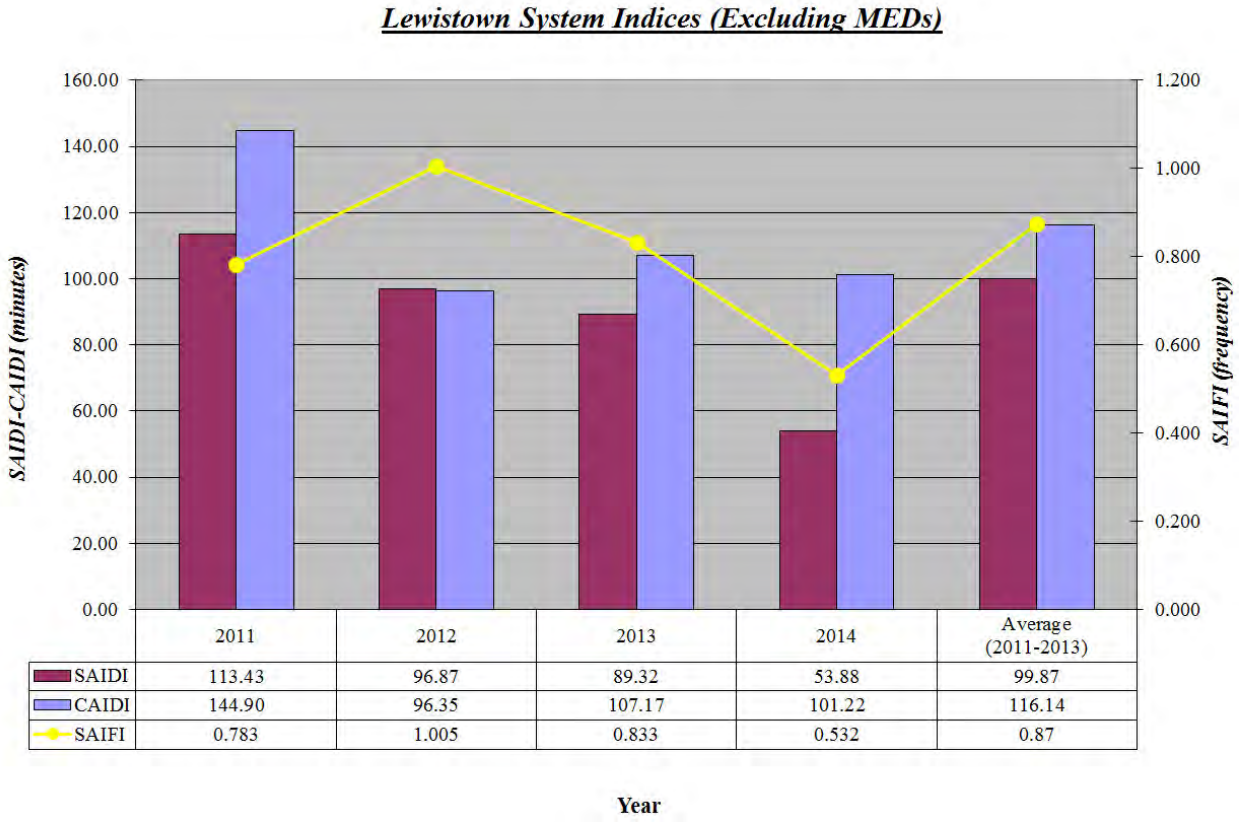


	2011	2012	2013	2014	Average (2011 - 2013)
Equipment Failure	231	203	148	190	194
Tree In Line	125	108	108	109	114
Lightning	62	74	81	84	72
Unknown	5	35	45	52	28
Squirrel	80	59	41	50	60
Scheduled Maintenance	32	46	38	103	39
Other Bird	35	47	33	52	38
Wind	55	55	27	44	46
Snow/Ice	28	16	22	36	22
Scheduled Construction	17	28	13	23	19
DIVISION TOTAL	806	820	638	845	755

Figure 8.4 Helena system outages by top ten causes including major event days (MEDs) as defined in IEEE Standard 1366-2012.

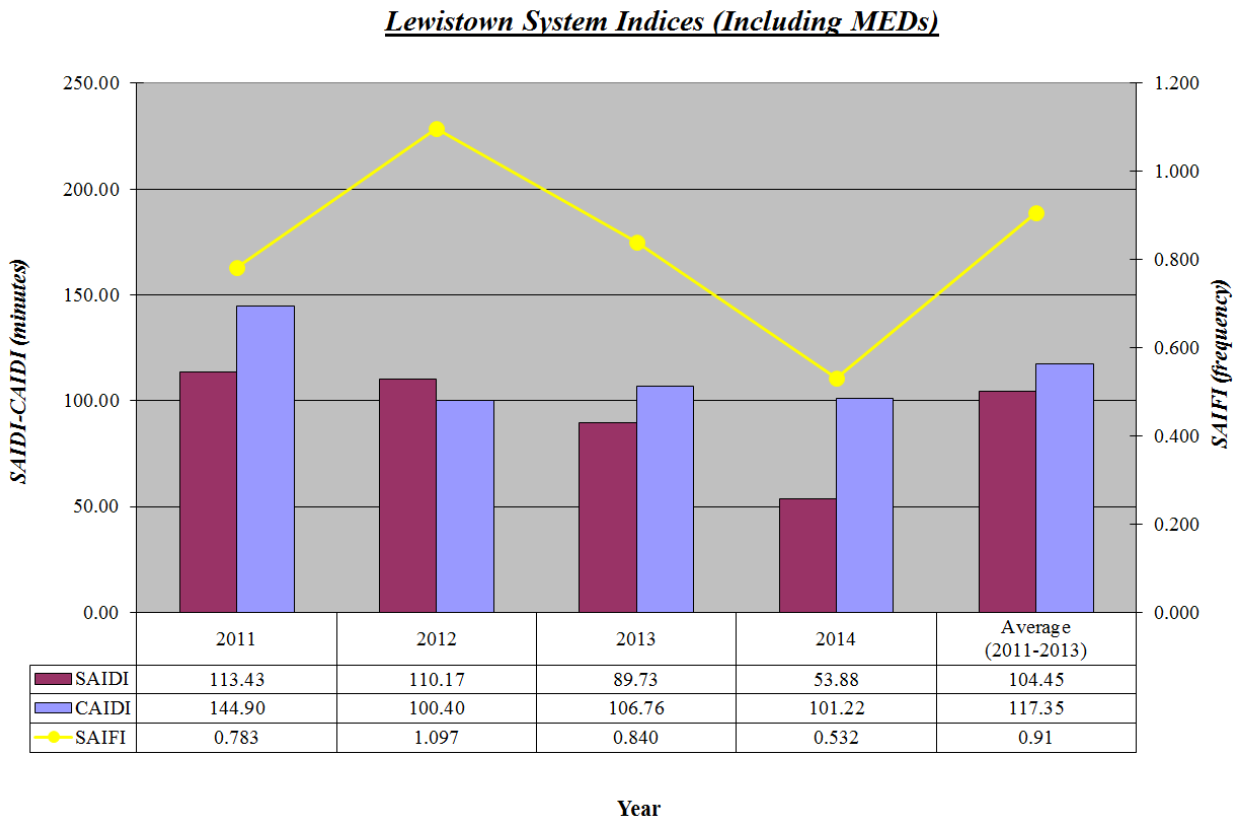
9. LEWISTOWN SYSTEM RELIABILITY

Lewistown District saw improvement in all three indices in 2014. With SAIDI at 54 minutes and SAIFI at 0.53, it was a very reliable year! Larger outages were an arrestor failure at the Roundup Auto Sub and a recloser failure at the Moccasin Sub. Lightning related outages were significantly down, but raccoons and other animals are making a comeback.



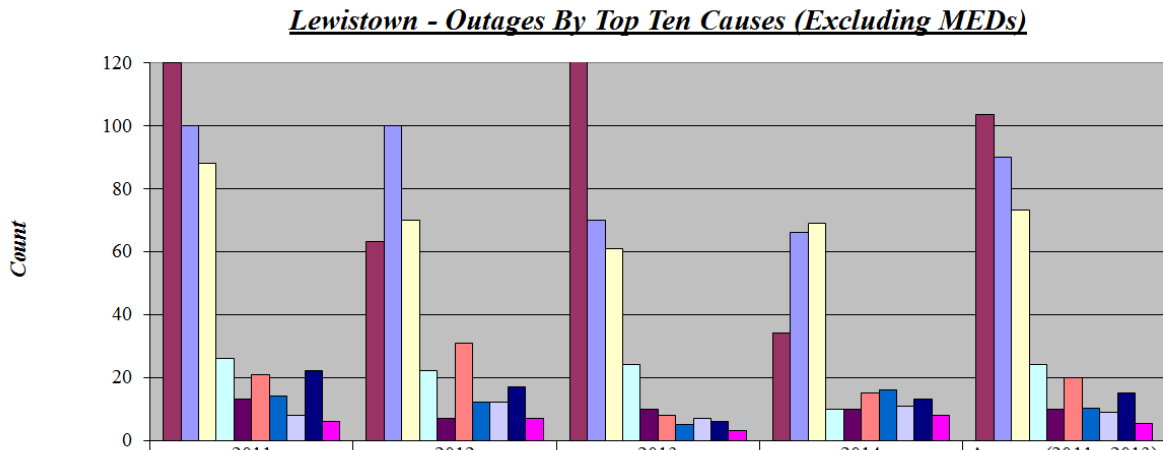
	2011	2012	2013	2014	Average (2011-2013)
SAIDI	113.43	96.87	89.32	53.88	99.87
CAIDI	144.90	96.35	107.17	101.22	116.14
SAIFI	0.783	1.005	0.833	0.532	0.87

Figure 9.1 Lewistown system indices excluding major event days (MEDs) as defined in IEEE Standard 1366-2012.



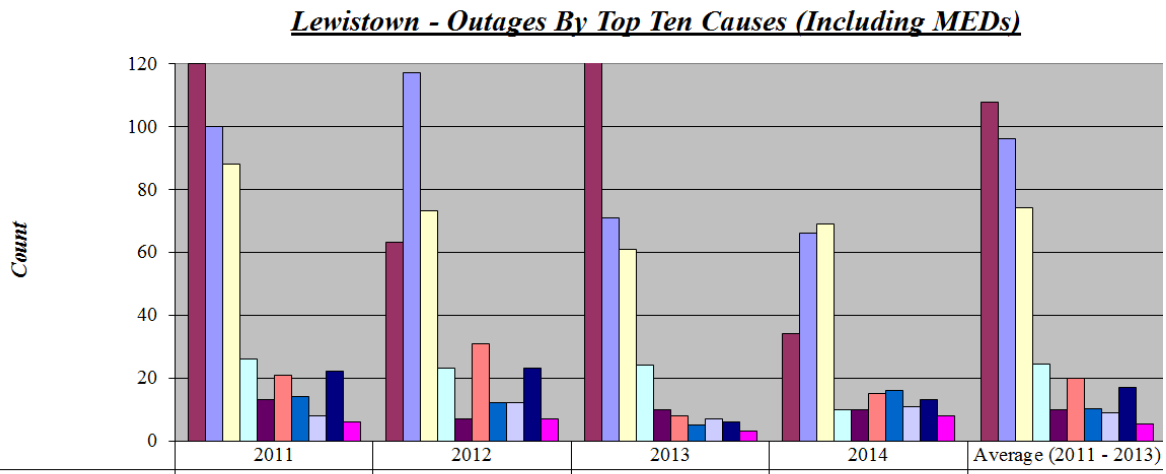
	2011	2012	2013	2014	Average (2011-2013)
SAIDI	113.43	110.17	89.73	53.88	104.45
CAIDI	144.90	100.40	106.76	101.22	117.35
SAIFI	0.783	1.097	0.840	0.532	0.91

Figure 9.2 Lewistown system indices including major event days (MEDs) as defined in IEEE Standard 1366-2012.



	2011	2012	2013	2014	Average (2011 - 2013)
Lightning	120	63	127	34	103
Wind	100	100	70	66	90
Equipment Failure	88	70	61	69	73
Unknown	26	22	24	10	24
Waterfowl	13	7	10	10	10
Other Bird	21	31	8	15	20
Animal - Raccoon	14	12	5	16	10
Animal Other	8	12	7	11	9
Snow/Ice	22	17	6	13	15
Scheduled Maintenance	6	7	3	8	5
DIVISION TOTAL	467	400	361	286	409

Figure 9.3 Lewistown system outages by top ten causes excluding major event days (MEDs) as defined in IEEE Standard 1366-2012.

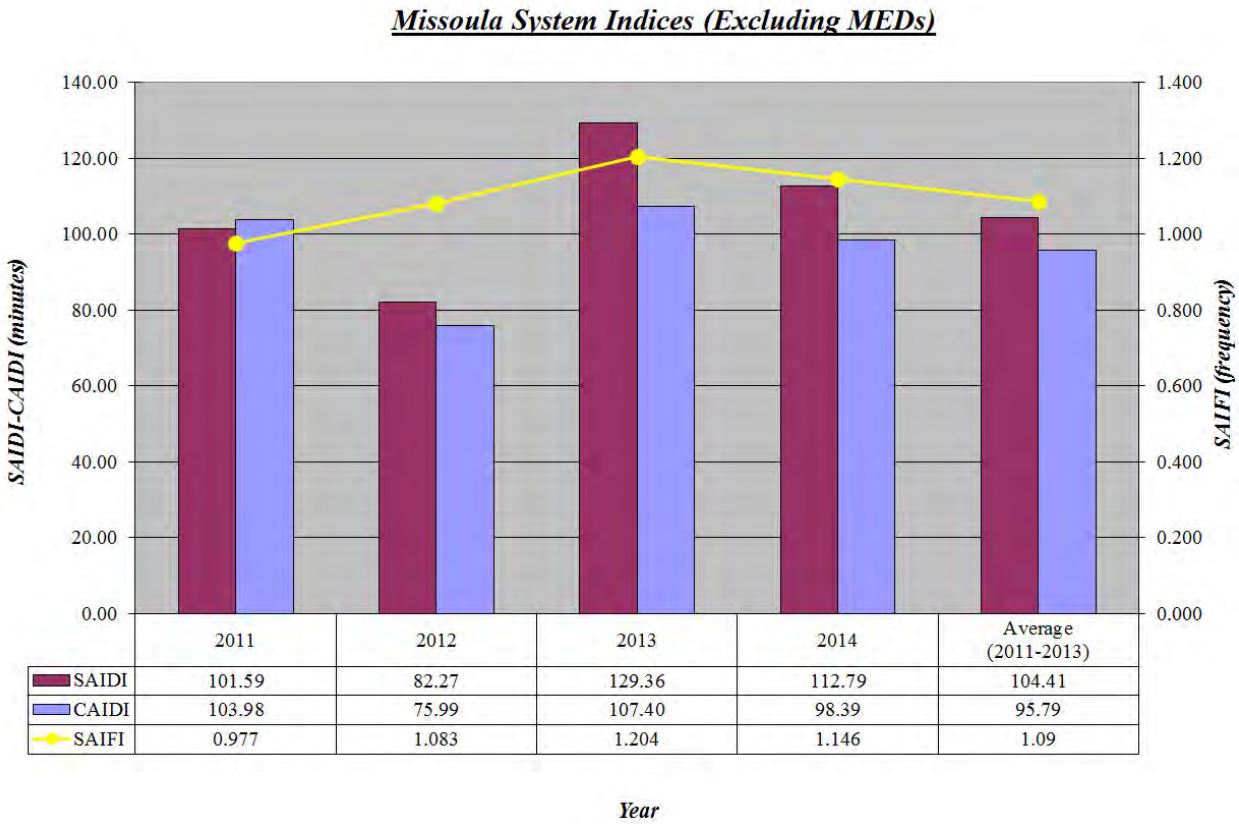


	2011	2012	2013	2014	Average (2011 - 2013)
Nature-Lightning	120	63	140	34	108
Nature-Wind	100	117	71	66	96
System-Equipment Failure	88	73	61	69	74
Unknown	26	23	24	10	24
Animal-Waterfowl	13	7	10	10	10
Animal-Other Bird	21	31	8	15	20
Animal - Raccoon	14	12	5	16	10
Animal-Other	8	12	7	11	9
Nature-Snow/Ice	22	23	6	13	17
Scheduled Maintenance	6	7	3	8	5
DIVISION TOTAL	467	428	375	286	426

Figure 9.4 Lewistown system outages by top ten causes including major event days (MEDs) as defined in IEEE Standard 1366-2012.

10. MISSOULA SYSTEM RELIABILITY

Missoula Division improved in all three indices in 2014 after fairly high numbers in 2013. The largest event was a storm on November 26th that caused a number of outages in the Bitterroot Valley and at 6.34 MT SAIDI minutes, was just under a Major Event Day. Earlier in November, a failed conductor also caused a large outage in Hamilton. In August, a faulted air-break switch during a wind storm differentialed the Missoula Industrial Sub taking out over 10,000 customers. Tree, squirrel, and equipment related outages were down, while snow/ice and scheduled outages were up. Total division outages were down by 271.



	2011	2012	2013	2014	Average (2011-2013)
SAIDI	101.59	82.27	129.36	112.79	104.41
CAIDI	103.98	75.99	107.40	98.39	95.79
SAIFI	0.977	1.083	1.204	1.146	1.09

Figure 10.1 Missoula system indices excluding major event days (MEDs) as defined in IEEE Standard 1366-2012.

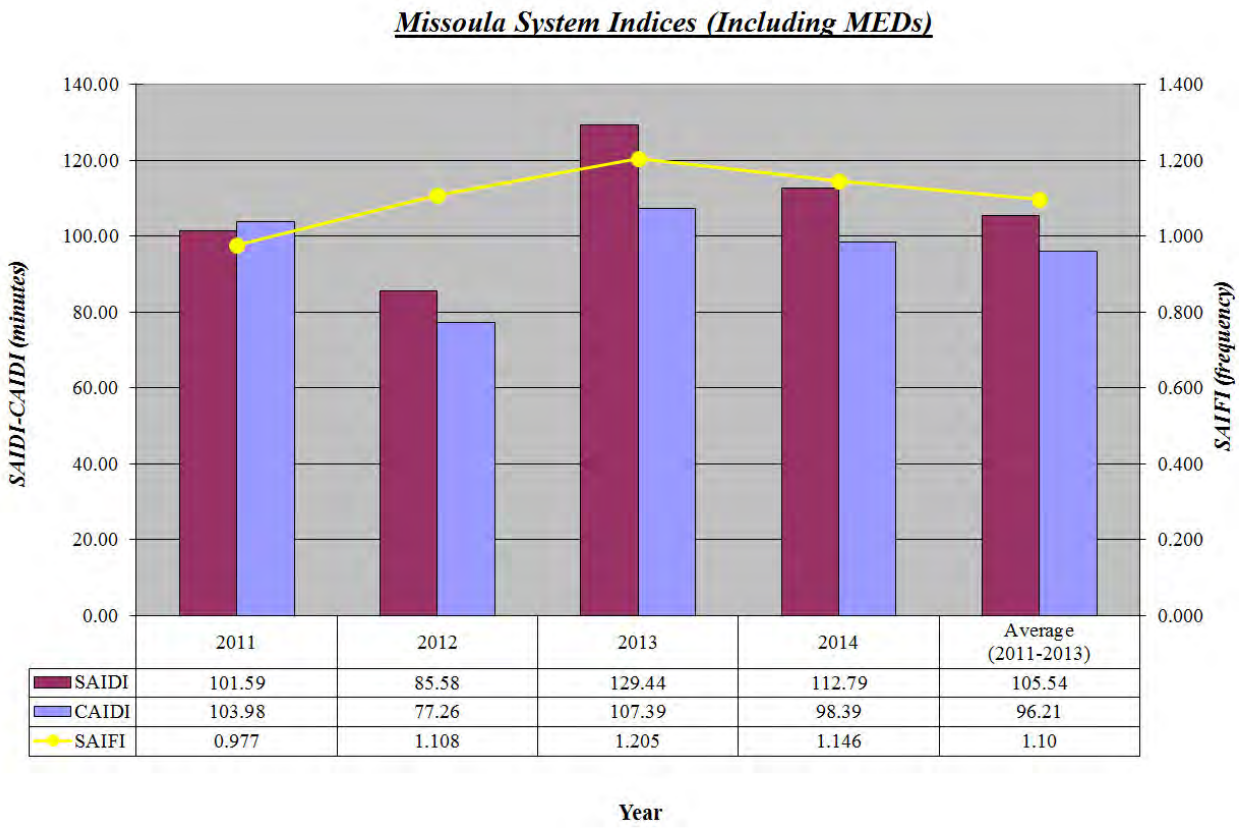
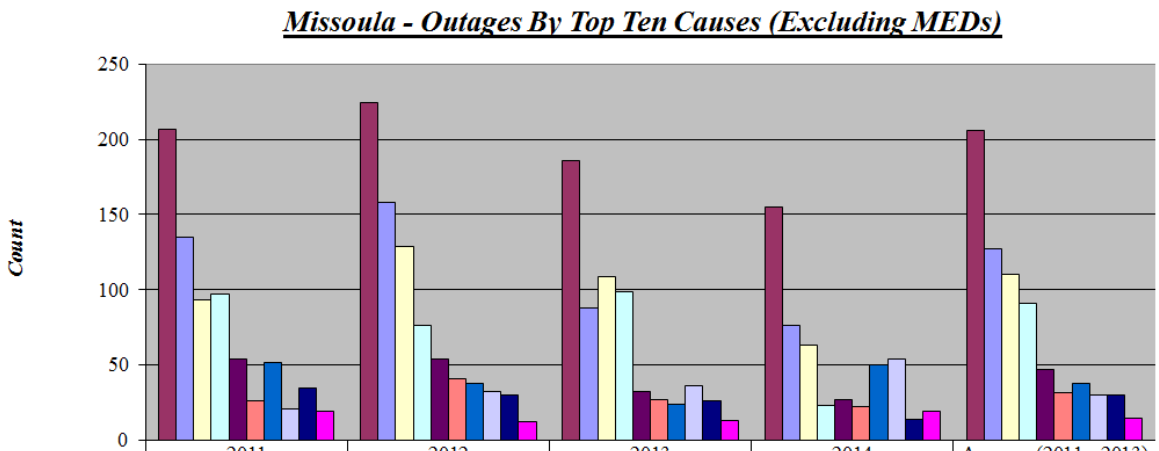
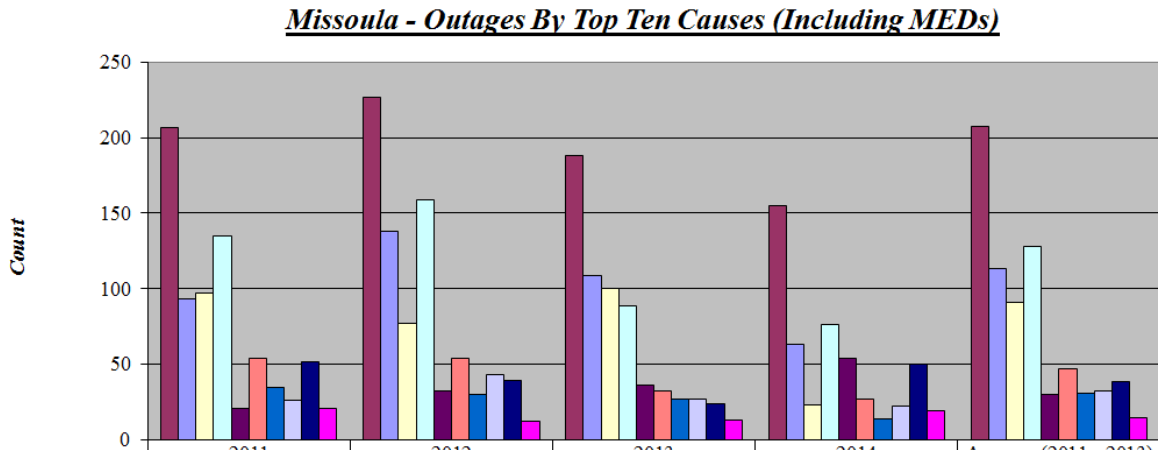


Figure 10.2 Missoula system indices including major event days (MEDs) as defined in IEEE Standard 1366-2012.



	2011	2012	2013	2014	Average (2011 - 2013)
Equipment Failure	207	224	186	155	206
Squirrel	135	158	88	76	127
Tree In Line	93	129	109	63	110
Unknown	97	76	99	23	91
Other Bird	54	54	32	27	47
Limb In Line	26	41	27	22	31
Snow/Ice	52	38	24	50	38
Scheduled Maintenance	21	32	36	54	30
Lightning	35	30	26	14	30
Public - Vehicle Hit	19	12	13	19	15
DIVISION TOTAL	899	933	751	580	861

Figure 10.3 Missoula system outages by top ten causes excluding major event days (MEDs) as defined in IEEE Standard 1366-2012.



	2011	2012	2013	2014	Average (2011 - 2013)
Equipment Failure	207	227	188	155	207
Nature-Tree In Line	93	138	109	63	113
Unknown	97	77	100	23	91
Animal-Squirrel	135	159	89	76	128
Scheduled Maintenance	21	32	36	54	30
Animal-Other Bird	54	54	32	27	47
Nature-Lightning	35	30	27	14	31
Nature-Limb In Line	26	43	27	22	32
Nature-Snow/Ice	52	39	24	50	38
Public - Vehicle Hit	21	12	13	19	15
DIVISION TOTAL	899	955	757	580	870

Figure 10.4 Missoula system outages by top ten causes including major event days (MEDs) as defined in IEEE Standard 1366-2012.

11. CONCLUSION

Last year started off in January with several severe wind storms, which drove that month's SAIDI over 11 minutes, compared to an earlier three-year January average of 4.7 minutes. With fairly average months through the spring, SAIDI remained higher than average. But then June and July were better, with few storms until August which saw average reliability. This trend was almost opposite that of 2013. Where September of 2013 had 26 minutes of SAIDI, due largely to storms in the Billings area, last September was mild with less than four minutes of SAIDI which continued the trend toward a good reliability year. Although storms in November drove the month to 19 SAIDI minutes, a better than average October and December helped to end the year at 112.9 minutes. This is the lowest Montana SAIDI in the last five years.

The InService mobile work force and outage management system was implemented by NWE during the fall of 2014. This will provide more accurate and timely outage reporting for 2015 and the future. Outage customer counts and times are derived from the GIS, call logging, and automated systems, eliminating the earlier manual outage reporting system and its inherent approximations. Both IEEE and the Department of Energy reports indicate that SAIDI numbers normally increase with this improved accuracy, but with the whims of nature, this may be difficult to determine for some time. The conversion to InService has also brought about the use of Universal Time (UT) for outage reporting. This eliminates the need to track the time zone difference between our Montana and South Dakota regions. Days will be looked at and tracked using UT rather MST, which entails a seven hour time shift. The IEEE reliability standard (1366-2012) does not define the 24 hour day and many of the utilities involved in the IEEE benchmark survey have gone to something other than midnight-to-midnight. Some will even "roll" the 24 hours to more accurately capture the full impact of a storm day (and possible MED). This option is being reviewed by NWE.

Increased efforts in line patrol and repairs as well as vegetation work may have improved reliability in 2014, as well as reduced the impacts from larger storms. The November storm in the Bitterroot Valley is one event where increased vegetation work may have avoided a Major Event Day. Additionally, with the implementation of reliability projects under the Distribution System Infrastructure Project (DSIP), stability and hopefully improvement in electric system reliability should be realized. Of course the impacts of storms are a major contributor to reduced reliability and complicate any analysis. Substation and other asset improvements increased scheduled outages, but careful planning kept these outages to a minimum and this work helps avoid equipment failures and provides facilities to 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 and a safe working environment for our employees, 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 2011-2013 average and 2014 year end. Also included are graphs showing the outage cause duration and frequency by year from 2010 through 2014.

The 2014 outage duration is approximately **742 hours (39.3%) less** than the 2011-2013 average. The 2014 outage frequency (count) is approximately **211 outages (26.3%) less** than the 2011-2013 average. These numbers reflect a very reliable year at the transmission level. Lightning, Hardware, and Terminal Equipment outage numbers were all down from 2013, with only System Protection outages notably up in 2014.

Outage Duration - Hours

Year		Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
2014	Monthly	136.13	148.56	56.75	133.78	40.08	111.07	108.53	132.40	16.10	25.46	156.97	81.62
2011-2013	Monthly	86.16	99.61	180.10	164.98	199.66	158.30	308.32	196.92	153.74	171.49	55.48	114.83
2014	Cumulative	136.13	284.69	341.43	475.22	515.29	626.37	734.90	867.30	883.40	908.86	1065.83	1147.46
2011-2013	Cumulative	86.16	185.77	365.87	530.86	730.52	888.82	1197.15	1394.07	1547.81	1719.30	1774.77	1889.60

Outage Frequency - Count

Year		Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
2014	Monthly	50.0	43.0	38.0	48.0	41.0	68.0	67.0	83.0	50.0	36.0	38.0	30.0
2011-2013	Monthly	31.0	40.7	74.0	84.7	74.7	101.7	118.7	83.7	59.0	41.7	39.3	54.0
2014	Cumulative	50.0	93.0	131.0	179.0	220.0	288.0	355.0	438.0	488.0	524.0	562.0	592.0
2011-2013	Cumulative	31.0	71.7	145.7	230.3	305.0	406.7	525.3	609.0	668.0	709.7	749.0	803.0

ASAI (Average Service Availability Index) - % Larger is Better

Year		Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
2014	Monthly	99.93602	99.92270	99.97333	99.93480	99.98114	99.94606	99.94899	99.93778	99.99218	99.98809	99.92430	99.96191
2011-2013	Monthly	99.95767	99.94647	99.91155	99.91627	99.90194	99.91994	99.84952	99.90401	99.92264	99.91649	99.97208	99.94408
2014	Cumulative	99.93602	99.92970	99.94473	99.94226	99.95024	99.94954	99.94946	99.94797	99.95283	99.95645	99.95354	99.95425
2011-2013	Cumulative	99.95767	99.95232	99.93833	99.93283	99.92650	99.92541	99.91427	99.91296	99.91403	99.91428	99.91949	99.92158

SAIFI (System Average Interruption Frequency) – Smaller is Better

Year		Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
2014	Monthly	2.05843	1.95992	1.56440	2.04912	1.69001	2.89277	2.75829	3.41699	2.12704	1.47458	1.60532	1.22648
2011-2013	Monthly	1.33548	1.91606	3.18667	3.76755	3.21538	4.50810	5.07823	3.57569	2.60322	1.77913	1.73548	2.30575
2014	Cumulative	2.05843	2.01167	1.85761	1.90537	1.86116	2.03228	2.13852	2.30172	2.28251	2.19973	2.14599	2.06746
2011-2013	Cumulative	1.33548	1.61277	2.15296	2.55553	2.69071	2.99227	3.29837	3.33395	3.25326	3.10237	2.97913	2.92177

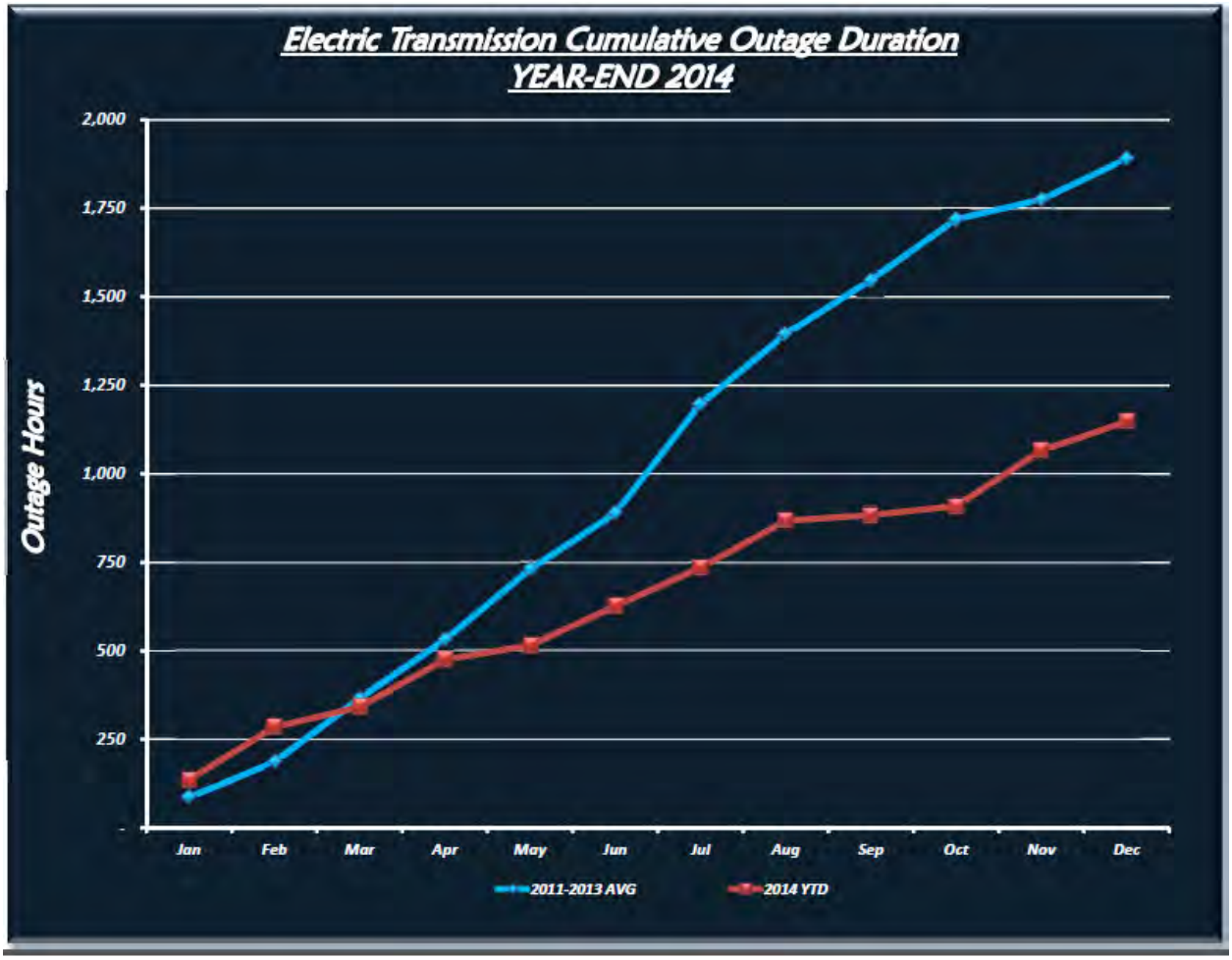


Figure A.1 Electric transmission cumulative outage duration

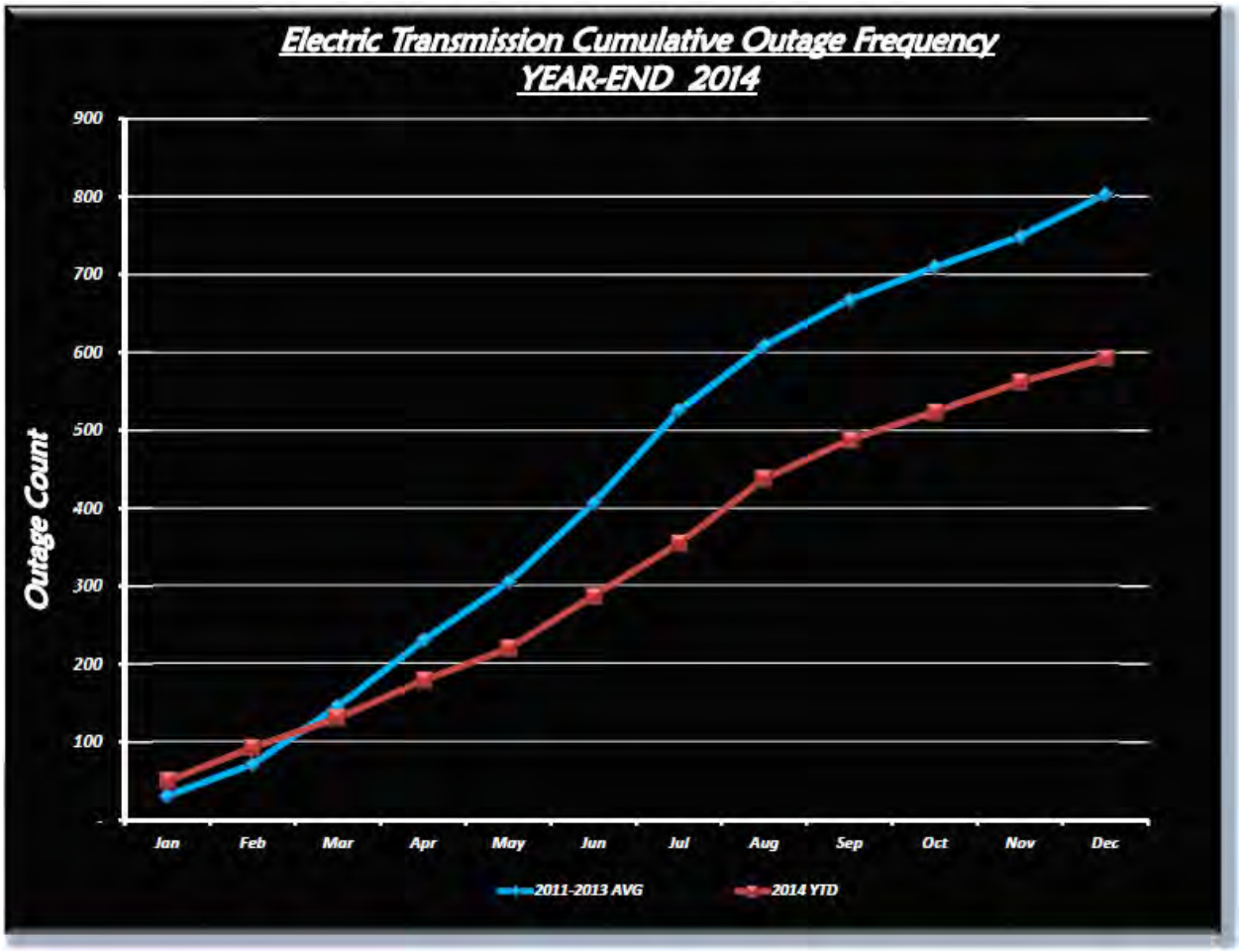


Figure A.2 Electric transmission cumulative outage frequency

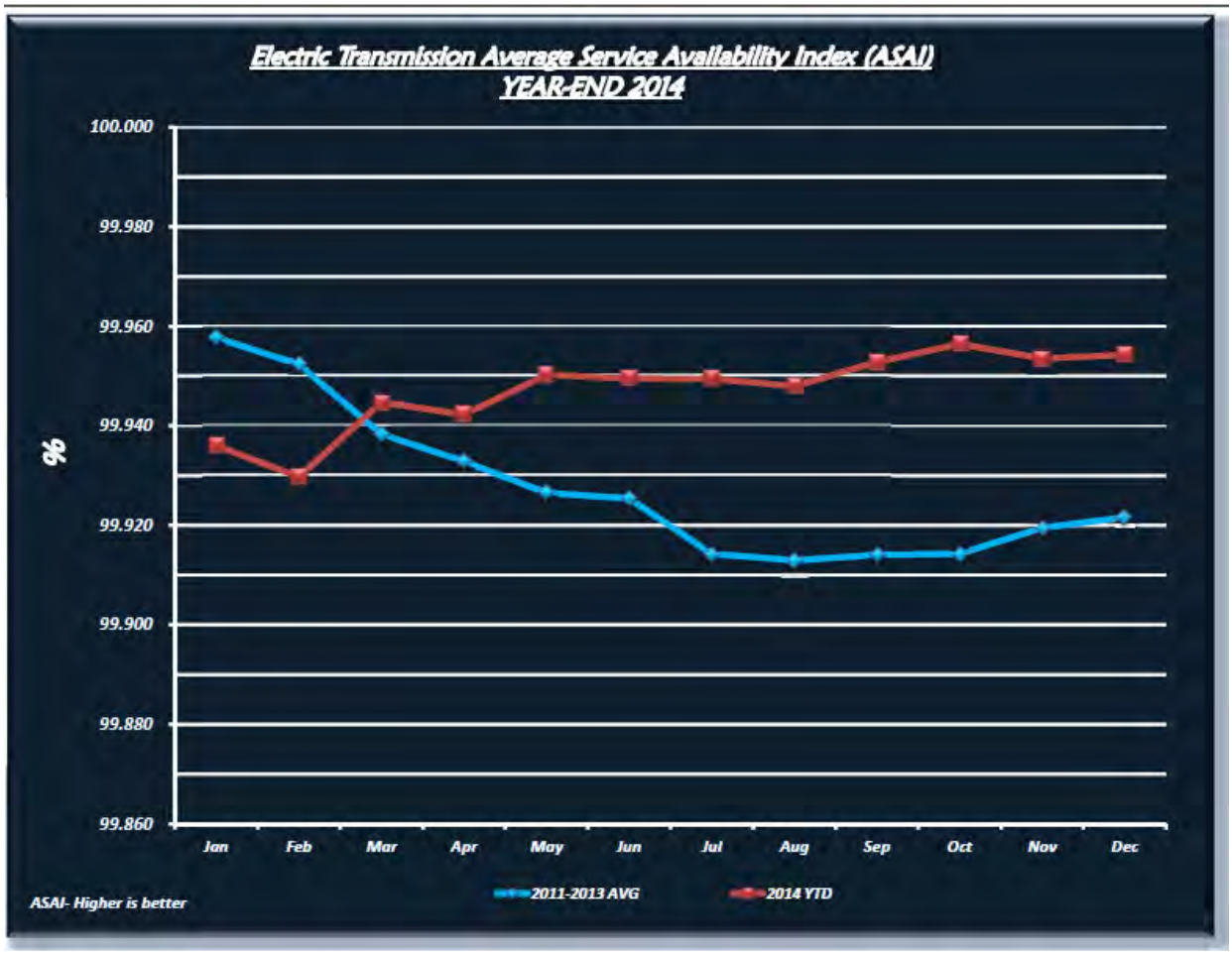


Figure A.3 Electric transmission Average Service Availability Index (ASAI)

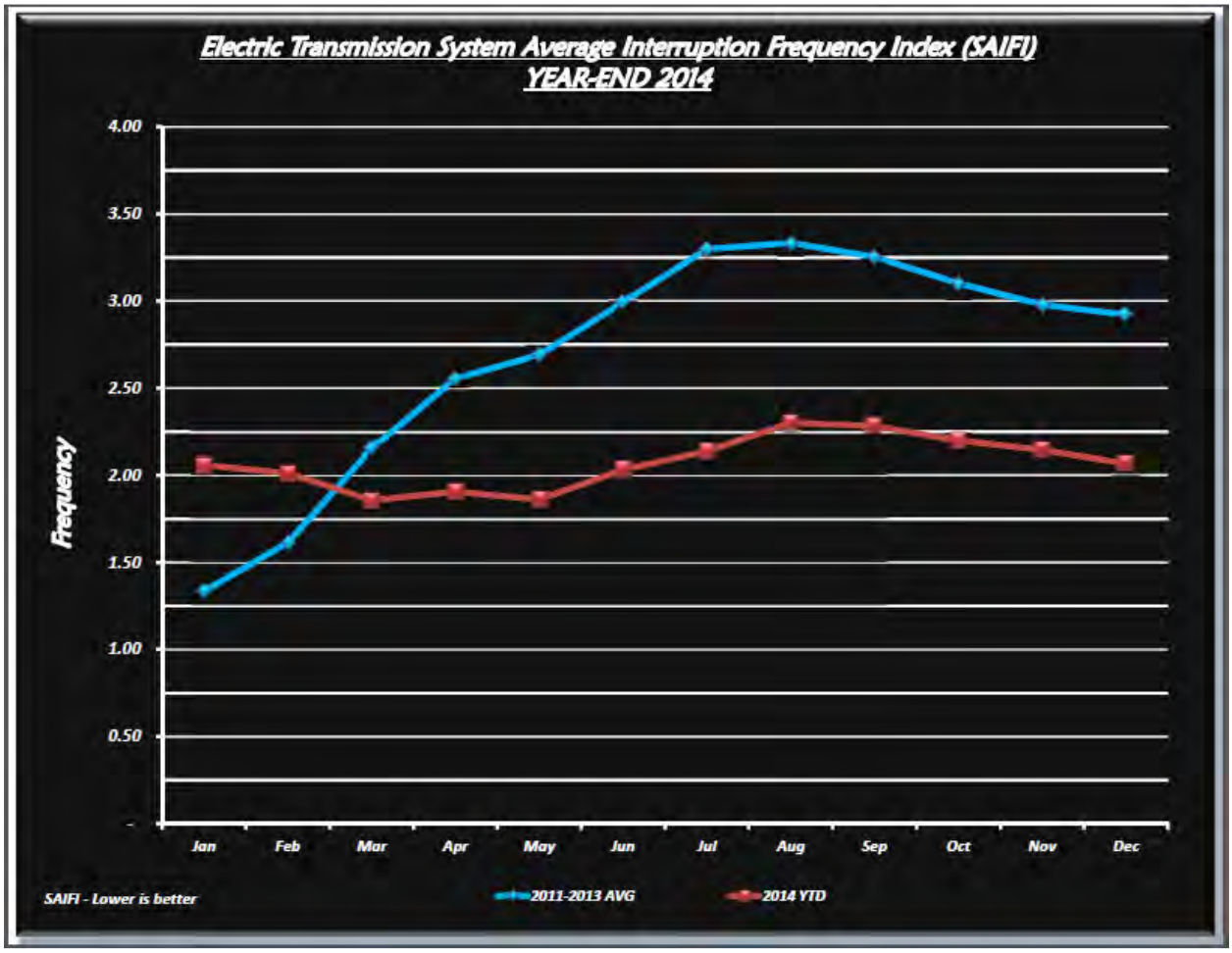


Figure A.4 Electric transmission System Average Interruption Frequency Index (SAIFI)

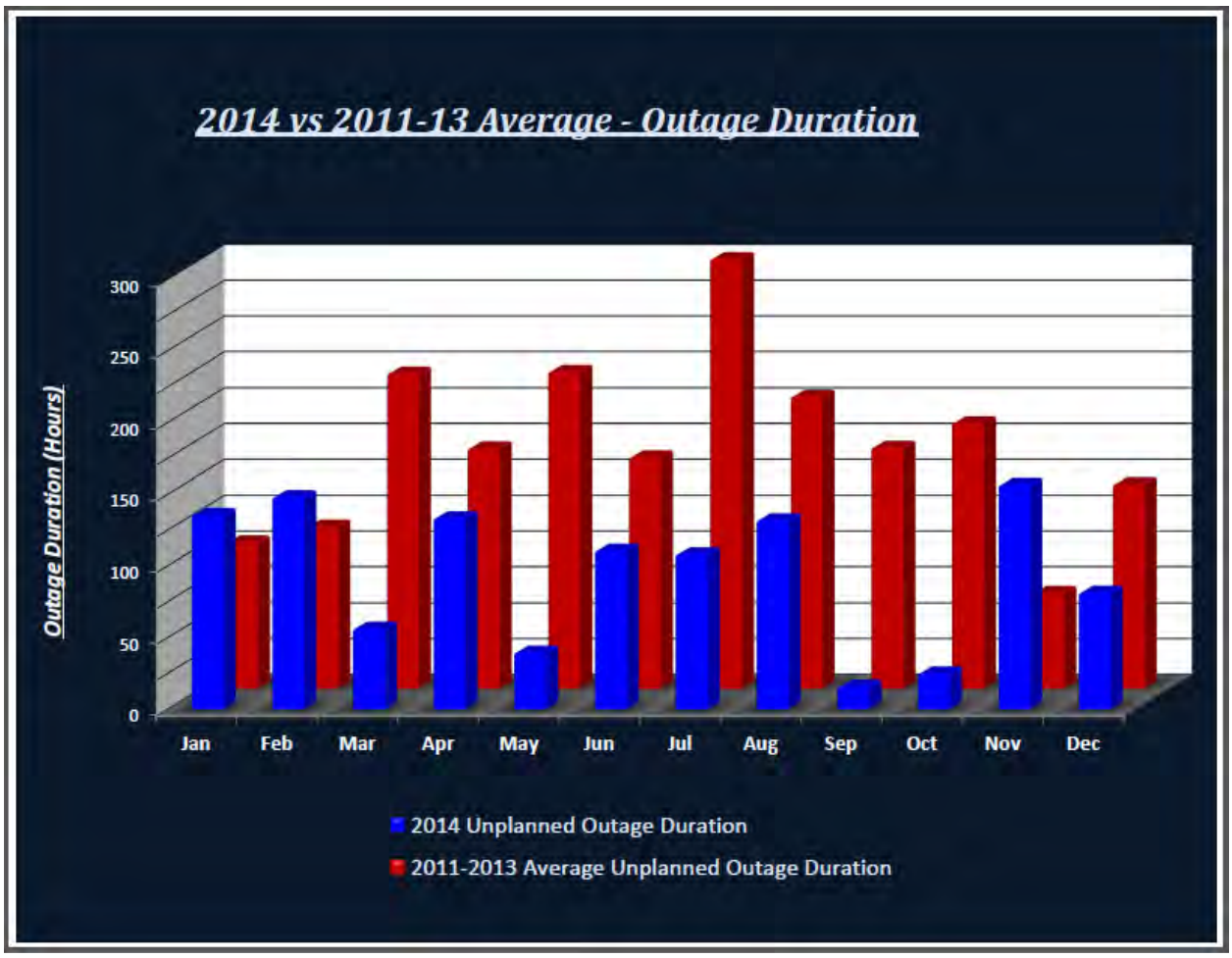


Figure A.7 Comparison of 2014 outage duration to previous three-year average

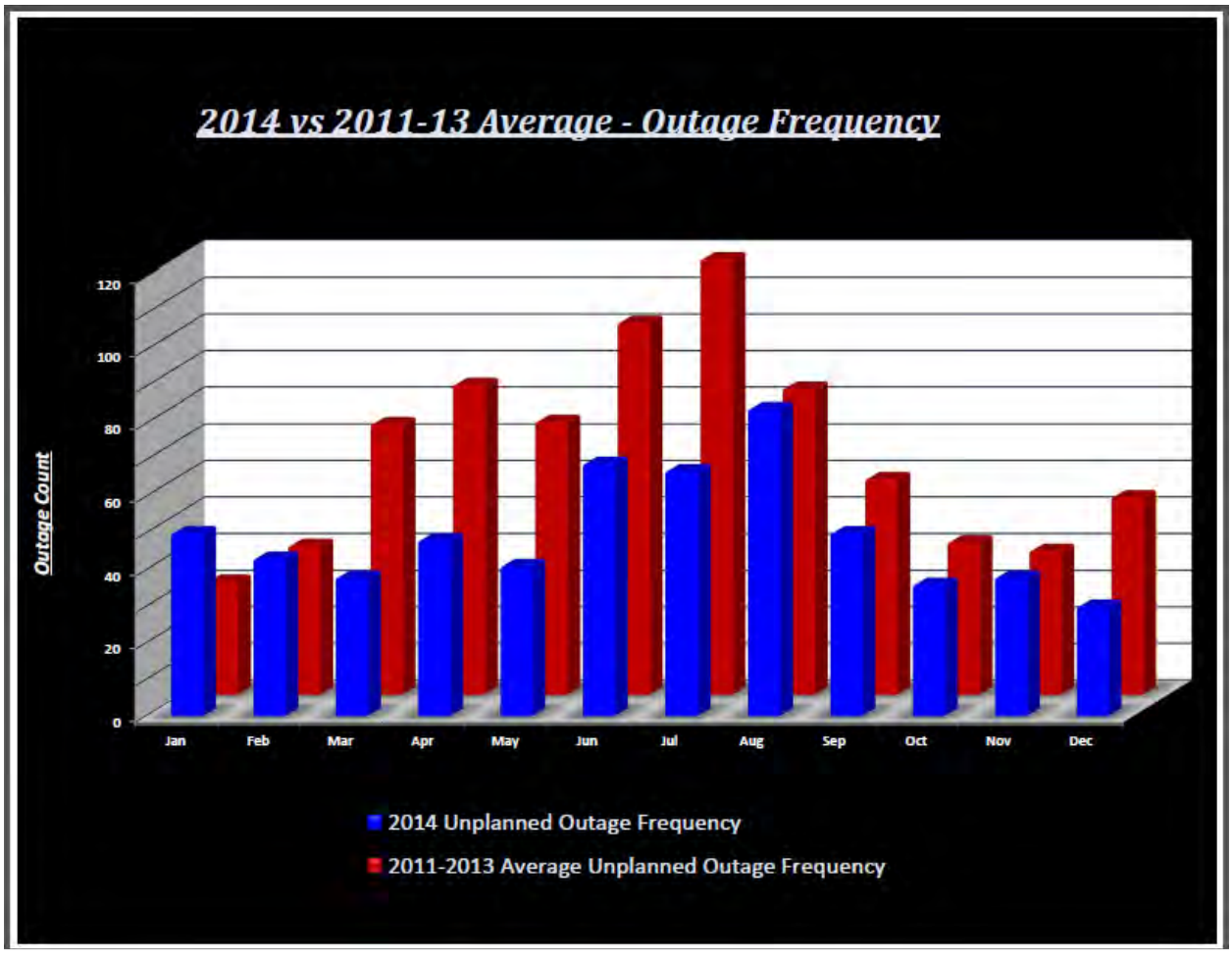


Figure A.8 Comparison of 2014 outage frequency to previous three-year average

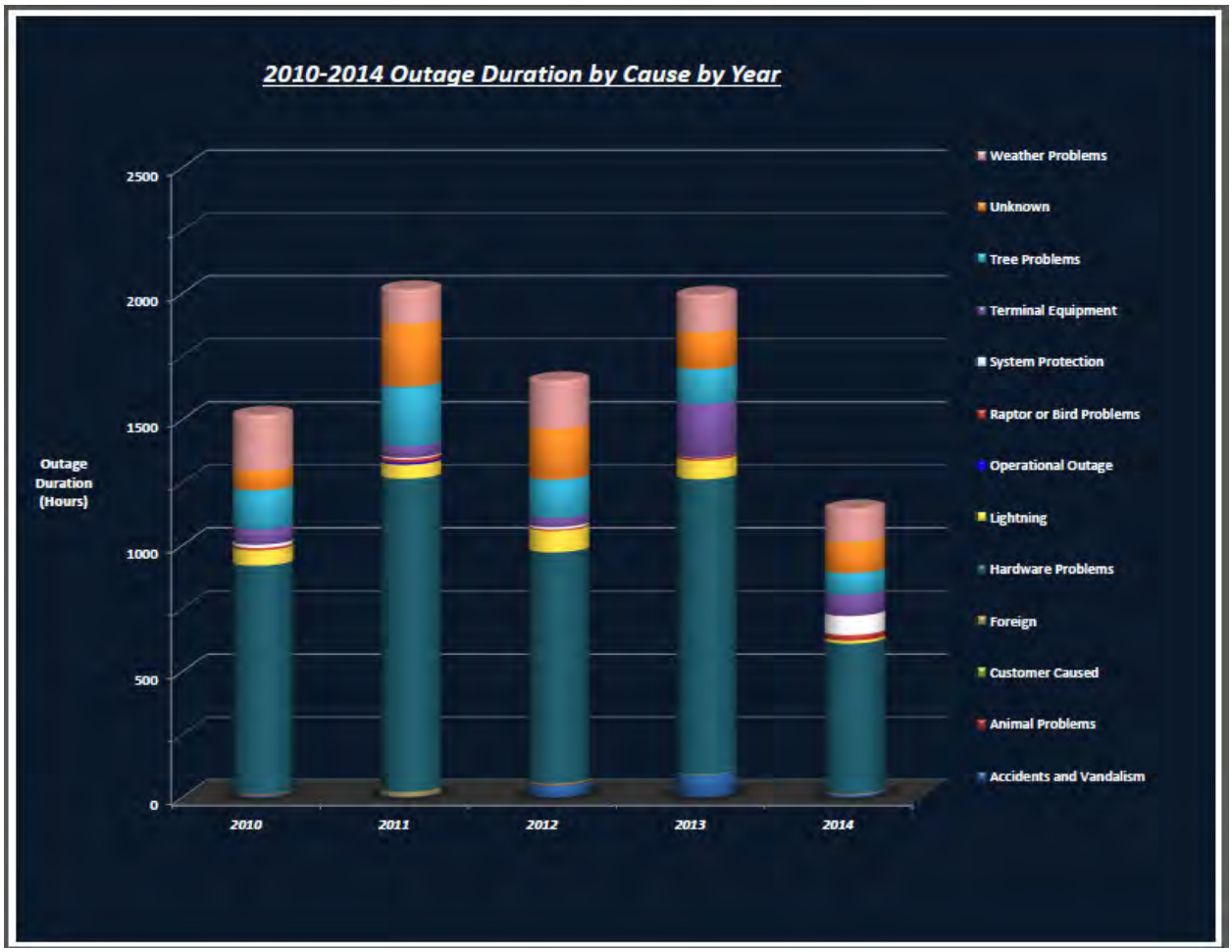


Figure A.9 Outage duration by cause by year for 2010-2014

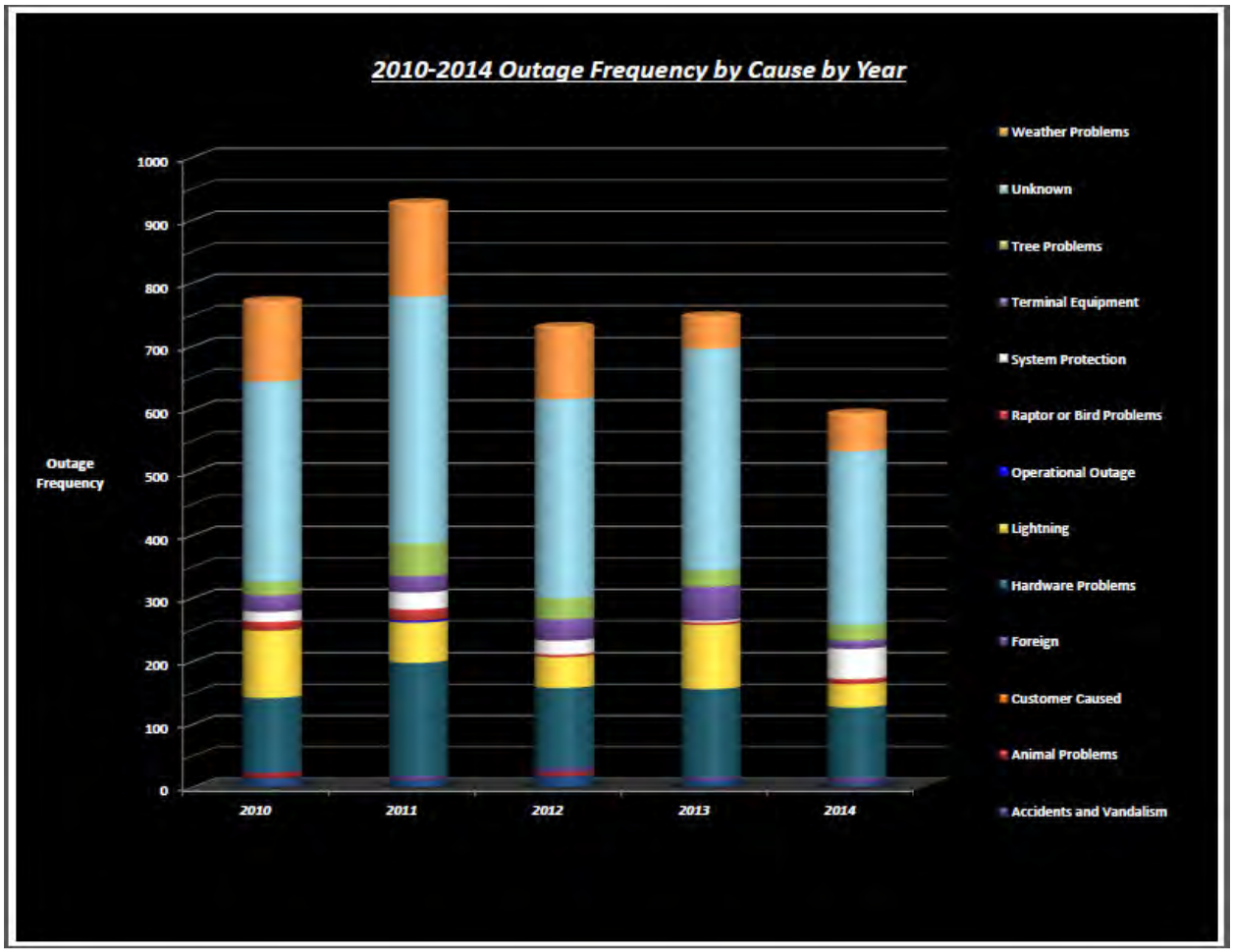


Figure A.10 Outage frequency by cause by year for 2010-2014