

Circuit Reliability Review Mono District 4

January 2017

Providing Safe, Reliable, and Affordable Power

Southern California Edison is modernizing the power grid to meet the changing needs and expectations of our customers and to help California achieve its clean energy goals.

We are investing more than \$12 billion into our power grid between 2015 – 2017 with the goal of increasing power reliability through significant upgrades. These investments include:

- Updating thousands of transmission and distribution poles
- Replacing hundreds of miles of underground cables
- Replacing hundreds of underground structures such as vaults and manholes
- Upgrading critical distribution equipment; capacitor banks, switches, and circuit breakers
- Building new distribution circuits to serve electrical demands in our communities
- Inspecting and replacing overhead conductor and equipment to improve public safety

Our investments in local communities will help ensure that customers receive safe, reliable, and affordable electricity now and in the future.

Understanding Your Reliability Report

As your electric utility, we want you to always have power when you need it. To get there, we constantly track and monitor electric outages across our service territory, and we measure our "system reliability" from this data.

The two metrics we rely on are common in the electric utility industry: the System Average Interruption Duration Index (SAIDI) and the System Average Interruption Frequency Index (SAIFI). Both are described in more detail on the next page.

Replacing and upgrading our infrastructure will help SCE maintain or improve SAIDI and SAIFI measurements.

This report provides historical reliability data for the circuits that serve your jurisdiction and our proposed infrastructure upgrades for the current year.

To view other reliability reports, visit sce.com>Outage Center>Maintaining Reliable Service

Reliability Metrics

MOMENTARY OUTAGES:

OUTAGES LASTING 5 MINUTES OR LESS

MAIFI:

 The number of times the average customer is interrupted by Momentary outages each year.

SUSTAINED OUTAGES:

OUTAGES LASTING LONGER THAN 5 MINUTES

SAIFI:

 The number of times the average customer is interrupted by Sustained outages each year.

SAIDI:

 The cumulative amount of time the average customer is interrupted by Sustained outages each year.

Cities in the Bishop/Mammoth District

Big Pine

Bishop

Darwin

Dixon Lane-Meadow Creek

Keeler

Mono County

Mammoth Lakes

Mesa

Round Valley

West Bishop

Wilkerson

Reliability by SCE District (No Exclusions)

		20	12			20:	13			20	14			20	15		2016				
	District	SAIDI	District	SAIFI																	
District Name	SAIDI	RANKING	SAIFI	Ranking																	
ANTELOPE VALLEY	78.60	28	0.56	31	94.42	22	0.62	31	51.05	35	0.59	34	104.34	22	0.68	30	107.67	24	0.87	29	
ARROWHEAD	129.58	13	1.31	7	180.59	7	1.39	8	193.25	5	1.59	5	362.61	4	3.97	1	659.46	3	2.85	5	
BARSTOW	184.80	7	1.15	12	204.33	6	1.40	7	201.53	4	1.34	10	187.11	8	1.17	12	134.83	18	1.35	9	
BIG CREEK	1184.25	1	4.52	1	176.51	8	3.08	1	920.25	1	1.34	11	422.77	2	3.42	2	1062.01	2	4.99	1	
BISHOP	463.09	2	1.25	9	104.44	17	0.51	35	118.79	17	0.59	35	298.11	6	2.22	4	168.59	8	1.22	14	
BLYTHE	225.88	6	1.53	3	483.13	1	1.38	9	707.54	2	2.42	2	427.00	1	1.52	7	396.38	5	2.71	6	
CATALINA	78.46	30	0.72	29	105.94	16	2.97	2	97.02	24	4.17	1	42.56	35	2.25	3	65.01	35	3.66	3	
COVINA	108.73	19	0.92	19	100.51	19	0.86	20	91.60	27	0.87	22	100.08	23	0.81	25	112.13	22	0.97	24	
DOMINGUEZ HILLS	117.22	18	0.82	24	89.17	26	0.80	21	82.30	29	0.71	28	130.63	15	0.97	17	146.38	12	1.11	17	
FOOTHILL	91.69	25	0.90	20	85.80	27	0.79	24	93.35	25	0.93	21	109.64	20	0.95	20	142.81	14	1.03	21	
FULLERTON	68.99	33	0.42	35	90.57	25	0.79	22	82.23	30	0.72	27	76.59	29	0.67	31	92.72	30	0.76	34	
HUNTINGTON BEACH	95.78	23	0.89	21	66.51	32	0.68	29	79.61	31	0.78	25	98.32	25	0.95	19	128.02	20	1.26	12	
KERNVILLE	226.76	5	1.31	6	232.18	4	1.96	3	178.69	8	1.99	3	286.38	7	0.96	18	2421.32	1	3.67	2	
LONG BEACH	75.83	31	0.55	33	75.11	30	0.70	28	66.33	34	0.61	32	164.46	9	0.89	23	135.16	17	0.86	31	
MENIFEE	99.32	22	0.84	23	107.39	15	1.26	10	156.68	11	1.32	12	111.46	19	0.98	16	156.75	9	1.31	10	
MONROVIA	108.11	20	1.13	15	99.12	20	1.02	16	133.32	14	1.16	16	96.68	26	0.88	24	116.57	21	0.84	32	
MONTEBELLO	131.06	12	1.13	14	118.08	13	1.17	12	158.34	10	1.16	15	150.28	12	1.18	11	133.52	19	1.17	15	
ONTARIO	93.09	24	0.87	22	77.39	29	0.79	23	97.91	23	1.00	19	94.04	27	0.74	27	105.07	27	0.93	27	
PALM SPRINGS	175.92	8	1.27	8	112.80	14	0.77	25	107.04	20	0.71	29	99.54	24	0.80	26	107.58	25	1.07	19	
REDLANDS	120.13	16	1.11	16	96.48	21	1.04	15	154.25	12	1.04	18	124.52	17	1.01	14	137.11	16	0.98	23	
RIDGECREST	229.65	4	1.44	4	161.95	9	1.12	13	176.84	9	1.57	6	148.90	13	1.01	15	254.31	6	1.05	20	
SADDLEBACK	83.01	27	0.73	27	70.69	31	0.53	34	99.07	22	0.74	26	46.03	34	0.39	35	65.99	34	0.65	35	
SAN JOAQUIN	135.90	10	1.04	18	244.44	2	1.45	6	138.25	13	1.17	14	127.50	16	1.05	13	108.44	23	1.09	18	
SANTA ANA	78.60	29	0.55	32	93.35	24	0.74	26	91.68	26	0.84	23	67.46	32	0.71	29	97.27	29	1.00	22	
SANTA BARBARA	153.81	9	1.15	13	82.00	28	0.70	27	183.78	7	1.38	9	152.37	11	1.52	6	156.66	10	1.41	8	
SANTA MONICA	101.69	21	0.79	25	122.78	12	1.00	17	110.76	19	0.99	20	75.41	30	0.62	32	91.08	31	0.95	26	
SOUTH BAY	122.68	15	1.17	10	142.15	10	1.49	5	125.28	16	1.39	8	164.07	10	1.31	8	183.90	7	1.88	7	
TEHACHAPI	117.96	17	1.43	5	232.67	3	1.12	14	130.70	15	1.29	13	298.96	5	1.21	9	97.29	28	1.13	16	
THOUSAND OAKS	127.73	14	1.05	17	93.86	23	0.91	18	104.37	21	1.10	17	106.59	21	0.92	21	143.78	13	1.31	11	
VALENCIA	62.01	35	0.46	34	51.04	34	0.53	33	79.23	32	0.61	33	72.27	31	0.61	33	105.09	26	0.97	25	
VENTURA	134.81	11	1.15	11	100.52	18	1.21	11	183.79	6	1.65	4	148.85	14	1.19	10	150.41	11	1.24	13	
VICTORVILLE	67.70	34	0.66	30	61.33	33	0.63	30	68.85	33	0.63	31	87.03	28	0.91	22	79.35	33	0.92	28	
WHITTIER	72.60	32	0.74	26	135.04	11	0.86	19	87.60	28	0.70	30	114.52	18	0.73	28	137.34	15	0.81	33	
WILDOMAR	88.54	26	0.72	28	40.51	35	0.56	32	118.49	18	0.81	24	52.70	33	0.60	34	84.01	32	0.87	30	
YUCCA VALLEY	319.82	3	3.41	2	216.97	5	1.50	4	304.25	3	1.49	7	389.08	3	1.80	5	463.68	4	3.39	4	
SCE SystemWide	108.13		0.89		102.61		0.91		112.00		0.96	_	114.83		0.92		134.48		1.10		

^{*&}quot;Exclusions" are days which utilities are allowed to remove from their metrics because the outages on those days were caused by a severe acts of nature.

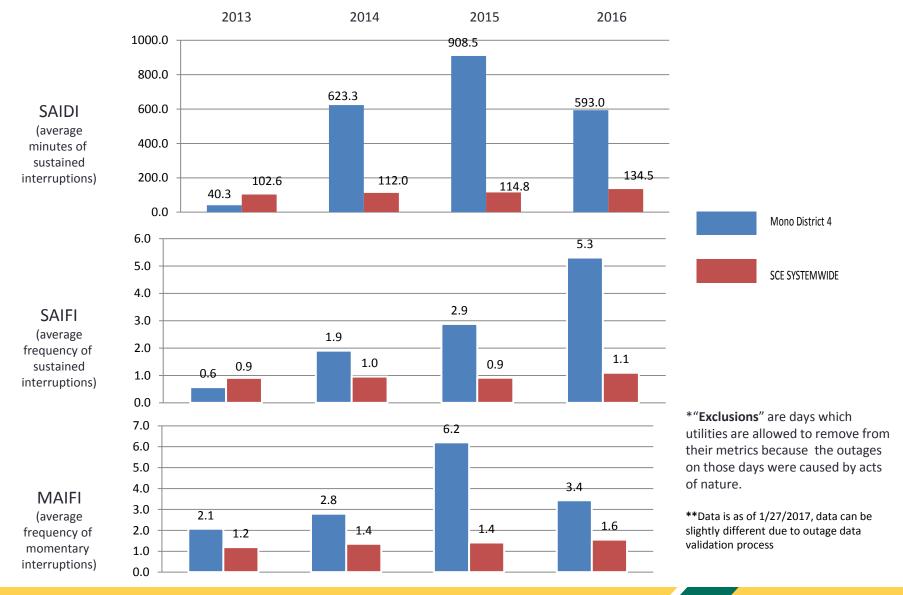
^{**}In the columns showing "Rank," lower numbers indicate poorer performance.

Overview of Mono District 4 There are 6 circuits that serve Mono District 4

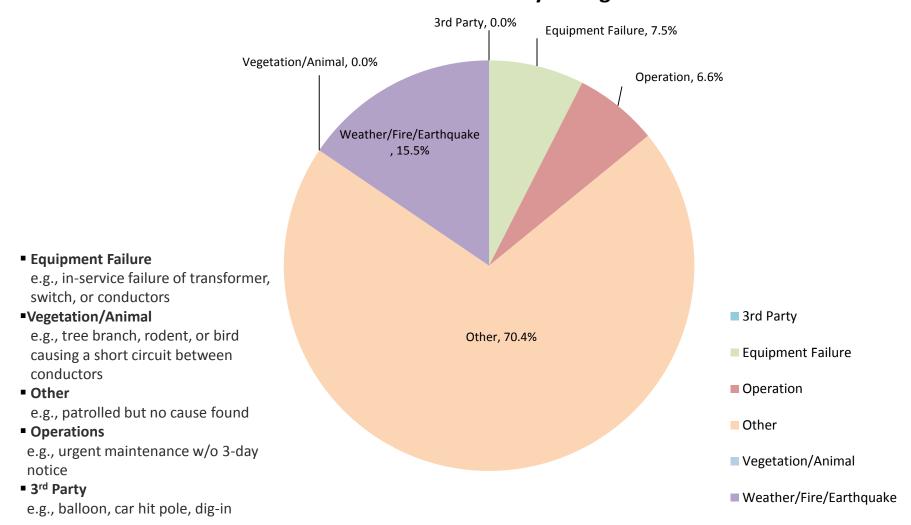
Circuit Type	Sum of Customers	Circuit Type	Sum of Customers	Circuit Type	Sum of Customers	Circuit Type	Sum of Customers
CONWAY(16KV)	26						
HURLEY(12KV)	865						
PICKLE MEADOWS(16KV	83						
REVERSE PEAK(12KV)	535						
ROBINSON CREEK(12KV)	253						
STROSNIDER(16KV)	406						

Grand Total 2,168

Reliability History of Circuits Serving Mono District 4 (No Exclusions)



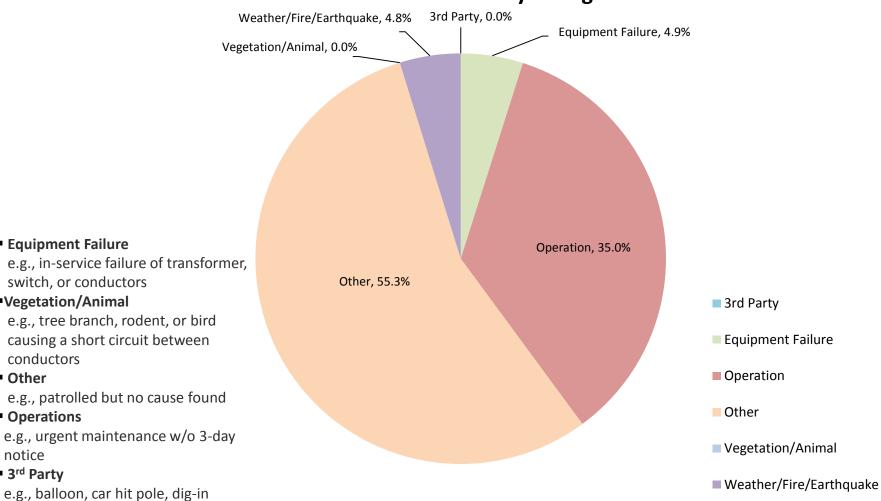
Causes of Repair Outages in Mono District 4 Circuits 2016 YTD Contributions to SAIDI by Outage Cause



SAIDI = the cumulative amount of time the average customer is interrupted by "sustained" outages each year.

Causes of Repair Outages in Mono District 4 Circuits 2016 YTD

Contributions to SAIFI by Outage Cause



SAIFI = the number of times the average customer is interrupted by "sustained" outages each year.

Equipment Failure

Vegetation/Animal

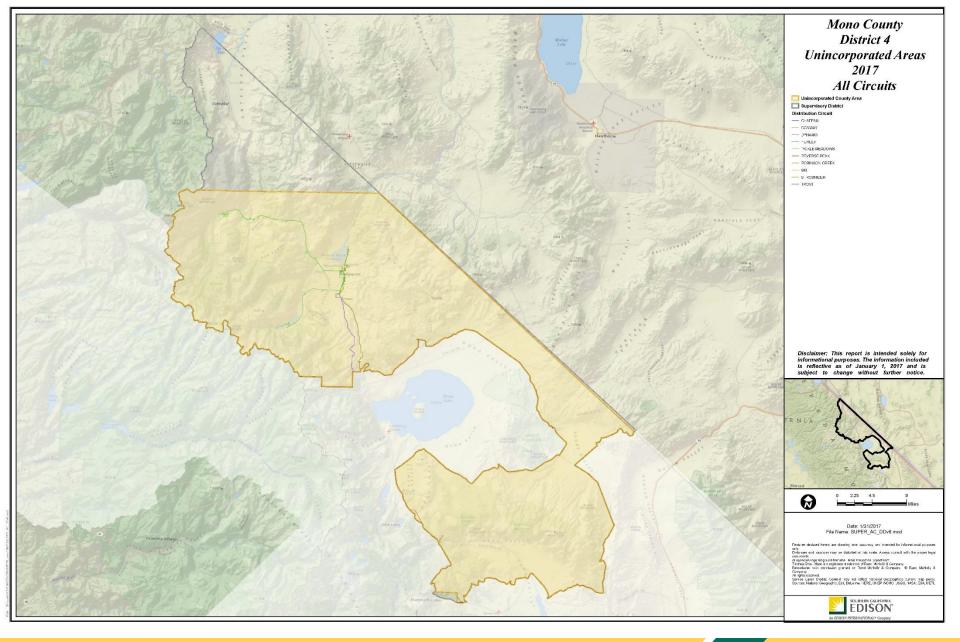
conductors

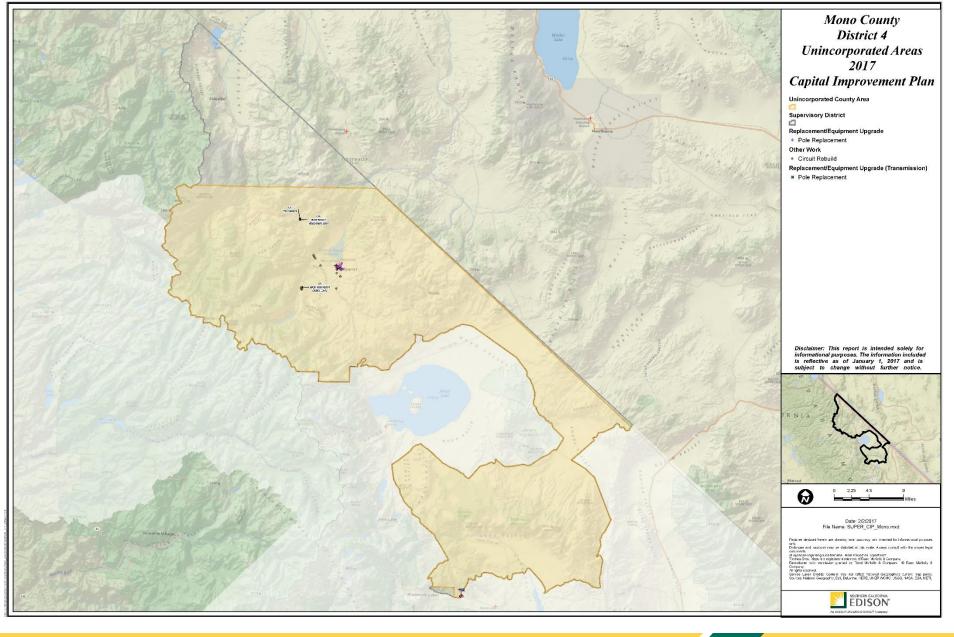
Operations

Other

notice ■ 3rd Party

switch, or conductors





Back-up Slides

Reliability Histories of Circuits Serving Mono District 4

Updated through Year-End 2016

Average Reliability of 6 Circuits Serving Mono District 4

		2013	•		2014			2015		15	t Qtr 20.	16	2nd	Qtr 20	016	3rd	Qtr 20	16	4th	Qtr 20	16	2016		
	SAIDI	SAIFI	MAIFI	SAIDI	SAIFI	MAIFI	SAIDI	SAIFI	MAIFI	SAIDI	SAIFI	MAIFI	SAIDI	SAIFI	MAIFI	SAIDI	SAIFI	MAIFI	SAIDI	SAIFI	MAIFI	SAIDI	SAIFI I	MAIFI
Mono District 4	40.3	0.6	2.1	623.3	1.9	2.8	908.5	2.9	6.2	158.6	0.6	1.5	274.5	2.0	1.1	105.4	2.1	0.1	54.4	0.6	0.7	593.0	5.3	3.4
3rd Party	36%	10%	0%	10%	6%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%
Equipment Failure	6%	1%	0%	15%	7%	7%	7%	8%	0%	0%	0%	0%	15%	13%	0%	0%	0%	0%	6%	2%	0%	7%	5%	0%
Operation	4%	37%	22%	17%	5%	0%	6%	26%	7%	0%	0%	0%	3%	31%	1%	10%	54%	66%	39%	21%	9%	7%	35%	4%
Other	51%	51%	78%	11%	59%	79%	14%	42%	92%	45%	62%	98%	82%	57%	99%	90%	46%	34%	47%	75%	90%	70%	55%	95%
Vegetation/Animal	3%	1%	0%	0%	0%	0%	0%	0%	1%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%
Weather/Fire/Earthquake	0%	0%	0%	47%	23%	14%	72%	24%	0%	55%	38%	2%	0%	0%	0%	0%	0%	0%	9%	2%	1%	16%	5%	1%
SCE Systemwide	102.6	0.9	1.2	112.0	1.0	1.4	114.8	0.9	1.4	40.5	0.3	0.4	34.8	0.3	0.4	29.4	0.2	0.3	29.8	0.3	0.4	134.5	1.1	1.6

Notes:

No outages are excluded from the metrics.

Outage Causes:

Other: e.g., patrolled but no cause could be found

Operations: e.g., urgent maintenance w/o 3-day notice to customers

3rd Party: e.g., balloons, car hit pole, dig-in

Vegetation/Animal: e.g., tree branch, rodent, or bird causing short circuit across conductors

SAIDI (minutes) = the cumulative amount of time the average customer is interrupted by "sustained" (longer than 5 minutes) outages.

SAIFI (interruptions) = the number of times the average customer is interrupted by "sustained" outages.

MAIFI (interruptions) = the number of times the average customer is interrupted by "momentary" (lasting 5 minutes or less) outages.

Reliability Histories for Individual Circuits Serving Mono District 4

	ı	2013			2014			2015		1st (Qtr 201	.6	2nd	Qtr 20 :	16	3rd (Qtr 201	6	4th	Qtr 20:	16		2016	
	SAIDI	SAIFI	MAIFI	SAIDI	SAIFI	MAIFI	SAIDI	SAIFI	MAIFI	SAIDI	SAIFI	MAIFI	SAIDI	SAIFI	MAIFI	SAIDI	SAIFI	MAIFI	SAIDI	SAIFI	MAIFI	SAIDI	SAIFI	MAIFI
CONWAY(16KV) - Customers: 26	167.8	0.7	5.0	110.3	2.3	2.3	1806.4	2.0	13.3	347.5	1.3	3.0	544.2	5.0	3.0	232.0	4.0	0.0	302.5	1.3	1.0	1426.1	11.7	7.0
3rd Party	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%
Equipment Failure	98%	47%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%
Operation	0%	0%	20%	0%	0%	0%	0%	0%	8%	0%	0%	0%	2%	20%	0%	6%	50%	0%	0%	0%	0%	2%	26%	0%
Other	2%	53%	80%	18%	86%	100%	1%	50%	92%	100%	100%	100%	98%	80%	100%	94%	50%	0%	20%	74%	100%	81%	71%	100%
Vegetation/Animal	0%	0%	0%	82%	14%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%
Weather/Fire/Earthquake	0%	0%	0%	0%	0%	0%	99%	50%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	80%	26%	0%	17%	3%	0%
HURLEY(12KV) - Customers: 865	37.1	0.1	0.0	5.3	0.0	0.0	435.9	2.3	0.1	168.0	1.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	168.0	1.0	0.0
3rd Party	100%	100%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%
Equipment Failure	0%	0%	0%	100%	100%	0%	28%	16%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%
Operation	0%	0%	0%	0%	0%	0%	7%	43%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%
Other	0%	0%	0%	0%	0%	0%	66%	41%	100%	100%	100%	100%	0%	0%	0%	0%	0%	0%	0%	0%	0%	100%	100%	100%
Vegetation/Animal	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%
Weather/Fire/Earthquake	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%
PICKLE MEADOWS(16KV) - Customers: 83	2.9	0.0	7.0	360.0	3.5	4.4	2536.4	4.1	13.8	0.0	0.0	3.9	662.0	3.8	3.0	234.3	4.1	1.0	60.8	1.0	1.0	957.2	8.8	8.9
3rd Party	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%
Equipment Failure	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%
Operation	0%	0%	14%	8%	12%	0%	25%	25%	7%	0%	0%	0%	2%	27%	10%	7%	50%	0%	0%	0%	0%	3%	34%	3%
Other	100%	100%	86%	92%	88%	100%	2%	26%	93%	0%	0%	100%	98%	73%	90%	93%	50%	100%	100%	100%	100%	97%	65%	97%
Vegetation/Animal	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%
Weather/Fire/Earthquake	0%	0%	0%	0%	0%	0%	72%	49%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%
REVERSE PEAK(12KV) - Customers: 535	14.1	1.7	0.6	907.0	2.6	1.9	119.8	3.1	6.7	355.1	1.0	0.4	202.3	3.0	0.0	92.7	2.7	0.3	96.0	0.6	0.5	746.1	7.3	1.3
3rd Party	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%
Equipment Failure	17%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	83%	33%	0%	0%	0%	0%	3%	3%	0%	23%	14%	0%
Operation	42%	50%	74%	47%	12%	0%	77%	41%	15%	0%	0%	0%	8%	33%	0%	21%	63%	100%	89%	91%	44%	16%	44%	43%
Other	42%	50%	26%	12%	51%	85%	23%	59%	85%	0%	0%	65%	10%	33%	0%	79%	37%	0%	0%	0%	49%	12%	28%	43%
Vegetation/Animal	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%
Weather/Fire/Earthquake	0%	0%	0%	41%	37%	15%	0%	0%	0%	100%	100%	35%	0%	0%	0%	0%	0%	0%	8%	6%	6%	49%	14%	14%

Reliability Histories for Individual Circuits Serving Mono District 4

		2013		2014				2015		1st	Qtr 20:	!6	2nd	Qtr 20	16	3rd Qtr 2016			4th	Qtr 20:	16	2016		
	SAIDI	SAIFI	MAIFI	SAIDI	SAIFI I	MAIFI	SAIDI	SAIFI	MAIFI	SAIDI	SAIFI	MAIFI	SAIDI	SAIFI	MAIFI	SAIDI	SAIFI N	/AIFI	SAIDI	SAIFI	MAIFI	SAIDI	SAIFI	MAIF
ROBINSON CREEK(12KV) - Customers: 25	0.0	0.0	5.0	3216.7	6.0	10.5	1741.9	3.0	14.7	0.0	0.0	4.0	676.6	3.0	3.0	233.7	4.0	0.0	96.1	1.8	1.8	1006.4	8.9	8.8
3rd Party	0%	0%	0%	16%	17%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%
Equipment Failure	0%	0%	0%	24%	17%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%
Operation	0%	0%	20%	0%	0%	0%	0%	0%	7%	0%	0%	0%	2%	33%	0%	6%	50%	0%	0%	0%	0%	3%	34%	0%
Other	0%	0%	80%	7%	38%	74%	1%	34%	93%	0%	0%	100%	98%	67%	100%	94%	50%	0%	100%	100%	100%	97%	66%	100%
Vegetation/Animal	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%
Weather/Fire/Earthquake	0%	0%	0%	53%	28%	26%	99%	66%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%
STROSNIDER(16KV) - Customers: 406	105.5	0.4	5.4	25.1	2.0	4.8	2043.2	3.4	11.2	0.0	0.0	4.0	606.0	3.6	3.4	232.0	4.0	0.0	72.4	1.0	1.4	910.5	8.6	8.8
3rd Party	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%
Equipment Failure	0%	0%	0%	21%	0%	21%	5%	12%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	17%	4%	0%	1%	0%	0%
Operation	0%	0%	18%	0%	0%	0%	0%	0%	0%	0%	0%	0%	2%	28%	0%	6%	50%	0%	0%	0%	0%	3%	35%	0%
Other	95%	93%	82%	79%	100%	79%	1%	29%	96%	0%	0%	100%	98%	72%	100%	94%	50%	0%	83%	96%	100%	96%	65%	100%
Vegetation/Animal	5%	7%	0%	0%	0%	0%	0%	0%	4%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%
Weather/Fire/Earthquake	0%	0%	0%	0%	0%	0%	95%	59%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%