Circuit Reliability Review

Manhattan Beach

2020

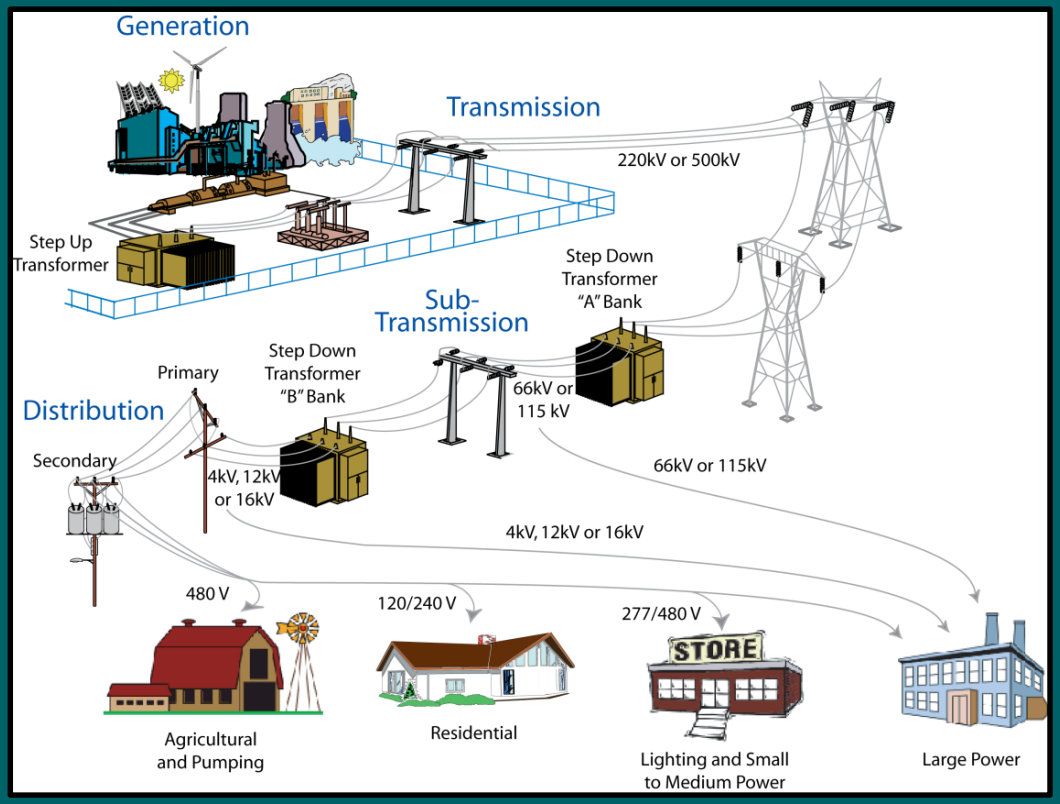
Who We Are

- Southern California Edison (SCE) is an Edison International company
- One of the nation's largest electric utilities
- More than 130 years of history
- Headquartered in Rosemead, California
- Regulated by the California Public Utilities Commission (CPUC) and the Federal Energy Regulatory Commission (FERC)
- 50,000 square miles of SCE service area across Central, Coastal, and Southern California
- 15 million residents in service territory
- 5 million customer accounts in 445 cities and communities

Our Grid

To deliver power safely, reliably and affordably, we monitor and maintain a vast electricity system.

- 50,000 Square Miles
- 4,600 Circuits
- 1.5 Million Poles
- 119,000 Miles of Transmission and Distribution Lines
- 730,000 Transformers



Strengthening and Modernizing the Grid

SCE plans to spend more than $5B each year to maintain, improve, and harden its infrastructure.

- **Infrastructure reliability** – updating underground cables, poles, switches, and transformers
- **Wildfire mitigation** – hardening infrastructure, bolstering situational awareness capabilities, and enhancing operational practices
- **Transmission** – connecting renewables, installing new substations, and updating lines
- **Grid readiness** – updating the grid for impacts from new technologies
- **Long-term energy policy** – supporting energy storage, electric vehicles, and renewables

2019 Capital Investments

179 miles of underground cable replaced

502 miles of overhead conductor replaced for public safety

16.4k distribution poles replaced

4.3k transmission poles replaced

71 underground structure replacements

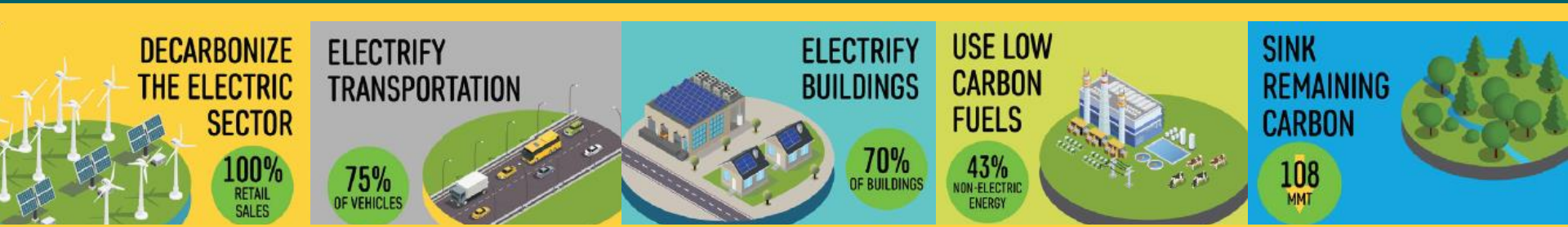
SCE's investments support safe, reliable, affordable, and clean energy for our customers

Meeting California's Climate Change Goals

PATHWAY 2045

SCE'S vision to help California achieve a carbon neutral future

Carbon neutrality is achieved through deep **decarbonization** of **electricity,** transportation and building **electrification**, and the use of **low-carbon fuels**



Addressing Wildfire Risk

- SCE filed its second Wildfire Mitigation Plan in February 2020
- It builds on the progress made in 2019 to reduce the risk of fire ignitions caused by utility infrastructure
- SCE crews will continue to work to install hi-tech wildfire mitigation tools and technologies to make communities safer, more resilient, and to help reduce the number of Public Safety Power Shutoffs (PSPS)

Public Safety Power Shutoffs (PSPS)

- De-energizing power lines to prevent ignitions
- Used during elevated fire conditions
- Primarily impacts circuits in high fire risk areas
- Use of multiple methods to notify people in affected areas before, during and after a de-energization event

4-7 DAYS AHEAD

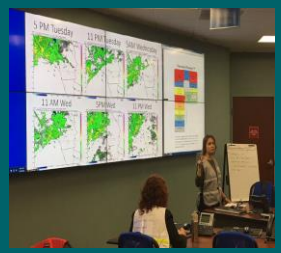
Forecast Weather & Fire Conditions

3 DAYS AHEAD

SCE Incident Management Team on Alert

County Operational Areas informed of potential activation

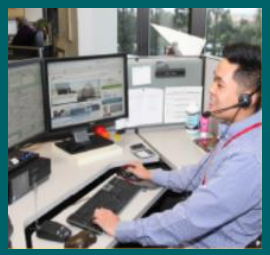
2 DAYS AHEAD



SCE Incident Management Team Activated

1st Notification PSPS Possible sent to agencies and customers

1 DAY AHEAD



2nd Notification PSPS Possible

POWER SHUTOFF

3rd Notification Power Shutoff

POWER RESTORATION

4th Notification Power Restored After Inspection

PLANNING AND MONITORING

OUTAGE

*Erratic or sudden onset of conditions may impact our ability to provide advanced notice to customers.

Reliability Overview

Energy for What's Ahead℠

SOUTHERN CALIFORNIA EDISON®

What is Reliability?

- In simplest terms:

  Having dependable electricity when you need it.

- Outages:
  - Maintenance outages (aka planned outages)
  - Repair outages (aka unplanned outages)
    - Sustained Outage = An outage lasting **> 5 minutes**
    - Momentary Outage = An outage lasting **≤ 5 minutes**

Major Event Day (MED) : A day in which the daily system SAIDI exceeds a threshold value. For the purposes of calculating daily system SAIDI, any interruption that spans multiple calendar days is accrued to the day on which the interruption began. Statistically, days having a daily system SAIDI greater than a threshold value are days on which the energy delivery system experienced stresses beyond that normally expected (such as severe weather).

Public Safety Power Shutoff (PSPS) : An operational protocol that SCE implements under extreme weather conditions in order to minimize the threat of wildfires and keep communities safe from potentially dangerous situations. These types of sustained outages are temporary and usually involve situations where high fire areas are experiencing adverse weather or public safety is at risk.

How Do We Measure Reliability?

SAIDI	SAIFI	MAIFI	CAIDI

SAIDI	=	Total minutes every SCE customer was without power due to sustained outages (CMI)	÷	Total number of customers	"What's the total time my power service will be unexpectedly interrupted this year?"
System Average Interruption Duration Index					
SAIFI	=	Number of sustained customer outages experienced by all SCE customers (CI)	÷	Total number of customers	"How many times will my power service be unexpectedly interrupted this year?"
System Average Interruption Frequency Duration Index					
CAIDI	=	System Average Interruption Duration Index (SAIDI)	÷	System Average Interruption Frequency Index (SAIFI)	"How long will it take to restore my power after an unexpected interruption?"
Customer Average Interruption Duration Index					

Communities in the SOUTH BAY District

ALONDRA PARK
DEL AIRE
EL SEGUNDO
GARDENA
HAWTHORNE
HERMOSA BEACH
INGLEWOOD
LADERA HEIGHTS
LAWNDALE
LENNOX
LOMITA
LOS ANGELES
MANHATTAN BEACH
PALOS VERDES ESTATES
RANCHO PALOS VERDES
REDONDO BEACH
ROLLING HILLS
ROLLING HILLS ESTATES
TORRANCE
VIEW PARK-WINDSOR HILLS
WEST ATHENS
WESTMONT

Reliability by SCE Districts (No Exclusions)

	2015				2016				2017				2018				2019			
District Name	District SAIDI	SAIDI Ranking	District SAIFI	SAIFI Ranking	District SAIDI	SAIDI Ranking	District SAIFI	SAIFI Ranking	District SAIDI	SAIDI Ranking	District SAIFI	SAIFI Ranking	District SAIDI	SAIDI Ranking	District SAIFI	SAIFI Ranking	District SAIDI	SAIDI Ranking	District SAIFI	SAIFI Ranking
ANTELOPE VALLEY	104.34	22	0.68	30	107.67	24	0.87	29	103.19	23	0.87	27	55.61	33	0.61	31	194.75	15	0.67	33
ARROWHEAD	362.61	4	3.97	1	659.46	3	2.85	5	816.52	2	3.86	3	68.60	29	1.53	5	3630.64	1	9.59	1
BARSTOW	187.11	8	1.17	12	134.83	18	1.35	9	357.47	6	2.65	6	116.70	17	1.37	9	114.49	19	0.83	26
BIG CREEK	422.77	2	3.42	2	1062.01	2	4.99	1	4273.52	1	7.95	2	203.43	6	2.48	1	1559.97	3	5.58	2
BISHOP	298.11	6	2.22	4	168.59	8	1.22	14	190.51	10	1.93	9	139.70	12	0.54	32	1445.73	4	2.91	4
BLYTHE	427.00	1	1.52	7	396.38	5	2.71	6	684.48	3	2.38	7	277.72	3	1.57	4	379.85	8	1.69	8
CATALINA	42.56	35	2.25	3	65.01	35	3.66	3	70.67	34	0.54	35	141.45	11	2.44	2	46.63	35	1.56	11
COVINA	100.08	23	0.81	25	112.13	22	0.97	24	117.18	20	0.93	23	103.18	18	0.83	22	84.30	28	0.86	24
DOMINGUEZ HILLS	130.63	15	0.97	17	146.38	12	1.11	17	123.60	18	0.83	28	93.37	19	0.85	21	98.66	22	0.87	23
FOOTHILL	109.64	20	0.95	20	142.81	14	1.03	21	110.53	21	1.12	13	117.61	16	0.98	17	273.47	12	1.05	18
FULLERTON	76.59	29	0.67	31	92.72	30	0.76	34	89.29	28	0.68	33	69.45	28	0.52	33	82.34	30	0.78	28
HUNTINGTON BEACH	98.32	25	0.95	19	128.02	20	1.26	12	99.07	26	0.98	21	87.72	24	0.76	25	97.70	23	1.01	20
KERNVILLE	286.38	7	0.96	18	2421.32	1	3.67	2	305.53	7	3.29	4	184.41	7	1.14	10	320.17	10	1.67	9
LONG BEACH	164.46	9	0.89	23	135.16	17	0.86	31	77.17	32	0.71	32	51.48	34	0.44	34	78.18	32	0.64	34
MENIFEE	111.46	19	0.98	16	156.75	9	1.31	10	130.47	16	0.96	22	174.06	8	0.90	19	99.48	21	0.86	25
MONROVIA	96.68	26	0.88	24	116.57	21	0.84	32	105.00	22	0.98	20	243.02	5	1.43	8	86.10	26	0.82	27
MONTEBELLO	150.28	12	1.18	11	133.52	19	1.17	15	123.98	17	0.99	19	160.88	10	1.06	13	127.52	18	1.18	16
ONTARIO	94.04	27	0.74	27	105.07	27	0.93	27	100.43	24	1.13	12	80.04	26	0.72	27	90.16	25	0.94	21
PALM SPRINGS	99.54	24	0.80	26	107.58	25	1.07	19	119.10	19	1.02	17	73.95	27	0.79	24	133.77	17	1.23	14
REDLANDS	124.52	17	1.01	14	137.11	16	0.98	23	142.59	14	1.01	18	88.93	22	0.97	18	215.23	13	1.27	13
RIDGECREST	148.90	13	1.01	15	254.31	6	1.05	20	164.28	11	1.09	14	254.59	4	1.10	11	299.99	11	2.09	6
SADDLEBACK	46.03	34	0.39	35	65.99	34	0.65	35	65.35	35	0.58	34	45.80	35	0.38	35	134.87	16	0.67	32
SAN JOAQUIN	127.50	16	1.05	13	108.44	23	1.09	18	191.66	9	1.34	11	56.23	31	0.68	28	72.67	33	0.75	30
SANTA ANA	67.46	32	0.71	29	97.27	29	1.00	22	81.90	31	0.71	31	122.09	15	0.82	23	62.79	34	0.56	35
SANTA BARBARA	152.37	11	1.52	6	156.66	10	1.41	8	408.43	5	9.21	1	172.90	9	1.02	16	201.25	14	1.50	12
SANTA MONICA	75.41	30	0.62	32	91.08	31	0.95	26	71.89	33	0.71	30	80.24	25	1.04	15	104.74	20	0.90	22
SOUTH BAY	164.07	10	1.31	8	183.90	7	1.88	7	99.19	25	0.93	24	90.63	21	1.09	12	79.31	31	1.01	19
TEHACHAPI	298.96	5	1.21	9	97.29	28	1.13	16	86.51	29	1.05	16	55.99	32	0.67	29	2983.88	2	4.61	3
THOUSAND OAKS	106.59	21	0.92	21	143.78	13	1.31	11	151.74	12	1.43	10	1167.54	1	1.48	6	517.05	5	1.72	7
VALENCIA	72.27	31	0.61	33	105.09	26	0.97	25	136.62	15	1.08	15	92.41	20	1.06	14	457.47	6	1.22	15
VENTURA	148.85	14	1.19	10	150.41	11	1.24	13	520.90	4	3.12	5	136.04	13	1.44	7	334.96	9	1.65	10
VICTORVILLE	87.03	28	0.91	22	79.35	33	0.92	28	84.07	30	0.89	26	125.92	14	0.86	20	82.42	29	1.10	17
WHITTIER	114.52	18	0.73	28	137.34	15	0.81	33	148.91	13	0.90	25	87.74	23	0.67	30	84.86	27	0.73	31
WILDOMAR	52.70	33	0.60	34	84.01	32	0.87	30	90.15	27	0.80	29	60.77	30	0.75	26	94.47	24	0.77	29
YUCCA VALLEY	389.08	3	1.80	5	463.68	4	3.39	4	300.33	8	1.96	8	353.83	2	1.94	3	451.75	7	2.34	5
SCE SystemWide	**114.83**		**0.92**		**134.48**		**1.10**		**139.73**		**1.19**		**136.82**		**0.87**		**177.97**		**1.04**	

*"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 Manhattan Beach

There are 16 circuits that serve Manhattan Beach [1]

Circuit Type	Customers	Circuit Type	Customers	Circuit Type	Customers	Circuit Type	Customers
BARRACUDA(16KV)	232						
BORDEN(4.16KV)	1,015						
CLEO(4.16KV)	1,053						
CYLINDER(16KV)	1,387						
GRIZZLEY(16KV)	3,612						
HARKNESS(4.16KV)	835						
HILL(4.16KV)	743						
KATHLEEN(16KV)	679						
KEATS(4.16KV)	155						
NO BEACH(4.16KV)	781						
OZONE(4.16KV)	615						
PENGUIN(16KV)	456						
PISTON(16KV)	4,409						
SALMON(16KV)	4,029						
SO STRAND(4.16KV)	632						
VALVE(16KV)	3,327						
Grand Total	23,960						

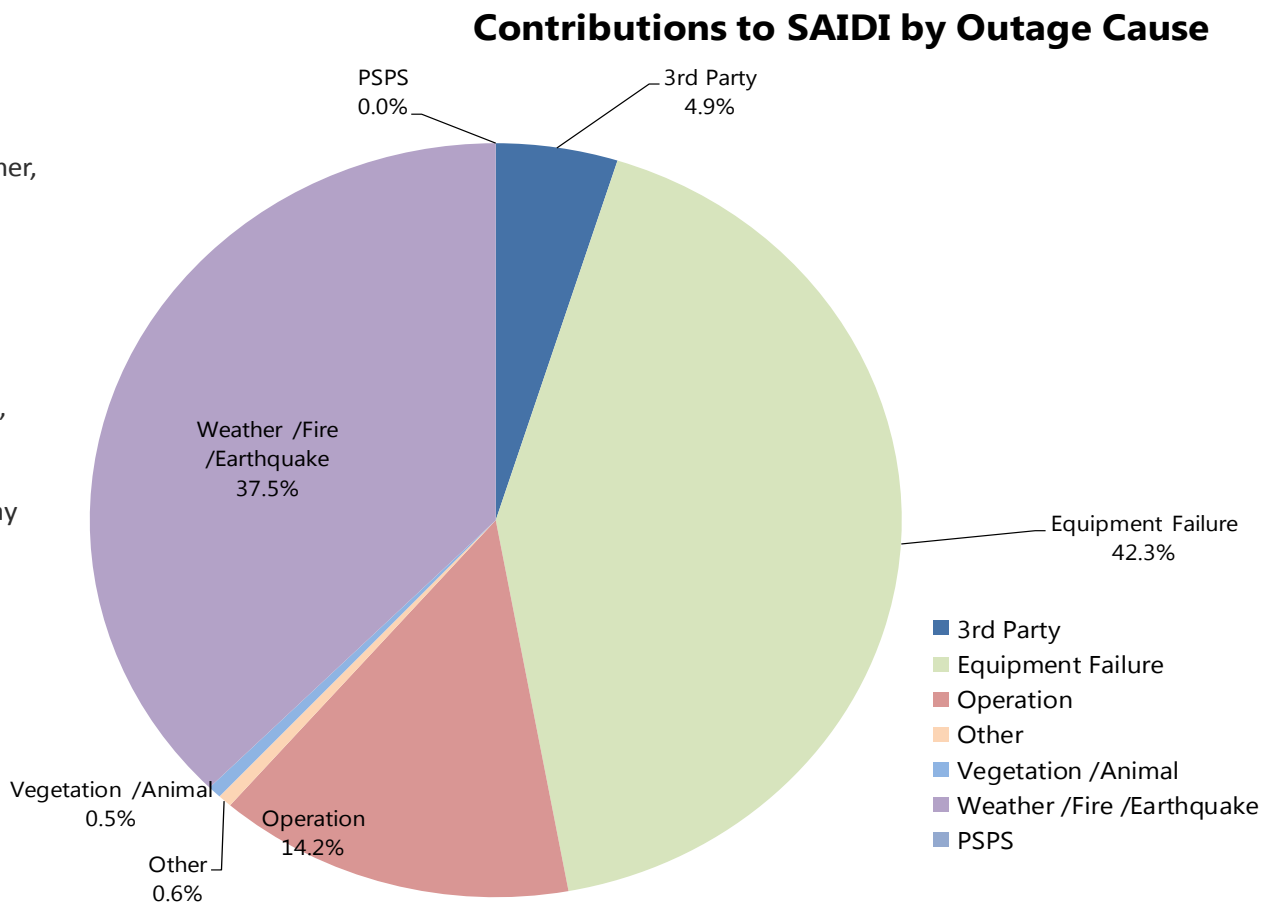
Reliability History of Circuits Serving Manhattan Beach (No Exclusions)

"Exclusions**" are days which utilities are allowed to remove from their metrics because the outages on those days were caused by acts of nature.

**Data is as of 02/14/2020, data can be slightly different due to outage data validation process

Causes of Repair Outages in Manhattan Beach
2019

- **Equipment Failure**
  e.g., in-service failure of transformer, switch, or conductors
- **Vegetation/Animal**
  e.g., tree branch, rodent, or bird causing a short circuit between conductors
- **Other**
  e.g., patrolled but no cause found, PSPS
- **Operations**
  e.g., urgent maintenance w/o 3-day notice
- **3rd Party**
  e.g., balloon, car hit pole, dig-in
- **PSPS**
  e.g., Public Safety Power Shutoff

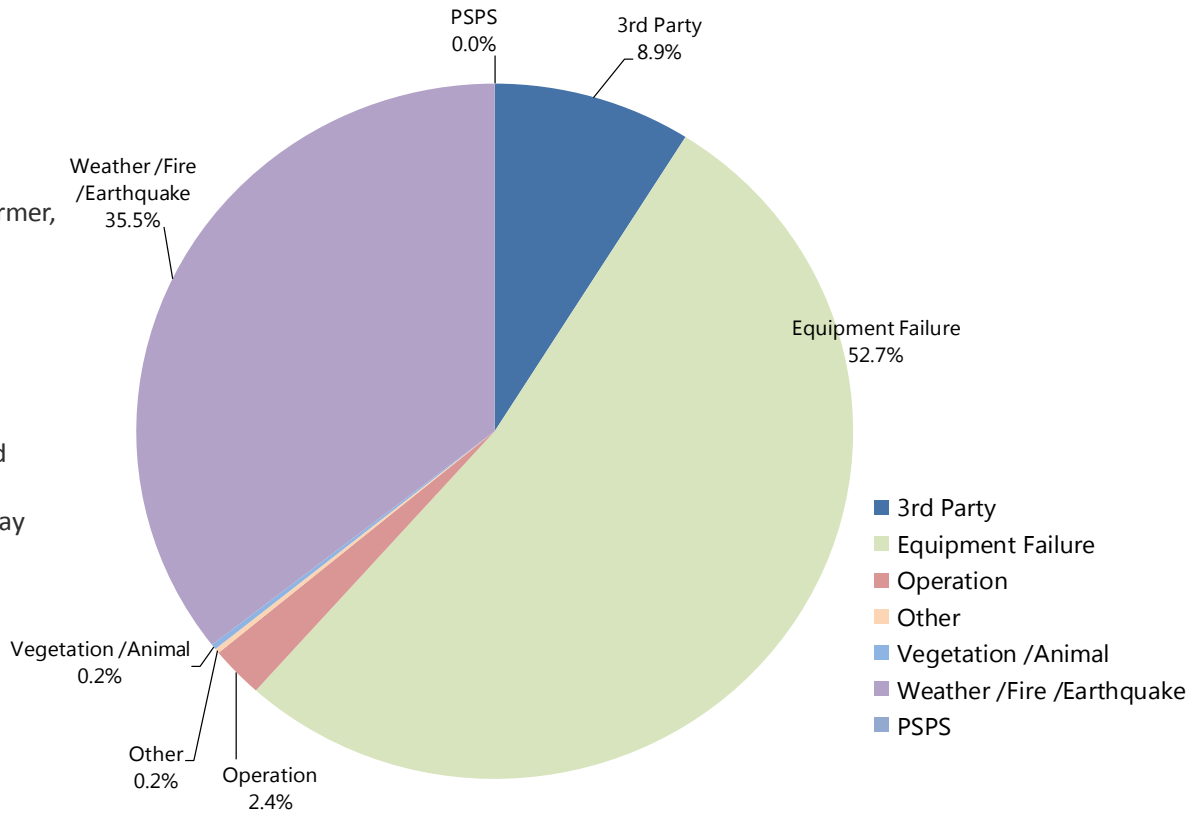


SAIDI = the cumulative amount of time the average customer is interrupted by "sustained" outages each year.

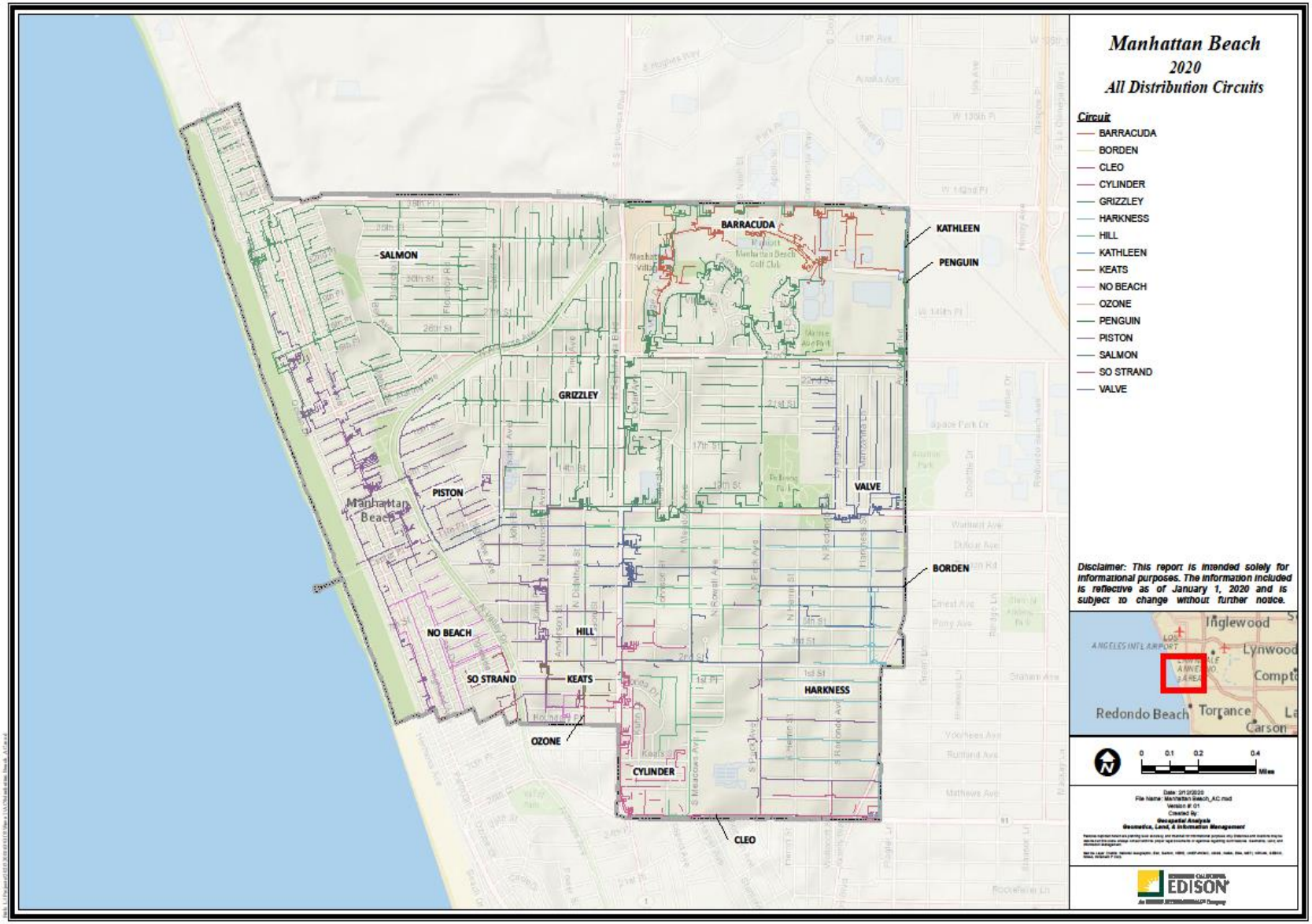
Causes of Repair Outages in Manhattan Beach
2019

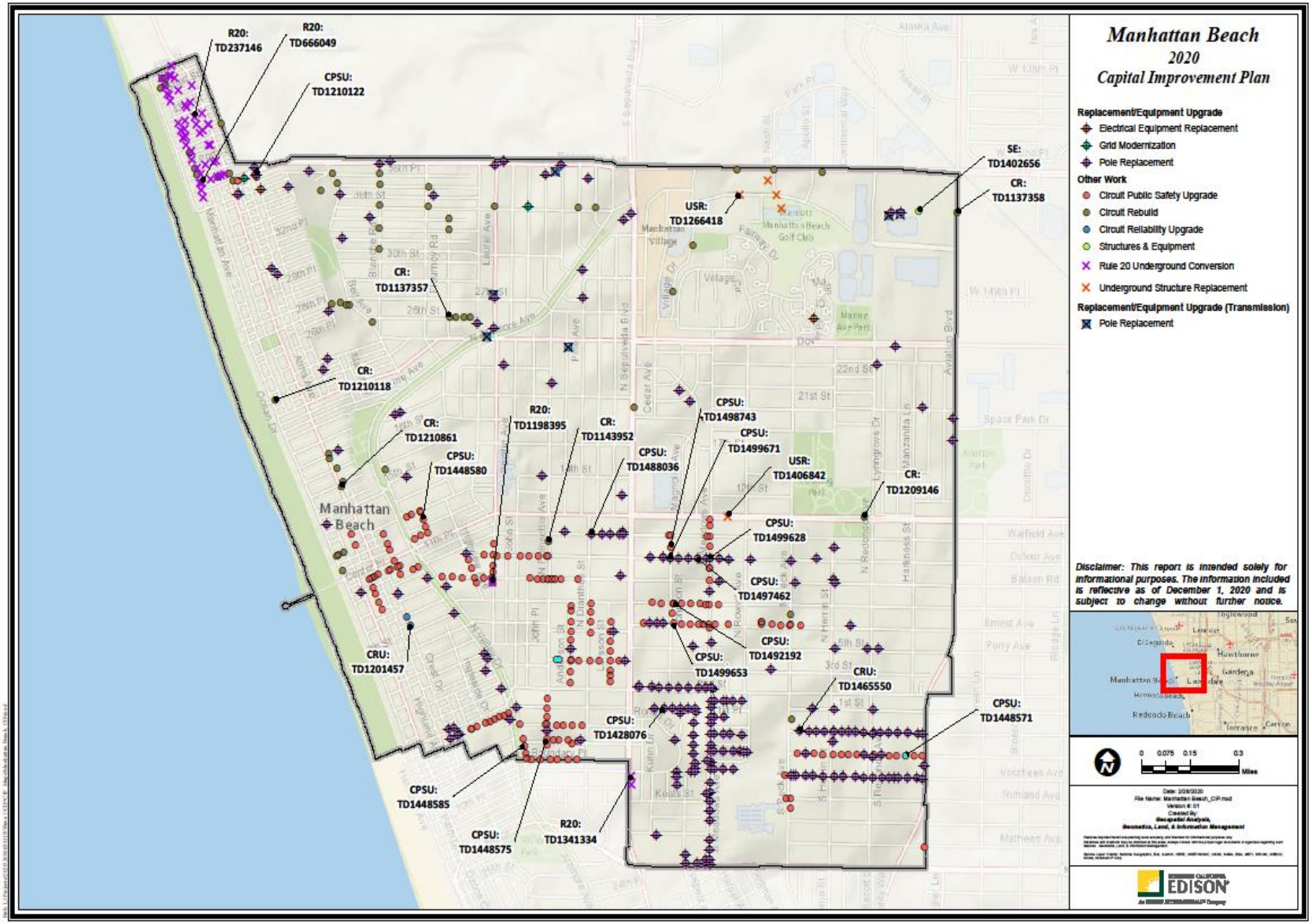
Contributions to SAIFI by Outage Cause

- **Equipment Failure**
  e.g., in-service failure of transformer, switch, or conductors
- **Vegetation/Animal**
  e.g., tree branch, rodent, or bird causing a short circuit between conductors
- **Other**
  e.g., patrolled but no cause found
- **Operations**
  e.g., urgent maintenance w/o 3-day notice
- **3rd Party**
  e.g., balloon, car hit pole, dig-in
- **PSPS**
  e.g., Public Safety Power Shutoff



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


Manhattan Beach
2020
All Distribution Circuits
Circuit
BARRACUDA
BORDEN
CLEO
CYLINDER
GRIZZLEY
HARKNESS
HILL
KATHLEEN
KEATS
NO BEACH
OZONE
PENGUIN
PISTON
SALMON
SO STRAND
VALVE
Disclaimer: This report is intended solely for informational purposes. The information included is reflective as of January 1, 2020 and is subject to change without further notice.
BARRACUDA
KATHLEEN
PENGUIN
SALMON
GRIZZLEY
PISTON
Manhattan Beach
VALVE
BORDEN
NO BEACH
HILL
SO STRAND
KEATS
HARKNESS
OZONE
CYLINDER
CLEO
Inglewood
Lynwood
Redondo Beach
Torrance
Carson
0 0.1 0.2 0.4
Miles
EDISON


Manhattan Beach
2020
Capital Improvement Plan
Replacement/Equipment Upgrade
Electrical Equipment Replacement
Grid Modernization
Pole Replacement
Other Work
Circuit Public Safety Upgrade
Circuit Rebuild
Circuit Reliability Upgrade
Structures & Equipment
Rule 20 Underground Conversion
Underground Structure Replacement
Replacement/Equipment Upgrade (Transmission)
Pole Replacement
Disclaimer: This report is intended solely for informational purposes. The information included is reflective as of December 1, 2020 and is subject to change without further notice.
R20: TD237146
R20: TD666049
CPSU: TD1210122
SE: TD1402656
CR: TD1137358
USR: TD1266418
CR: TD1137357
CR: TD1210118
CR: TD1210861
CPSU: TD1448580
R20: TD1198395
CR: TD1143952
CPSU: TD1488036
CPSU: TD1498743
CPSU: TD1499671
USR: TD1406842
CR: TD1209146
CPSU: TD1499628
CPSU: TD1497462
CPSU: TD1492192
CPSU: TD1499653
CRU: TD1201457
CRU: TD1465550
CPSU: TD1448571
CPSU: TD1428076
CPSU: TD1448585
CPSU: TD1448575
R20: TD1341334
Manhattan Beach

Back-up Slides

Reliability Histories of Circuits Serving Manhattan Beach

Updated through Dec 2019

Average Reliability of 16 Circuits Serving Manhattan Beach

	2016			2017			2018			1st Qtr 2019			2nd Qtr 2019			3rd Qtr 2019			4th Qtr 2019			2019		
	SAIDI	SAIFI	MAIFI	SAIDI	SAIFI	MAIFI	SAIDI	SAIFI	MAIFI	SAIDI	SAIFI	MAIFI	SAIDI	SAIFI	MAIFI	SAIDI	SAIFI	MAIFI	SAIDI	SAIFI	MAIFI	SAIDI	SAIFI	MAIFI
16 Circuits Serving Manhattan Beach -- Total																								
Customers: 23,960	**117.9**	**1.6**	**0.7**	**122.3**	**1.1**	**2.1**	**80.8**	**1.6**	**2.4**	**18.4**	**0.6**	**0.1**	**3.1**	**0.1**	**0.6**	**2.3**	**0.0**	**0.2**	**10.7**	**0.3**	**0.3**	**34.5**	**0.9**	**1.3**
3rd Party	12%	7%	4%	25%	13%	16%	2%	2%	6%	-	-	-	38%	87%	-	-	-	15%	4%	12%	-	5%	9%	2%
Equipment Failure	39%	12%	8%	26%	25%	43%	58%	42%	8%	27%	45%	-	5%	0%	-	16%	11%	-	84%	85%	100%	42%	53%	26%
Operation	21%	40%	25%	7%	19%	2%	6%	9%	-	2%	0%	-	52%	12%	0%	84%	89%	-	9%	2%	-	14%	2%	0%
Other	6%	0%	28%	8%	7%	35%	11%	13%	47%	1%	0%	100%	-	-	100%	-	-	85%	-	-	-	1%	0%	71%
Vegetation/Animal	7%	23%	4%	5%	13%	1%	22%	32%	32%	-	-	-	-	-	-	-	-	-	2%	1%	-	1%	0%	-
Weather/Fire/Earthquake	15%	17%	30%	30%	22%	4%	2%	2%	8%	70%	54%	-	5%	1%	-	-	-	-	-	-	-	38%	36%	-
PSPS	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
SCE SYSTEMWIDE	**134.5**	**1.1**	**1.6**	**139.7**	**1.2**	**1.8**	**136.8**	**0.9**	**1.4**	**28.1**	**0.3**	**0.4**	**18.9**	**0.2**	**0.4**	**31.8**	**0.2**	**0.3**	**99.3**	**0.3**	**0.3**	**178.0**	**1.0**	**1.4**

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
PSPS: e.g., Public Safety Power Shutoff

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 Manhattan Beach - 1 of 4

	2016			2017			2018			1st Qtr 2019			2nd Qtr 2019			3rd Qtr 2019			4th Qtr 2019			2019		
	SAIDI	SAIFI	MAIFI	SAIDI	SAIFI	MAIFI	SAIDI	SAIFI	MAIFI	SAIDI	SAIFI	MAIFI	SAIDI	SAIFI	MAIFI	SAIDI	SAIFI	MAIFI	SAIDI	SAIFI	MAIFI	SAIDI	SAIFI	MAIFI
BARRACUDA(16KV) - Customers: 232	**156.0**	**2.1**	**-**	**188.2**	**2.1**	**1.0**	**381.7**	**1.6**	**1.3**	**48.9**	**1.0**	**-**	**2.3**	**0.0**	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**51.2**	**1.0**	**-**
3rd Party	94%	51%	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Equipment Failure	1%	0%	-	10%	52%	100%	100%	100%	100%	100%	100%	-	-	-	-	-	-	-	-	-	-	95%	99%	-
Operation	-	-	-	90%	48%	-	-	-	-	-	-	-	100%	100%	-	-	-	-	-	-	-	5%	1%	-
Other	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Vegetation/Animal	5%	48%	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Weather/Fire/Earthquake	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
PSPS	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
BORDEN(4.16KV) - Customers: 1,015	**85.7**	**2.1**	**5.0**	**115.4**	**1.3**	**-**	**46.8**	**1.1**	**3.0**	**3.4**	**0.0**	**-**	**5.0**	**1.0**	**1.0**	**-**	**-**	**-**	**113.8**	**1.1**	**-**	**122.3**	**2.1**	**1.0**
3rd Party	56%	49%	20%	-	-	-	-	-	33%	-	-	-	100%	100%	-	-	-	-	-	-	-	4%	48%	-
Equipment Failure	6%	1%	-	100%	100%	-	100%	100%	-	-	-	-	-	-	-	-	-	-	98%	95%	-	92%	49%	-
Operation	37%	50%	-	-	-	-	-	-	-	100%	100%	-	-	-	-	-	-	-	2%	5%	-	4%	3%	-
Other	-	-	80%	-	-	-	-	-	33%	-	-	-	-	-	100%	-	-	-	-	-	-	-	-	100%
Vegetation/Animal	-	-	-	-	-	-	-	-	33%	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Weather/Fire/Earthquake	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
PSPS	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
CLEO(4.16KV) - Customers: 1,053	**55.0**	**2.0**	**2.0**	**21.6**	**0.1**	**-**	**2.8**	**0.0**	**2.0**	**-**	**-**	**-**	**-**	**-**	**1.0**	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**1.0**
3rd Party	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Equipment Failure	-	-	-	93%	80%	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Operation	58%	51%	-	7%	20%	-	100%	100%	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Other	-	-	-	-	-	-	-	-	50%	-	-	-	-	-	100%	-	-	-	-	-	-	-	-	100%
Vegetation/Animal	-	-	-	-	-	-	-	-	50%	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Weather/Fire/Earthquake	42%	49%	100%	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
PSPS	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
CYLINDER(16KV) - Customers: 1,387	**398.1**	**3.1**	**1.0**	**64.1**	**1.3**	**1.0**	**-**	**-**	**2.0**	**-**	**-**	**-**	**0.4**	**0.0**	**1.0**	**-**	**-**	**-**	**1.4**	**0.0**	**-**	**1.8**	**0.0**	**1.0**
3rd Party	39%	33%	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Equipment Failure	22%	32%	97%	97%	98%	100%	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Operation	8%	32%	-	3%	2%	-	-	-	-	-	-	-	100%	100%	-	-	-	-	100%	100%	-	100%	100%	-
Other	32%	3%	3%	-	-	-	-	-	51%	-	-	-	-	-	100%	-	-	-	-	-	-	-	-	100%
Vegetation/Animal	-	-	-	-	-	-	-	-	49%	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Weather/Fire/Earthquake	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
PSPS	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-

Reliability Histories for Individual Circuits Serving Manhattan Beach - 2 of 4

	2016			2017			2018			1st Qtr 2019			2nd Qtr 2019			3rd Qtr 2019			4th Qtr 2019			2019		
	SAIDI	SAIFI	MAIFI	SAIDI	SAIFI	MAIFI	SAIDI	SAIFI	MAIFI	SAIDI	SAIFI	MAIFI	SAIDI	SAIFI	MAIFI	SAIDI	SAIFI	MAIFI	SAIDI	SAIFI	MAIFI	SAIDI	SAIFI	MAIFI
GRIZZLEY(16KV) - Customers: 3,612	**14.2**	**1.0**	**1.0**	**6.2**	**0.0**	**1.0**	**105.0**	**2.4**	**1.4**	**0.1**	**0.0**	**-**	**1.3**	**0.0**	**0.0**	**-**	**-**	**-**	**0.1**	**0.0**	**-**	**1.4**	**0.0**	**0.0**
3rd Party	-	-	-	-	-	-	0%	0%	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Equipment Failure	-	-	-	36%	54%	-	46%	15%	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Operation	5%	0%	100%	64%	46%	-	0%	0%	-	100%	100%	-	24%	62%	100%	-	-	-	100%	100%	-	32%	81%	100%
Other	-	-	-	-	-	100%	2%	0%	100%	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Vegetation/Animal	92%	99%	-	-	-	-	52%	84%	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Weather/Fire/Earthquake	3%	0%	-	-	-	-	-	-	-	-	-	-	76%	38%	-	-	-	-	-	-	-	68%	19%	-
PSPS	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
HARKNESS(4.16KV) - Customers: 835	**45.3**	**1.1**	**-**	**0.2**	**0.0**	**-**	**53.9**	**1.1**	**2.0**	**1.6**	**0.0**	**-**	**-**	**-**	**1.0**	**-**	**-**	**-**	**2.9**	**0.0**	**-**	**4.5**	**0.0**	**1.0**
3rd Party	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Equipment Failure	28%	9%	-	100%	100%	-	26%	7%	-	-	-	-	-	-	-	-	-	-	100%	100%	-	64%	58%	-
Operation	72%	91%	-	-	-	-	1%	1%	-	100%	100%	-	-	-	-	-	-	-	-	-	-	36%	42%	-
Other	-	-	-	-	-	-	-	-	49%	-	-	-	-	-	100%	-	-	-	-	-	-	-	-	100%
Vegetation/Animal	-	-	-	-	-	-	-	-	51%	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Weather/Fire/Earthquake	-	-	-	-	-	-	73%	93%	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
PSPS	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
HILL(4.16KV) - Customers: 743	**111.8**	**1.2**	**0.8**	**170.9**	**1.0**	**2.0**	**80.5**	**2.0**	**1.9**	**-**	**-**	**1.0**	**0.5**	**0.0**	**1.0**	**0.6**	**0.1**	**1.0**	**-**	**-**	**-**	**1.2**	**0.1**	**3.0**
3rd Party	-	-	-	-	-	-	67%	50%	-	-	-	-	-	-	-	-	-	100%	-	-	-	-	-	33%
Equipment Failure	14%	3%	-	95%	97%	51%	2%	0%	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Operation	86%	97%	100%	5%	3%	49%	0%	1%	-	-	-	-	100%	100%	3%	100%	100%	-	-	-	-	100%	100%	1%
Other	-	-	-	-	-	-	31%	48%	-	-	-	100%	-	-	97%	-	-	-	-	-	-	-	-	66%
Vegetation/Animal	-	-	-	-	-	-	-	-	100%	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Weather/Fire/Earthquake	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
PSPS	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
KATHLEEN(16KV) - Customers: 679	**68.7**	**1.1**	**1.0**	**299.3**	**2.1**	**2.0**	**-**	**-**	**-**	**-**	**-**	**-**	**9.3**	**0.1**	**-**	**0.7**	**0.0**	**-**	**44.4**	**1.1**	**-**	**54.5**	**1.1**	**-**
3rd Party	-	-	-	-	-	52%	-	-	-	-	-	-	-	-	-	-	-	-	37%	96%	-	30%	91%	-
Equipment Failure	100%	100%	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Operation	-	-	-	3%	3%	-	-	-	-	-	-	-	100%	100%	-	100%	100%	-	63%	4%	-	70%	9%	-
Other	-	-	-	97%	97%	48%	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Vegetation/Animal	-	-	100%	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Weather/Fire/Earthquake	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
PSPS	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-

Reliability Histories for Individual Circuits Serving Manhattan Beach - 3 of 4

	2016			2017			2018			1st Qtr 2019			2nd Qtr 2019			3rd Qtr 2019			4th Qtr 2019			2019		
	SAIDI	SAIFI	MAIFI	SAIDI	SAIFI	MAIFI	SAIDI	SAIFI	MAIFI	SAIDI	SAIFI	MAIFI	SAIDI	SAIFI	MAIFI	SAIDI	SAIFI	MAIFI	SAIDI	SAIFI	MAIFI	SAIDI	SAIFI	MAIFI
KEATS(4.16KV) - Customers: 155	**75.7**	**1.1**	**-**	**-**	**-**	**1.0**	**-**	**-**	**3.0**	**-**	**-**	**1.0**	**-**	**-**	**1.0**	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**2.0**
3rd Party	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Equipment Failure	-	-	-	-	-	100%	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Operation	100%	100%	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Other	-	-	-	-	-	-	-	-	33%	-	-	100%	-	-	100%	-	-	-	-	-	-	-	-	100%
Vegetation/Animal	-	-	-	-	-	-	-	-	67%	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Weather/Fire/Earthquake	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
PSPS	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
NO BEACH(4.16KV) - Customers: 781	**72.6**	**2.0**	**1.0**	**6.7**	**0.0**	**1.0**	**15.0**	**0.1**	**5.0**	**0.5**	**0.0**	**1.0**	**6.0**	**0.0**	**1.0**	**-**	**-**	**-**	**5.2**	**0.0**	**-**	**11.7**	**0.1**	**2.0**
3rd Party	-	-	-	-	-	-	7%	13%	41%	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Equipment Failure	-	-	-	57%	9%	100%	93%	87%	-	-	-	-	82%	23%	-	-	-	-	100%	100%	-	86%	45%	-
Operation	43%	50%	-	43%	91%	-	-	-	-	100%	100%	-	18%	77%	-	-	-	-	-	-	-	14%	55%	-
Other	-	-	100%	-	-	-	-	-	20%	-	-	100%	-	-	100%	-	-	-	-	-	-	-	-	100%
Vegetation/Animal	-	-	-	-	-	-	-	-	40%	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Weather/Fire/Earthquake	57%	50%	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
PSPS	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
OZONE(4.16KV) - Customers: 615	**146.6**	**2.1**	**1.0**	**-**	**-**	**1.0**	**105.6**	**1.0**	**5.0**	**1.2**	**0.0**	**1.0**	**-**	**-**	**1.0**	**-**	**-**	**-**	**-**	**-**	**-**	**1.2**	**0.0**	**2.0**
3rd Party	-	-	-	-	-	-	-	-	20%	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Equipment Failure	77%	51%	-	-	-	100%	100%	100%	-	100%	100%	-	-	-	-	-	-	-	-	-	-	100%	100%	-
Operation	23%	49%	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Other	-	-	100%	-	-	-	-	-	20%	-	-	100%	-	-	100%	-	-	-	-	-	-	-	-	100%
Vegetation/Animal	-	-	-	-	-	-	-	-	40%	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Weather/Fire/Earthquake	-	-	-	-	-	-	-	-	20%	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
PSPS	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
PENGUIN(16KV) - Customers: 456	**57.5**	**1.0**	**0.0**	**319.7**	**2.1**	**0.1**	**92.8**	**1.1**	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**-**
3rd Party	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Equipment Failure	-	-	-	100%	100%	-	52%	10%	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Operation	7%	2%	-	-	-	100%	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Other	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Vegetation/Animal	93%	98%	100%	-	-	-	48%	90%	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Weather/Fire/Earthquake	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
PSPS	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-

Reliability Histories for Individual Circuits Serving Manhattan Beach - 4 of 4

	2016			2017			2018			1st Qtr 2019			2nd Qtr 2019			3rd Qtr 2019			4th Qtr 2019			2019		
	SAIDI	SAIFI	MAIFI	SAIDI	SAIFI	MAIFI	SAIDI	SAIFI	MAIFI	SAIDI	SAIFI	MAIFI	SAIDI	SAIFI	MAIFI	SAIDI	SAIFI	MAIFI	SAIDI	SAIFI	MAIFI	SAIDI	SAIFI	MAIFI
PISTON(16KV) - Customers: 4,409	**52.5**	**1.1**	**-**	**39.4**	**1.7**	**5.6**	**119.6**	**1.1**	**3.0**	**19.7**	**1.5**	**-**	**-**	**-**	**1.0**	**2.0**	**0.0**	**-**	**0.0**	**0.0**	**-**	**21.7**	**1.5**	**1.0**
3rd Party	13%	7%	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Equipment Failure	5%	0%	-	6%	0%	65%	98%	98%	-	100%	100%	-	-	-	-	100%	100%	-	-	-	-	100%	100%	-
Operation	82%	93%	-	60%	58%	-	2%	2%	-	0%	0%	-	-	-	-	-	-	-	100%	100%	-	0%	0%	-
Other	-	-	-	13%	4%	35%	-	-	67%	-	-	-	-	-	100%	-	-	-	-	-	-	-	-	100%
Vegetation/Animal	-	-	-	-	-	-	-	-	33%	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Weather/Fire/Earthquake	-	-	-	20%	38%	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
PSPS	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
SALMON(16KV) - Customers: 4,029	**166.7**	**2.2**	**-**	**490.1**	**2.9**	**2.7**	**124.1**	**3.1**	**0.9**	**75.9**	**2.0**	**-**	**7.0**	**0.0**	**-**	**10.3**	**0.0**	**1.0**	**16.4**	**1.0**	**2.0**	**109.5**	**3.0**	**3.0**
3rd Party	1%	1%	-	38%	30%	41%	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Equipment Failure	26%	2%	-	11%	14%	-	12%	33%	-	-	-	-	-	-	-	-	-	-	92%	99%	100%	14%	33%	67%
Operation	1%	1%	-	0%	1%	-	15%	3%	-	0%	0%	-	100%	100%	-	100%	100%	-	1%	0%	-	16%	1%	-
Other	-	-	-	-	-	37%	36%	32%	-	-	-	-	-	-	-	-	-	100%	-	-	-	-	-	33%
Vegetation/Animal	14%	44%	-	8%	31%	5%	36%	32%	-	-	-	-	-	-	-	-	-	-	7%	1%	-	1%	0%	-
Weather/Fire/Earthquake	59%	52%	-	44%	25%	17%	-	-	100%	100%	100%	-	-	-	-	-	-	-	-	-	-	69%	66%	-
PSPS	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
SO STRAND(4.16KV) - Customers: 632	**1063.8**	**3.0**	**1.0**	**1.7**	**0.0**	**1.4**	**8.5**	**0.0**	**4.0**	**-**	**-**	**1.0**	**36.8**	**0.5**	**1.0**	**-**	**-**	**-**	**-**	**-**	**-**	**36.8**	**0.5**	**2.0**
3rd Party	-	-	-	-	-	-	-	-	-	-	-	-	100%	100%	-	-	-	-	-	-	-	100%	100%	-
Equipment Failure	97%	66%	-	-	-	73%	100%	100%	25%	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Operation	3%	34%	-	100%	100%	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Other	-	-	100%	-	-	27%	-	-	25%	-	-	100%	-	-	100%	-	-	-	-	-	-	-	-	100%
Vegetation/Animal	-	-	-	-	-	-	-	-	50%	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Weather/Fire/Earthquake	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
PSPS	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
VALVE(16KV) - Customers: 3,327	**35.5**	**1.0**	**0.8**	**16.3**	**0.1**	**0.8**	**48.4**	**1.9**	**4.0**	**8.6**	**0.0**	**-**	**0.2**	**0.0**	**1.0**	**1.2**	**0.0**	**-**	**10.8**	**0.0**	**-**	**20.8**	**0.1**	**1.0**
3rd Party	-	-	-	-	-	100%	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Equipment Failure	-	-	-	73%	48%	-	71%	53%	25%	78%	42%	-	-	-	-	-	-	-	100%	100%	-	84%	37%	-
Operation	73%	82%	-	12%	26%	-	15%	44%	-	5%	15%	-	100%	100%	-	100%	100%	-	-	-	-	9%	42%	-
Other	-	-	-	14%	26%	-	-	-	50%	16%	43%	-	-	-	100%	-	-	-	-	-	-	7%	21%	100%
Vegetation/Animal	27%	18%	-	-	-	-	14%	3%	25%	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Weather/Fire/Earthquake	-	-	100%	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
PSPS	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-