

Los Alamos County
Department of Public Utilities

Electric Distribution
Reliability

January 19, 2022

Stephen Marez
Electrical Engineering Manager

							Customers	Combined Customer		
Date	Call Rcd.	Circuit	Cause	Start Time	End Time	Duration	Affected (Meters)	Outage Durations	Total Outage H:M:S	Running SAIDI
1/15/2021	Utilities	13	UNKNOWN	13:20	14:15	0:55	36	33:00:00	33:00:00	0:00:13
2/2/2021	Utilities	15	ANIMAL	6:30	7:15	0:45	200	150:00:00	183:00:00	0:01:13
2/4/2021	Utilities	16	URD Failure	0:00	5:00	5:00	69	345:00:00	528:00:00	0:03:30
2/5/2021	Utilities	EA-4	OH Failure	21:45	22:30	0:45	10	7:30:00	535:30:00	0:03:33
2/25/2021	Utilities	14	URD Failure	8:30	11:30	3:00	1	3:00:00	538:30:00	0:03:34
4/21/2021	Utilities	14	ANIMAL	21:23	22:38	1:15	539	673:45:00	1212:15:00	0:08:02
5/16/2021	Utilities	WR1	UNKNOWN	10:30	12:00	1:30	5	7:30:00	1219:45:00	0:08:05
5/18/2021	Utilities	14	URD Failure	16:00	19:00	3:00	2	6:00:00	1225:45:00	0:08:08
5/22/2021	Utilities	EA-4	Weather	19:30	20:30	1:00	30	30:00:00	1255:45:00	0:08:20
5/26/2021	Utilities	16	URD Failure	16:45	22:20	5:35	100	558:20:00	1814:05:00	0:12:02
5/27/2021	Utilities	WR1	Weather	14:15	15:38	1:23	1586	2193:58:00	4008:03:00	0:26:35
6/5/2021	Utilities	15	ANIMAL	23:30	0:00	0:30	270	135:00:00	4143:03:00	0:27:29
6/5/2021	Utilities	15	ANIMAL	0:00	0:30	0:30	270	135:00:00	4278:03:00	0:28:23
6/17/2021	Utilities	16	URD Failure	18:35	21:30	2:55	3	8:45:00	4286:48:00	0:28:26
6/17/2021	Utilities	WR1	URD Failure	23:45	0:00	0:15	50	12:30:00	4299:18:00	0:28:31
6/17/2021	Utilities	WR1	URD Failure	0:00	2:30	2:30	50	125:00:00	4424:18:00	0:29:21
7/6/2021	Utilities	WR2	Unknown	10:45	11:45	1:00	25	25:00:00	4449:18:00	0:29:31
7/10/2021	Utilities	WR1	TREE	22:30	0:00	1:30	10	15:00:00	4464:18:00	0:29:37
7/10/2021	Utilities	14	Unknown	11:30	15:00	14:30	3	43:30:00	4507:48:00	0:29:54
7/17/2021	Utilities	WR2	Unknown	12:30	14:30	2:00	16	32:00:00	4539:48:00	0:30:07
7/18/2021	Utilities	13	URD Failure	22:30	0:00	1:30	13	19:30:00	4559:18:00	0:30:15
7/19/2021	Utilities	13	URD Failure	0:00	5:00	5:00	13	65:00:00	4624:18:00	0:30:41
7/22/2021	Utilities	13	URD Failure	18:30	19:10	0:40	5	3:20:00	4627:38:00	0:30:42
7/30/2021	Utilities	WR1	OH Failure	16:50	19:15	2:25	1586	3832:50:00	8460:28:00	0:56:07
8/25/2021	Utilities	WR1	URD Failure	16:30	18:30	2:00	20	40:00:00	8500:28:00	0:56:23
9/26/2021	Utilities	14	URD Failure	4:45	11:00	6:15	5	31:15:00	8531:43:00	0:56:36
9/29/2021	Utilities	16	TREE	19:45	23:40	3:55	5	19:35:00	8551:18:00	0:56:44
10/2/2021	Utilities	14	UNKNOWN	23:30	0:00	0:30	539	269:30:00	8820:48:00	0:58:31
10/2/2021	Utilities	14	UNKNOWN	0:00	1:00	1:00	539	539:00:00	9359:48:00	1:02:05
10/6/2021	Utilities	16	URD Failure	9:00	12:30	3:30	41	143:30:00	9503:18:00	1:03:02
10/13/2021	Utilities	16	URD Failure	17:00	21:00	4:00	50	200:00:00	9703:18:00	1:04:22
10/18/2021	Utilities	16	URD Failure	10:20	11:20	1:00	55	55:00:00	9758:18:00	1:04:44
10/19/2021	Utilities	14	URD Failure	2:23	6:00	3:37	19	68:43:00	9827:01:00	1:05:11
10/25/2021	Utilities	15	URD Failure	2:50	3:50	1:00	1564	1564:00:00	11391:01:00	1:15:34
10/25/2021	Utilities	15	UR							

CIRCUIT SAIDI IS CALCULATED ACCORDING TO THE NUMBER OF CUSTOMERS IN EACH CIRCUIT RESPECTIVELY

<u>Running SAIDI Circuit 13</u>	<u>Running SAIDI Circuit 14</u>	<u>Running SAIDI Circuit 15</u>	<u>Running SAIDI Circuit 16</u>	<u>Running SAIDI Circuit 17</u>	<u>Running SAIDI Circuit 18</u>	<u>Running SAIDI Circuit EA4 & Royal Crest</u>	<u>Running SAIDI Circuit WR1</u>	<u>Running SAIDI Circuit WR2</u>	<u>Monthly SAIDI</u>		<u>Monthly Customer Minutes out of service</u>	<u>WEATHER SAIDI</u>
0:01:12		0:04:48							JAN	0:00:13	33:00:00	
			0:11:14									
						0:02:44						
	0:00:20								FEB	0:03:21	505:30:00	
	1:15:00								APR	0:04:28	673:45:00	
							0:00:17					
	0:00:40					0:10:55						0:00:12
			0:18:11						MAY	0:18:33	2795:48:00	
							1:23:00					0:14:33
		0:04:19										
		0:04:19										
			0:00:17									
							0:00:28					
							0:04:44		JUN	0:02:46	416:15:00	
								0:01:34				
							0:00:34					
	0:04:51											
							0:02:00					
0:00:42												
0:02:21												
0:00:07												
							3:59:18		JUL	0:26:46	4036:10:00	
							0:02:30		AUG	0:00:16	40:00:00	
	0:03:29											
			0:00:38						SEP	0:00:20	50:50:00	
	0:30:00											
	1:00:00											
			0:04:40									
			0:06:31									
	0:07:39											
		0:50:03										
		0:01:30										
			0:00:31						OCT	0:19:09	2886:43:00	
									NOV	0:00:06	2633:05:00	
	9:37:31			24:49:23	24:21:25					0:34:25		
2:50:00										0:31:06		
0:23:06	1:10:57	0:20:24	0:20:46	3:02:58	2:59:32					0:04:14		
0:12:58										0:02:22		
2:10:00										0:23:47		
					0:20:27					0:00:28		
			0:20:00						DEC	0:04:04	15143:11:00	
												1:16:12
5:40:27	13:50:26	1:25:23	1:22:49	3:52:21	3:41:24	0:13:38	5:32:51	0:01:34	Total	2:56:26		1:30:57
1655	539	1875	1842	209	213	165	1586	961	9045			

Twelve Month History	December 2021	
Total # Accounts	9045	
Total # Interruptions	43	
Sum Customer Interruption Durations	26597:04	hours:min
# Customers Interrupted	19880	
SAIFI (APPA AVG. = 1.0)	2.20	int./cust.
SAIDI (APPA AVG. = 1:00)	2:56	hours:min
CAIDI	1.20	hours:min/INT
ASAI	99.9986%	% available

- **SAIFI - System Average Interruption Frequency Index**
A measure of interruptions per customer (Per Year)

$$\text{SAIFI} = \frac{(\text{Total number of customer interruptions})}{(\text{Total number of customers served})}$$

- **SAIDI – System Average Interruption Duration Index**
A measure of outage time per customer if all customers were out at the same time (hours per year)

$$\text{SAIDI} = \frac{(\text{Sum of all customer outage durations})}{(\text{Total number of customers served})}$$

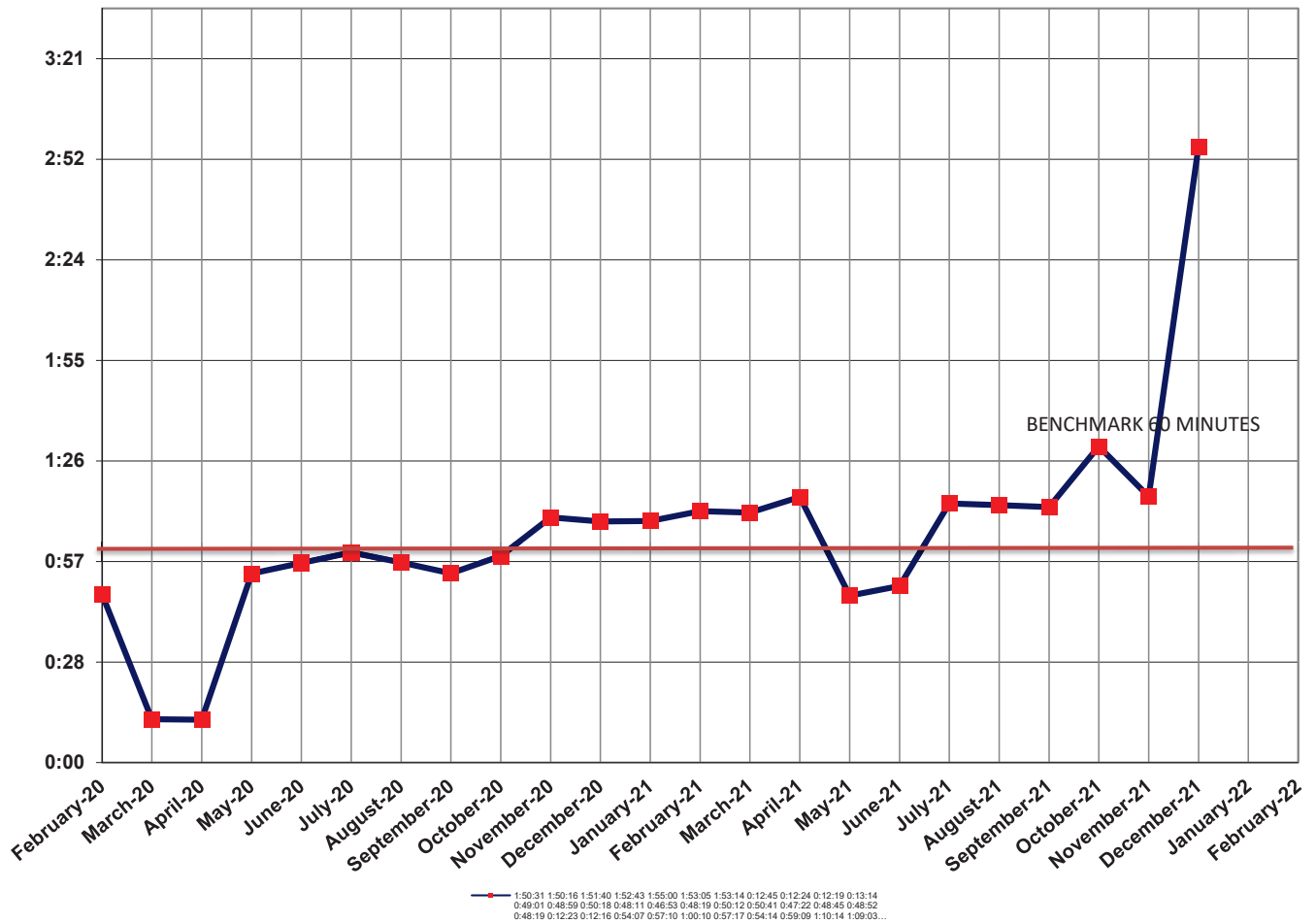
- **CAIDI – Customer Average Interruption Duration Index**
A measure of the average outage duration per customer (hours per interruption)

$$\text{CAIDI} = \frac{(\text{Sum of all customer outage durations})}{(\text{Total number of customer interruptions})} = \frac{\text{SAIDI}}{\text{SAIFI}}$$

- **ASAI – Average System Availability Index**
A measure of the average service availability (Per unit)

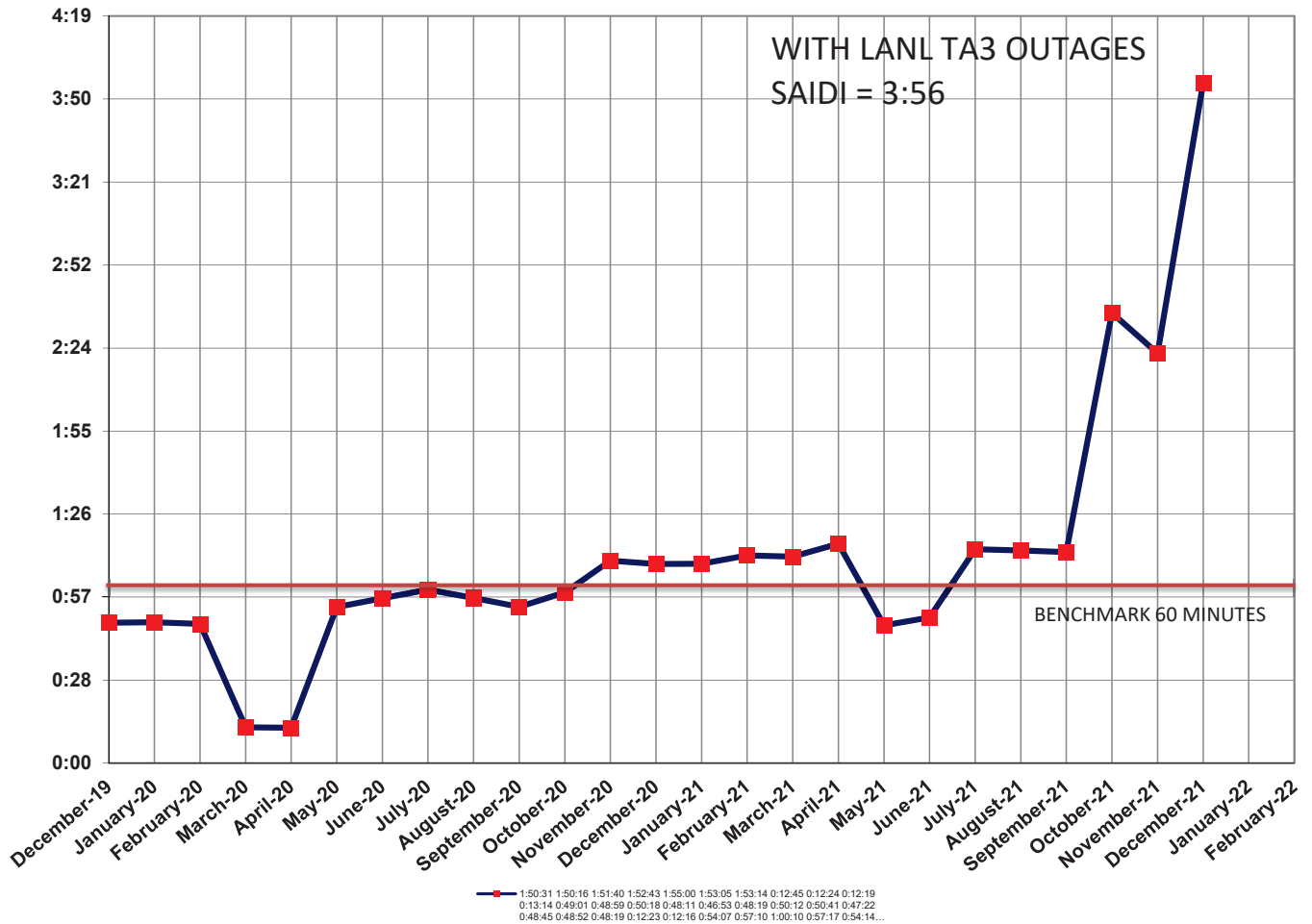
$$\text{ASAI} = \frac{(\text{Service hours available})}{(\text{Customer demand hours})} = \frac{8760 - \text{SAIDI}}{8760}$$

EACH POINT IS A 12 MONTH SAIDI HISTORY
1:00 = APPA BENCHMARK SAIDI



EACH POINT IS A 12 MONTH SAIDI HISTORY
1:00 = APPA BENCHMARK SAIDI

WITH LANL TA3 OUTAGES
SAIDI = 3:56



Projected Date for 6 MW of Connected Solar Power In Los Alamos County

