

# **STATUS REPORTS**

## **ELECTRIC RELIABILITY**

# Los Alamos County Utilities

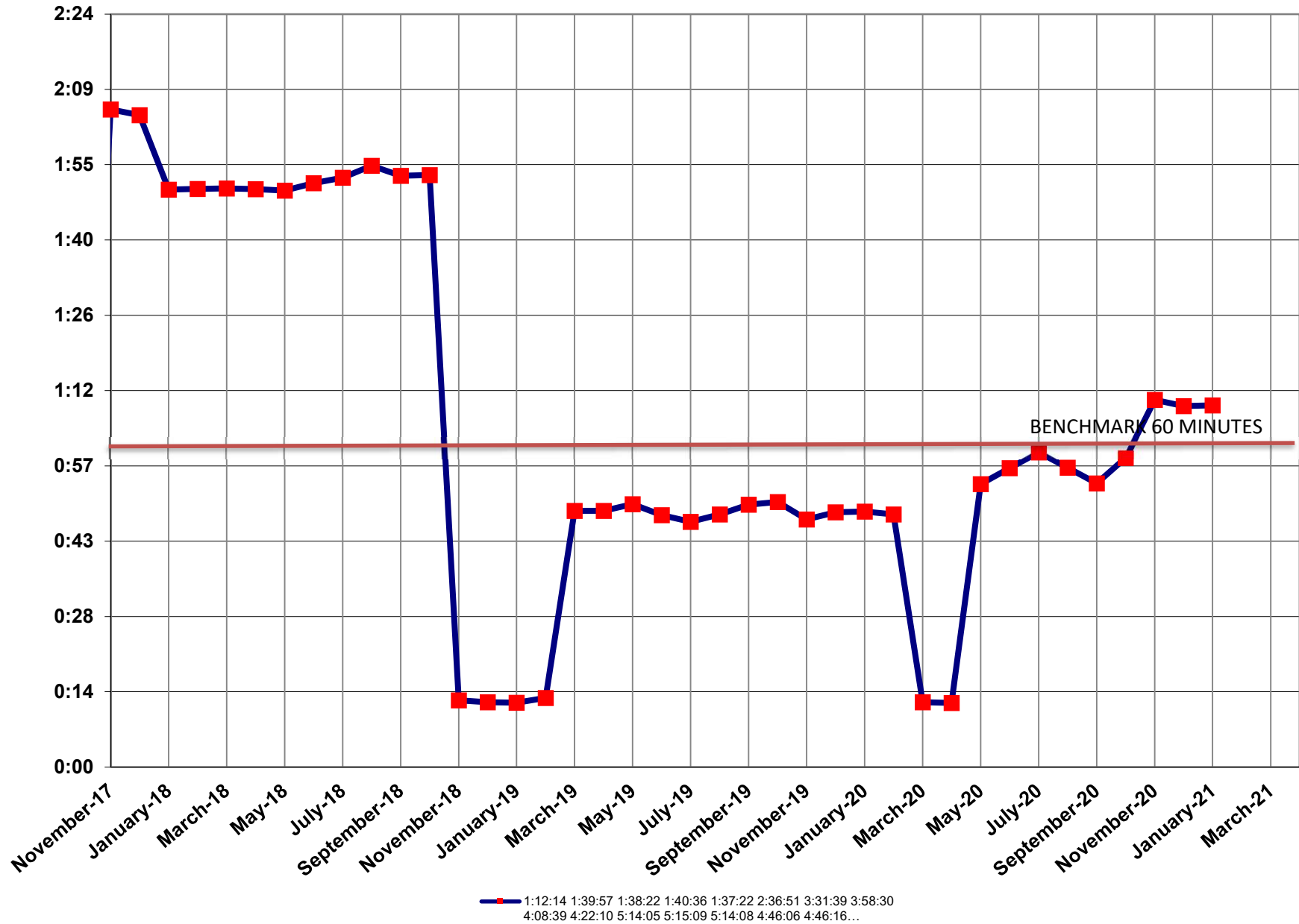


## **Electric Distribution Reliability**

February 20, 2021

Alan Horton  
Associate Engineer

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



| <b>Twelve Month History</b>                | <b>January 2021</b> |                      |
|--------------------------------------------|---------------------|----------------------|
| <b>Total # Accounts</b>                    | <b>9045</b>         |                      |
| <b>Total # Interruptions</b>               | <b>40</b>           |                      |
| <b>Sum Customer Interruption Durations</b> | <b>10426:03:00</b>  | <b>hours:min:sec</b> |
| <b># Customers Interrupted</b>             | <b>4976</b>         |                      |
| <b>SAIFI (APPA AVG. = 1.0)</b>             | <b>0.55</b>         | <b>int./cust.</b>    |
| <b>SAIDI (APPA AVG. = 1:00)</b>            | <b>1:09</b>         | <b>hours:min</b>     |
| <b>CAIDI</b>                               | <b>2.05</b>         | <b>hours:min/INT</b> |
| <b>ASAI</b>                                | <b>99.9995%</b>     | <b>% available</b>   |

- **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)

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

Prepared by Alan Horton  
Associate Engineer L.A.C.U.

|            |           |         |             |            |          |          | Customers | Combined   |              |         |
|------------|-----------|---------|-------------|------------|----------|----------|-----------|------------|--------------|---------|
|            |           |         |             |            |          |          | Affected  | Customer   | Total Outage | Running |
| Date       | Call Rcd. | Circuit | Cause       | Start Time | End Time | Duration | (Meters)  | Outage     | H:M:S        | SAIDI   |
| 2/12/2020  | Utilities | 16      | URD Failure | 15:50      | 21:30    | 5:40     | 13        | 73:40:00   | 73:40:00     | 0:00:29 |
| 3/13/2020  | Utilities | WR2     | URD Failure | 15:00      | 18:45    | 3:45     | 3         | 11:15:00   | 84:55:00     | 0:00:34 |
| 3/15/2020  | Utilities | 16      | URD Failure | 7:00       | 15:30    | 8:30     | 6         | 51:00:00   | 135:55:00    | 0:00:54 |
| 5/13/2020  | Utilities | 16      | HUMAN       | 19:30      | 20:15    | 0:45     | 31        | 23:15:00   | 159:10:00    | 0:01:03 |
| 5/30/2020  | Utilities | WR2     | Weather     | 20:35      | 0:00     | 3:25     | 951       | 3249:15:00 | 3408:25:00   | 0:22:37 |
| 5/31/2020  | Utilities | WR2     | Weather     | 0:00       | 3:28     | 3:28     | 951       | 3296:48:00 | 6705:13:00   | 0:44:29 |
| 6/7/2020   | Utilities | WR1     | UNKNOWN     | 2:40       | 4:10     | 1:30     | 66        | 99:00:00   | 6804:13:00   | 0:45:08 |
| 6/8/2020   | Utilities | WR2     | UNKNOWN     | 13:20      | 15:20    | 2:00     | 18        | 36:00:00   | 6840:13:00   | 0:45:22 |
| 6/11/2020  | Utilities | WR2     | URD Failure | 6:50       | 7:35     | 0:45     | 13        | 9:45:00    | 6849:58:00   | 0:45:26 |
| 6/11/2020  | Utilities | EA-4    | OH Failure  | 16:30      | 17:20    | 0:50     | 100       | 83:20:00   | 6933:18:00   | 0:46:00 |
| 6/14/2020  | Utilities | EA-4    | UNKNOWN     | 11:00      | 13:00    | 2:00     | 30        | 60:00:00   | 6993:18:00   | 0:46:23 |
| 6/17/2020  | Utilities | WR2     | UNKNOWN     | 21:00      | 23:30    | 2:30     | 80        | 200:00:00  | 7193:18:00   | 0:47:43 |
| 6/28/2020  | Utilities | 17      | UNKNOWN     | 11:25      | 13:00    | 1:35     | 2         | 3:10:00    | 7196:28:00   | 0:47:44 |
| 7/5/2020   | Utilities | WR2     | URD Failure | 13:00      | 14:00    | 1:00     | 20        | 20:00:00   | 7216:28:00   | 0:47:52 |
| 7/11/2020  | Utilities | WR1     | URD Failure | 12:30      | 13:50    | 1:20     | 15        | 20:00:00   | 7236:28:00   | 0:48:00 |
| 7/11/2020  | Utilities | 13      | OH Failure  | 20:30      | 21:30    | 1:00     | 13        | 13:00:00   | 7249:28:00   | 0:48:05 |
| 7/12/2020  | Utilities | 17      | UNKNOWN     | 21:30      | 23:00    | 1:30     | 17        | 25:30:00   | 7274:58:00   | 0:48:16 |
| 7/18/2020  | Utilities | 13      | ANIMAL      | 21:50      | 22:30    | 0:40     | 25        | 16:40:00   | 7291:38:00   | 0:48:22 |
| 7/25/2020  | Utilities | WR1     | ANIMAL      | 18:30      | 19:30    | 1:00     | 75        | 75:00:00   | 7366:38:00   | 0:48:52 |
| 7/27/2020  | Utilities | WR2     | URD Failure | 11:45      | 18:30    | 6:45     | 44        | 297:00:00  | 7663:38:00   | 0:50:50 |
| 8/7/2020   | Utilities | 14      | URD Failure | 6:20       | 7:25     | 1:05     | 4         | 4:20:00    | 7667:58:00   | 0:50:52 |
| 8/9/2020   | Utilities | WR2     | URD Failure | 13:00      | 13:30    | 0:30     | 25        | 12:30:00   | 7680:28:00   | 0:50:57 |
| 8/17/2020  | Utilities | WR1     | URD Failure | 0:35       | 2:00     | 1:25     | 59        | 83:35:00   | 7764:03:00   | 0:51:30 |
| 8/19/2020  | Utilities | 13      | URD Failure | 4:00       | 4:30     | 0:30     | 25        | 12:30:00   | 7776:33:00   | 0:51:35 |
| 9/4/2020   | Utilities | 16      | UNKNOWN     | 16:00      | 17:00    | 1:00     | 11        | 11:00:00   | 7787:33:00   | 0:51:40 |
| 9/4/2020   | Utilities | WR1     | UNKNOWN     | 17:00      | 18:00    | 1:00     | 2         | 2:00:00    | 7789:33:00   | 0:51:40 |
| 9/5/2020   | Utilities | 13      | UNKNOWN     | 18:00      | 19:00    | 1:00     | 1         | 1:00:00    | 7790:33:00   | 0:51:41 |
| 10/2/2020  | Utilities | 15      | ANIMAL      | 1:00       | 3:30     | 2:30     | 50        | 125:00:00  | 7915:33:00   | 0:52:30 |
| 10/9/2020  | Utilities | 15      | ANIMAL      | 22:15      | 23:15    | 1:00     | 25        | 25:00:00   | 7940:33:00   | 0:52:40 |
| 10/12/2020 | Utilities | 15      | URD Failure | 7:00       | 8:15     | 1:15     | 25        | 31:15:00   | 7971:48:00   | 0:52:53 |
| 10/27/2020 | Utilities | 17      | Weather     | 5:00       | 6:30     | 1:30     | 70        | 105:00:00  | 8076:48:00   | 0:53:35 |
| 10/27/2020 | Utilities | 17      | URD Failure | 9:00       | 19:00    | 10:00    | 10        | 100:00:00  | 8176:48:00   | 0:54:14 |
| 11/8/2020  | Utilities | WR1     | OH Failure  | 9:35       | 13:40    | 4:05     | 1         | 4:05:00    | 8180:53:00   | 0:54:16 |
| 11/23/2020 | Utilities | WR1     | Weather     | 18:30      | 20:00    | 1:30     | 528       | 792:00:00  | 8972:53:00   | 0:59:31 |
| 11/23/2020 | Utilities | WR1     | Weather     | 20:00      | 20:50    | 0:50     | 1586      | 1321:40:00 | 10294:33:00  | 1:08:17 |
| 11/23/2020 | Utilities | 13      | Weather     | 18:30      | 21:30    | 3:00     | 4         | 12:00:00   | 10306:33:00  | 1:08:22 |
| 11/27/2020 | Utilities | WR1     | URD Failure | 1:29       | 4:15     | 2:46     | 20        | 55:20:00   | 10361:53:00  | 1:08:44 |
| 12/19/2020 | Utilities | 14      | URD Failure | 17:00      | 18:10    | 1:10     | 1         | 1:10:00    | 10363:03:00  | 1:08:45 |
| 12/27/2020 | Utilities | 15      | UNKNOWN     | 1:00       | 2:30     | 1:30     | 20        | 30:00:00   | 10393:03:00  | 1:08:57 |
| 1/15/2021  | Utilities | 13      | UNKNOWN     | 13:20      | 14:15    | 0:55     | 36        | 33:00:00   | 10426:03:00  | 1:09:10 |
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| CIRCUIT SAIDI IS CALCULATED ACCORDING TO THE NUMBER OF CUSTOMERS IN EACH CIRCUIT RESPECTIVELY |                                |                                |                             |                                |                                |                                          |                                 |                                 |               |         |                                                  |               |
|-----------------------------------------------------------------------------------------------|--------------------------------|--------------------------------|-----------------------------|--------------------------------|--------------------------------|------------------------------------------|---------------------------------|---------------------------------|---------------|---------|--------------------------------------------------|---------------|
| Running<br>SAIDI Circuit<br>13                                                                | Running<br>SAIDI<br>Circuit 14 | Running<br>SAIDI<br>Circuit 15 | Running SAIDI<br>Circuit 16 | Running<br>SAIDI<br>Circuit 17 | Running<br>SAIDI<br>Circuit 18 | SAIDI<br>Circuit EA4<br>& Royal<br>Crest | Running<br>SAIDI<br>Circuit WR1 | Running<br>SAIDI<br>Circuit WR2 | Monthly SAIDI |         | Monthly<br>Customer<br>Minutes out<br>of service | WEATHER SAIDI |
|                                                                                               |                                |                                | 0:02:24                     |                                |                                |                                          |                                 | 0:00:42                         | FEBRUARY      | 0:00:29 | 73:40:00                                         |               |
|                                                                                               |                                |                                | 0:04:04                     |                                |                                |                                          |                                 |                                 | MARCH         | 0:00:25 | 62:15:00                                         |               |
|                                                                                               |                                |                                | 0:04:49                     |                                |                                |                                          |                                 |                                 |               |         |                                                  |               |
|                                                                                               |                                |                                |                             |                                |                                |                                          |                                 | 3:23:34                         |               |         |                                                  | 0:21:33       |
|                                                                                               |                                |                                |                             |                                |                                |                                          |                                 | 6:49:24                         | MAY           | 0:43:35 | 6620:18:00                                       | 0:21:52       |
|                                                                                               |                                |                                |                             |                                |                                |                                          | 0:03:45                         |                                 |               |         |                                                  |               |
|                                                                                               |                                |                                |                             |                                |                                |                                          |                                 | 6:51:39                         |               |         |                                                  |               |
|                                                                                               |                                |                                |                             |                                |                                |                                          |                                 | 6:52:16                         |               |         |                                                  |               |
|                                                                                               |                                |                                |                             |                                |                                | 0:00:03<br>0:00:11                       |                                 |                                 |               |         |                                                  |               |
|                                                                                               |                                |                                |                             |                                |                                |                                          |                                 | 7:04:45                         |               |         |                                                  |               |
|                                                                                               |                                |                                |                             | 0:00:55                        |                                |                                          |                                 |                                 | JUNE          | 0:03:16 | 491:15:00                                        |               |
|                                                                                               |                                |                                |                             |                                |                                |                                          |                                 | 7:06:00                         |               |         |                                                  |               |
| 0:00:28                                                                                       |                                |                                |                             |                                |                                |                                          | 0:04:30                         |                                 |               |         |                                                  |               |
| 0:01:05                                                                                       |                                |                                |                             | 0:08:14                        |                                |                                          |                                 |                                 |               |         |                                                  |               |
|                                                                                               |                                |                                |                             |                                |                                |                                          | 0:07:20                         |                                 |               |         |                                                  |               |
|                                                                                               | 0:00:29                        |                                |                             |                                |                                |                                          |                                 | 7:24:32                         | JULY          | 0:03:06 | 467:10:00                                        |               |
|                                                                                               |                                |                                |                             |                                |                                |                                          |                                 | 7:25:19                         |               |         |                                                  |               |
| 0:01:32                                                                                       |                                |                                |                             |                                |                                |                                          | 0:10:11                         |                                 | AUG           | 0:00:45 | 112:55:00                                        |               |
|                                                                                               |                                |                                | 0:05:11                     |                                |                                |                                          |                                 |                                 |               |         |                                                  |               |
| 0:01:34                                                                                       |                                |                                |                             |                                |                                |                                          | 0:10:15                         |                                 | SEP           | 0:00:06 | 14:00:00                                         |               |
|                                                                                               |                                | 0:04:00                        |                             |                                |                                |                                          |                                 |                                 |               |         |                                                  |               |
|                                                                                               |                                | 0:04:48                        |                             |                                |                                |                                          |                                 |                                 |               |         |                                                  |               |
|                                                                                               |                                | 0:05:46                        |                             |                                |                                |                                          |                                 |                                 |               |         |                                                  |               |
|                                                                                               |                                |                                |                             | 0:38:22                        |                                |                                          |                                 |                                 |               |         |                                                  | 0:00:42       |
|                                                                                               |                                |                                |                             | 1:07:05                        |                                |                                          |                                 |                                 | OCT           | 0:02:34 | 386:15:00                                        |               |
|                                                                                               |                                |                                |                             |                                |                                |                                          | 0:10:20                         |                                 |               |         |                                                  |               |
|                                                                                               |                                |                                |                             |                                |                                |                                          |                                 |                                 |               |         |                                                  | 0:05:15       |
|                                                                                               |                                |                                |                             |                                |                                |                                          |                                 |                                 |               |         |                                                  | 0:08:46       |
|                                                                                               | 4:20:00                        |                                |                             |                                |                                |                                          | 0:10:24                         |                                 | NOV           | 0:14:30 | 2185:05:00                                       | 0:00:05       |
|                                                                                               |                                | 0:06:43                        |                             |                                |                                |                                          |                                 |                                 | DEC           | 0:00:12 | 31:10:00                                         |               |
|                                                                                               |                                |                                |                             |                                |                                |                                          |                                 |                                 | JAN           | 0:00:13 | 33:00:00                                         |               |
|                                                                                               |                                |                                |                             |                                |                                |                                          |                                 |                                 |               |         |                                                  |               |
|                                                                                               |                                |                                |                             |                                |                                |                                          |                                 |                                 |               |         |                                                  |               |
|                                                                                               |                                |                                |                             |                                |                                |                                          |                                 |                                 |               |         |                                                  |               |
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|                                                                                               |                                |                                |                             |                                |                                |                                          |                                 |                                 |               |         |                                                  |               |
|                                                                                               |                                |                                |                             |                                |                                |                                          |                                 |                                 |               |         |                                                  |               |
|                                                                                               |                                |                                |                             |                                |                                |                                          |                                 |                                 |               |         |                                                  |               |
| Circ 13                                                                                       | Circ 14                        | Circ 15                        | Circ 16                     | Circ 17                        | Circ 18                        | Circ EA4                                 | Circ WR1                        | Circ WR2                        | Total         | 1:09:10 |                                                  | 0:58:13       |
| 1655                                                                                          | 539                            | 1875                           | 1842                        | 209                            | 213                            | 165                                      | 1586                            | 961                             | 9045          |         |                                                  |               |