

# **STATUS REPORTS**

## **ELECTRIC RELIABILITY**

# Los Alamos County Utilities



## **Electric Distribution Reliability**

October 21, 2020

Alan Horton  
Electrical Engineering Manager

Prepared by Stephen Marez  
Senior Engineer L.A.C.U.

|  | Date       | Call Rcd. | Circuit | Cause       | Start Time | End Time | Duration | Customers<br>Affected<br>(Meters) | Combined<br>Customer<br>Durations | Total Outage<br>H:M:S | Running<br>SAIDI |
|--|------------|-----------|---------|-------------|------------|----------|----------|-----------------------------------|-----------------------------------|-----------------------|------------------|
|  | 10/2/2019  | Utilities | WR1     | ANIMAL      | 17:30      | 18:30    | 1:00     | 6                                 | 6:00:00                           | 6:00:00               | 0:00:02          |
|  | 10/15/2019 | Utilities | WR2     | URD Failure | 20:30      | 21:15    | 0:45     | 3                                 | 2:15:00                           | 8:15:00               | 0:00:03          |
|  | 10/17/2019 | Utilities | WR2     | OH Failure  | 16:45      | 18:00    | 1:15     | 5                                 | 6:15:00                           | 14:30:00              | 0:00:06          |
|  | 10/18/2019 | Utilities | WR2     | URD Failure | 0:30       | 1:45     | 1:15     | 8                                 | 10:00:00                          | 24:30:00              | 0:00:10          |
|  | 10/19/2019 | Utilities | 17      | URD Failure | 12:00      | 18:15    | 6:15     | 5                                 | 31:15:00                          | 55:45:00              | 0:00:22          |
|  | 10/29/2019 | Utilities | 13      | UNKNOWN     | 21:00      | 22:00    | 1:00     | 28                                | 28:00:00                          | 83:45:00              | 0:00:33          |
|  | 10/29/2019 | Utilities | 13      | UNKNOWN     | 2:30       | 3:00     | 0:30     | 28                                | 14:00:00                          | 97:45:00              | 0:00:39          |
|  | 11/17/2019 | Utilities | 13      | LOAD        | 4:20       | 5:15     | 0:55     | 32                                | 29:20:00                          | 127:05:00             | 0:00:51          |
|  | 11/18/2019 | Utilities | 14      | URD Failure | 12:25      | 13:45    | 1:20     | 24                                | 32:00:00                          | 159:05:00             | 0:01:03          |
|  | 12/29/2019 | Utilities | WR1     | UNKNOWN     | 10:45      | 15:30    | 4:45     | 44                                | 209:00:00                         | 368:05:00             | 0:02:27          |
|  | 1/11/2020  | Utilities | WR1     | TREE        | 14:15      | 15:15    | 1:00     | 11                                | 11:00:00                          | 379:05:00             | 0:02:31          |
|  | 1/11/2020  | Utilities | 16      | ANIMAL      | 19:15      | 20:00    | 0:45     | 8                                 | 6:00:00                           | 385:05:00             | 0:02:33          |
|  | 2/12/2020  | Utilities | 16      | URD Failure | 15:50      | 21:30    | 5:40     | 13                                | 73:40:00                          | 458:45:00             | 0:03:03          |
|  | 3/13/2020  | Utilities | WR2     | URD Failure | 15:00      | 18:45    | 3:45     | 3                                 | 11:15:00                          | 470:00:00             | 0:03:07          |
|  | 3/15/2020  | Utilities | 16      | URD Failure | 7:00       | 15:30    | 8:30     | 6                                 | 51:00:00                          | 521:00:00             | 0:03:27          |
|  | 5/13/2020  | Utilities | 16      | HUMAN       | 19:30      | 20:15    | 0:45     | 31                                | 23:15:00                          | 544:15:00             | 0:03:37          |
|  | 5/30/2020  | Utilities | WR2     | Weather     | 20:35      | 0:00     | 3:25     | 951                               | 3249:15:00                        | 3793:30:00            | 0:25:10          |
|  | 5/31/2020  | Utilities | WR2     | Weather     | 0:00       | 3:28     | 3:28     | 951                               | 3296:48:00                        | 7090:18:00            | 0:47:02          |
|  | 6/7/2020   | Utilities | WR1     | UNKNOWN     | 2:40       | 4:10     | 1:30     | 66                                | 99:00:00                          | 7189:18:00            | 0:47:41          |
|  | 6/8/2020   | Utilities | WR2     | UNKNOWN     | 13:20      | 15:20    | 2:00     | 18                                | 36:00:00                          | 7225:18:00            | 0:47:56          |
|  | 6/11/2020  | Utilities | WR2     | URD Failure | 6:50       | 7:35     | 0:45     | 13                                | 9:45:00                           | 7235:03:00            | 0:48:00          |
|  | 6/11/2020  | Utilities | EA-4    | OH Failure  | 16:30      | 17:20    | 0:50     | 100                               | 83:20:00                          | 7318:23:00            | 0:48:33          |
|  | 6/14/2020  | Utilities | EA-4    | UNKNOWN     | 11:00      | 13:00    | 2:00     | 30                                | 60:00:00                          | 7378:23:00            | 0:48:57          |
|  | 6/17/2020  | Utilities | WR2     | UNKNOWN     | 21:00      | 23:30    | 2:30     | 80                                | 200:00:00                         | 7578:23:00            | 0:50:16          |
|  | 6/28/2020  | Utilities | 17      | UNKNOWN     | 11:25      | 13:00    | 1:35     | 2                                 | 3:10:00                           | 7581:33:00            | 0:50:18          |
|  | 7/5/2020   | Utilities | WR2     | URD Failure | 13:00      | 14:00    | 1:00     | 20                                | 20:00:00                          | 7601:33:00            | 0:50:25          |
|  | 7/11/2020  | Utilities | WR1     | URD Failure | 12:30      | 13:50    | 1:20     | 15                                | 20:00:00                          | 7621:33:00            | 0:50:33          |
|  | 7/11/2020  | Utilities | 13      | OH Failure  | 20:30      | 21:30    | 1:00     | 13                                | 13:00:00                          | 7634:33:00            | 0:50:39          |
|  | 7/12/2020  | Utilities | 17      | UNKNOWN     | 21:30      | 23:00    | 1:30     | 17                                | 25:30:00                          | 7660:03:00            | 0:50:49          |
|  | 7/18/2020  | Utilities | 13      | ANIMAL      | 21:50      | 22:30    | 0:40     | 25                                | 16:40:00                          | 7676:43:00            | 0:50:55          |
|  | 7/25/2020  | Utilities | WR1     | ANIMAL      | 18:30      | 19:30    | 1:00     | 75                                | 75:00:00                          | 7751:43:00            | 0:51:25          |
|  | 7/27/2020  | Utilities | WR2     | URD Failure | 11:45      | 18:30    | 6:45     | 44                                | 297:00:00                         | 8048:43:00            | 0:53:23          |
|  | 8/7/2020   | Utilities | 14      | URD Failure | 6:20       | 7:25     | 1:05     | 4                                 | 4:20:00                           | 8053:03:00            | 0:53:25          |
|  | 8/9/2020   | Utilities | WR2     | URD Failure | 13:00      | 13:30    | 0:30     | 25                                | 12:30:00                          | 8065:33:00            | 0:53:30          |
|  | 8/17/2020  | Utilities | WR1     | URD Failure | 0:35       | 2:00     | 1:25     | 59                                | 83:35:00                          | 8149:08:00            | 0:54:03          |
|  | 8/19/2020  | Utilities | 13      | URD Failure | 4:00       | 4:30     | 0:30     | 25                                | 12:30:00                          | 8161:38:00            | 0:54:08          |
|  | 9/4/2020   | Utilities | 16      | UNKNOWN     | 16:00      | 17:00    | 1:00     | 11                                | 11:00:00                          | 8172:38:00            | 0:54:13          |
|  | 9/4/2020   | Utilities | WR1     | UNKNOWN     | 17:00      | 18:00    | 1:00     | 2                                 | 2:00:00                           | 8174:38:00            | 0:54:14          |
|  | 9/5/2020   | Utilities | 13      | UNKNOWN     | 18:00      | 19:00    | 1:00     | 1                                 | 1:00:00                           | 8175:38:00            | 0:54:14          |
|  |            |           |         |             |            |          |          |                                   |                                   |                       |                  |
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|  |            |           |         |             |            |          |          |                                   |                                   |                       |                  |
|  |            |           |         |             |            |          |          |                                   |                                   |                       |                  |
|  |            |           |         |             |            |          |          |                                   |                                   |                       |                  |
|  |            |           |         |             |            |          |          |                                   |                                   |                       |                  |
|  |            |           |         |             |            |          |          |                                   |                                   |                       |                  |
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|  |            |           |         |             |            |          |          |                                   |                                   |                       |                  |
|  |            |           |         |             |            |          |          |                                   |                                   |                       |                  |
|  |            |           |         |             |            |          |          |                                   |                                   |                       |                  |
|  |            |           |         |             |            |          |          |                                   |                                   |                       |                  |
|  |            |           |         |             |            |          |          |                                   |                                   |                       |                  |
|  |            |           |         |             |            |          |          |                                   |                                   |                       |                  |
|  |            |           |         |             |            |          |          |                                   |                                   |                       |                  |
|  |            |           |         |             |            |          |          |                                   |                                   |                       |                  |
|  |            |           |         |             |            |          |          |                                   |                                   |                       |                  |
|  |            |           |         |             |            |          |          |                                   |                                   |                       |                  |
|  |            |           |         |             |            |          |          |                                   |                                   |                       |                  |
|  |            |           |         |             |            |          |          |                                   |                                   |                       |                  |
|  |            |           |         |             |            |          |          |                                   |                                   |                       |                  |
|  |            |           |         |             |            |          |          |                                   |                                   |                       |                  |
|  |            |           |         |             |            |          |          |                                   |                                   |                       |                  |
|  |            |           |         |             |            |          |          |                                   |                                   |                       |                  |



| Twelve Month History                | SEPT 2020  |               |
|-------------------------------------|------------|---------------|
| Total # Accounts                    | 9045       |               |
| Total # Interruptions               | 39         |               |
| Sum Customer Interruption Durations | 8175:38:00 | hours:min:sec |
| # Customers Interrupted             | 2802       |               |
| SAIFI (APPA AVG. = 1.0)             | 0.31       | int./cust.    |
| SAIDI (APPA AVG. = 1:00)            | 0:54       | hours:min     |
| CAIDI                               | 2.55       | hours:min/INT |
| ASAI                                | 99.9996%   | % 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

