ELECTRIC RELIABILITY PLAN

INFORMATION AND DISCUSSION

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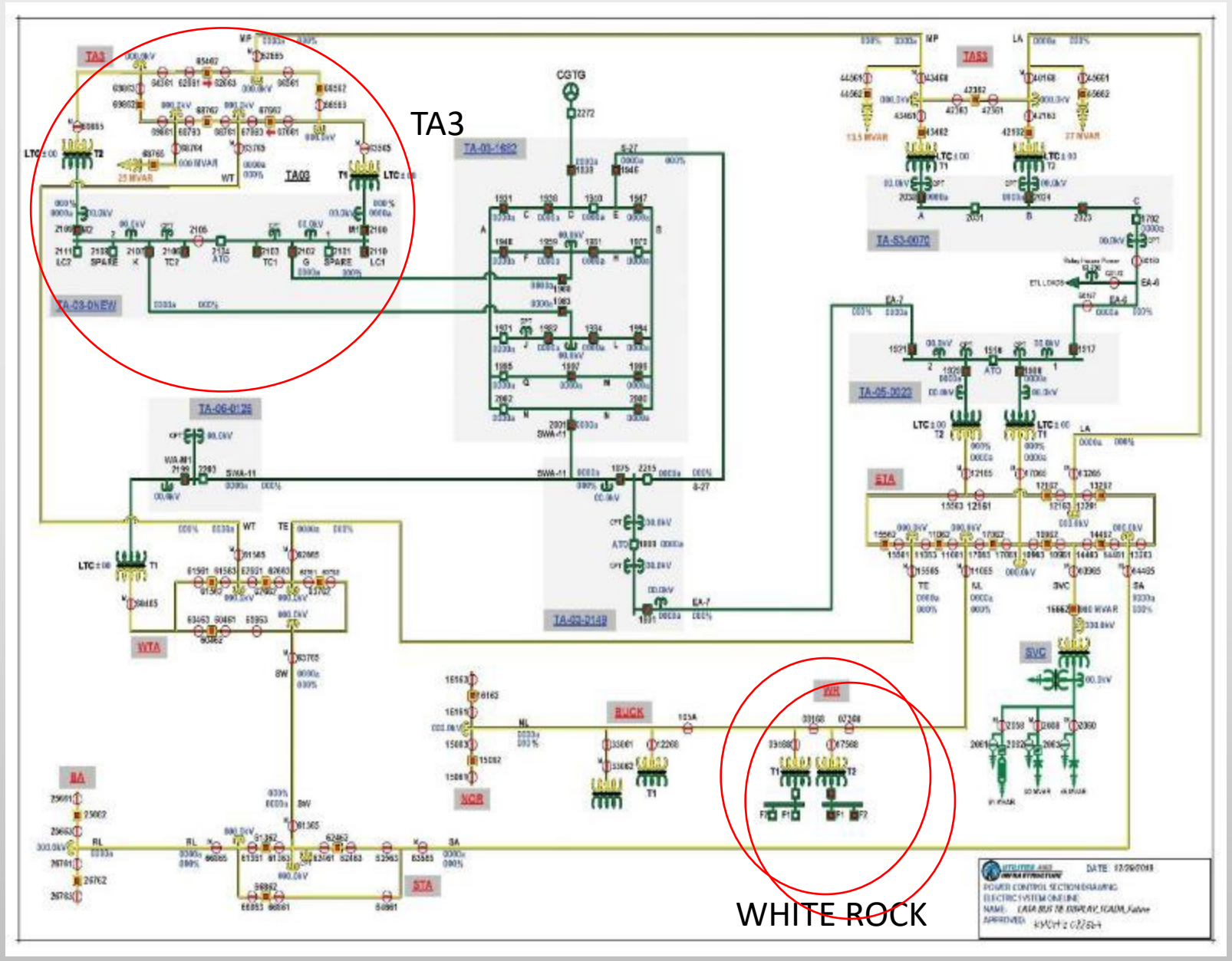
DISTRIBUTION SYSTEM

RELIABILITY MEASURES

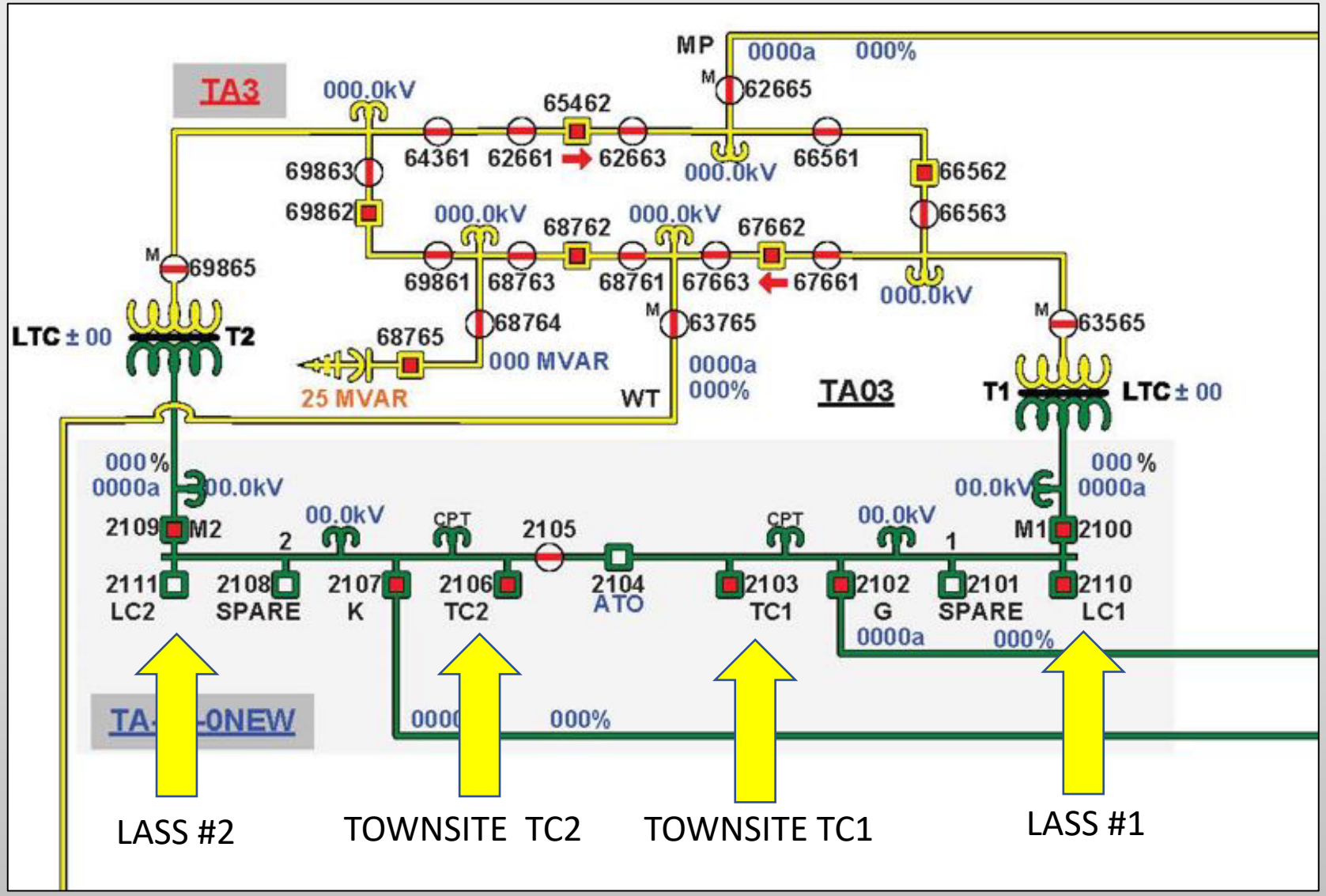
SHORT TERM ACTION PLANS

LONG TERM ACTION PLANS

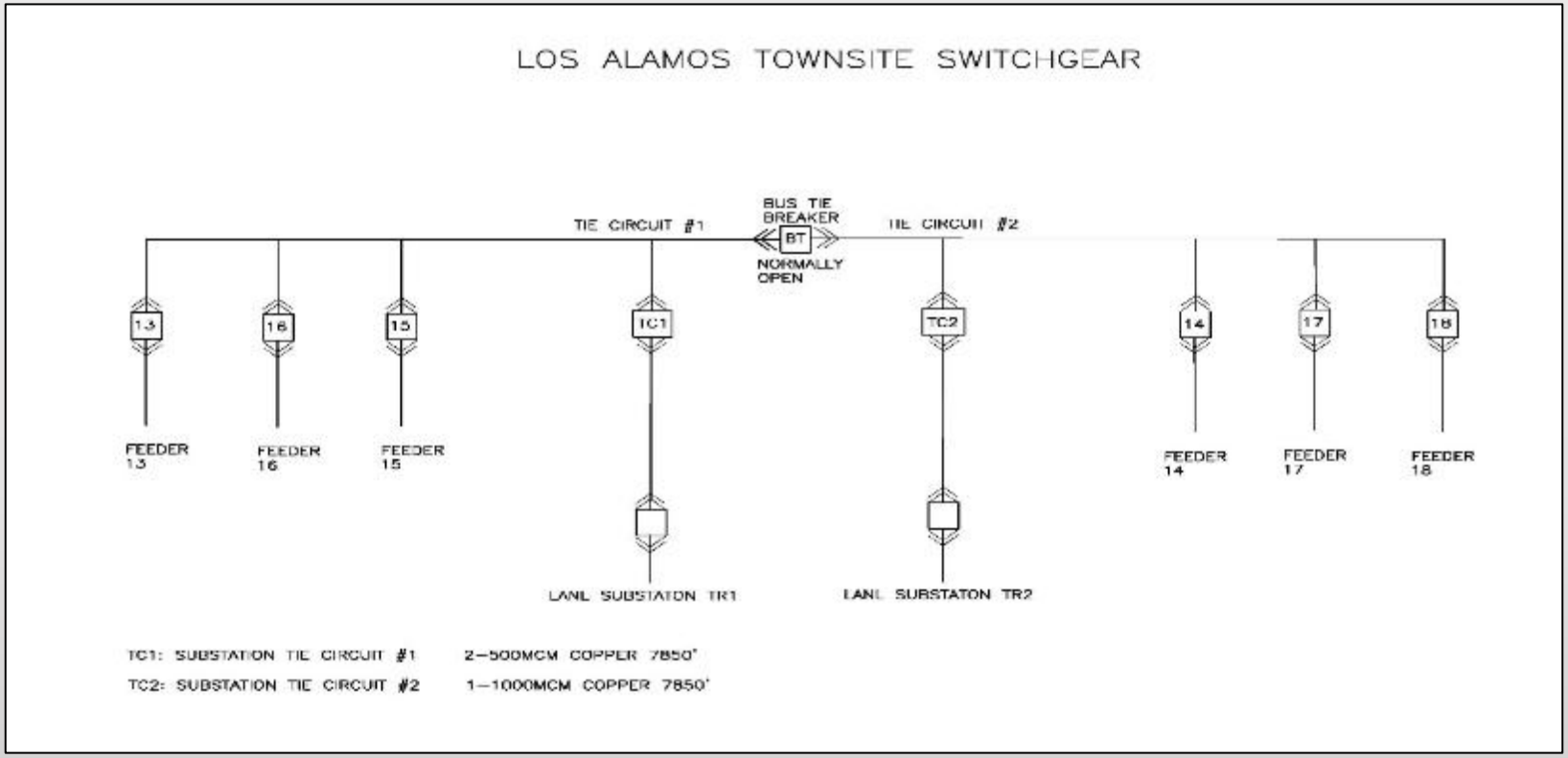
LOS ALAMOS COUNTY AREA TRANSMISSION SYSTEM



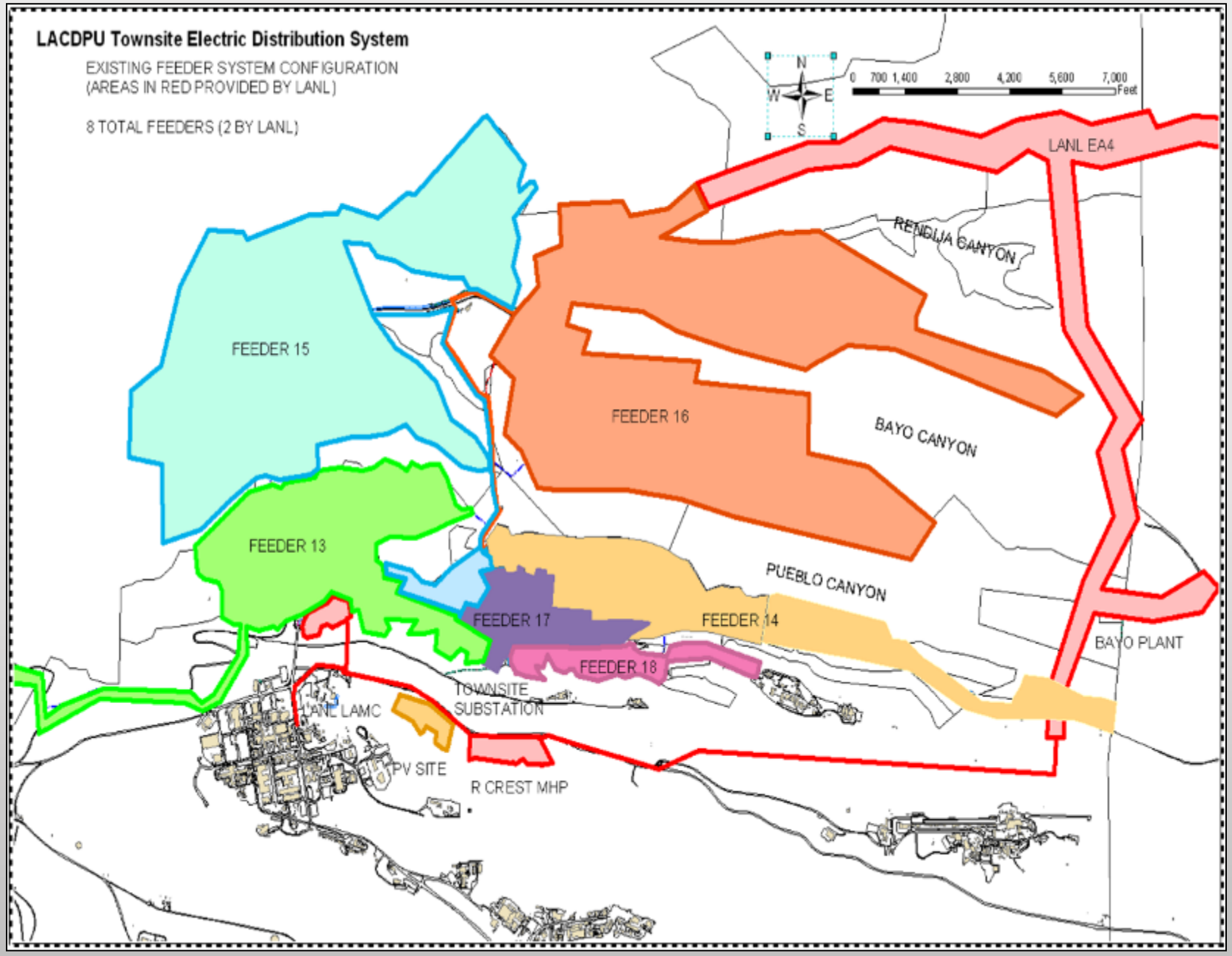
TA-3 Substation



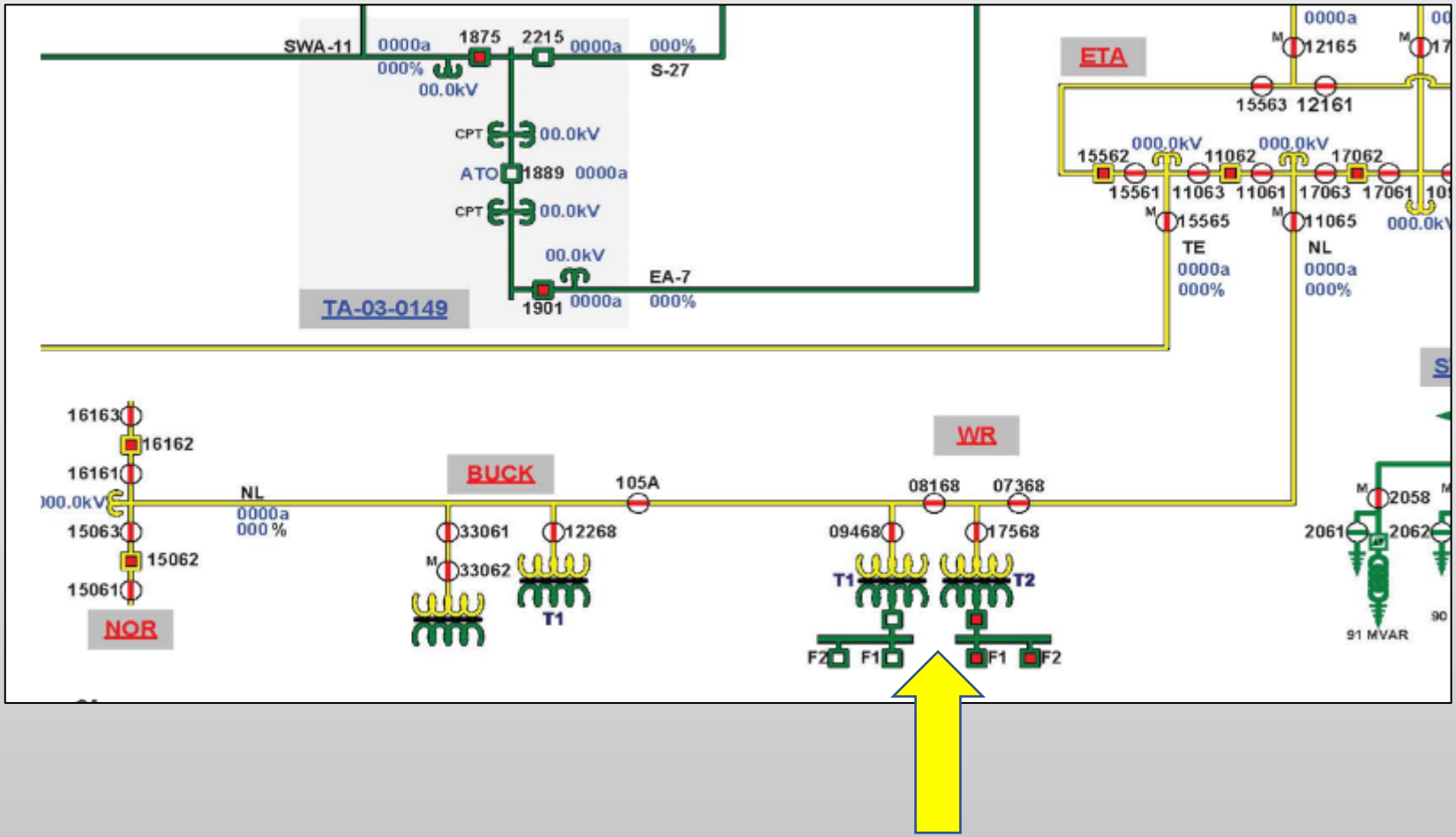
TOWNSITE SWITCH STATION



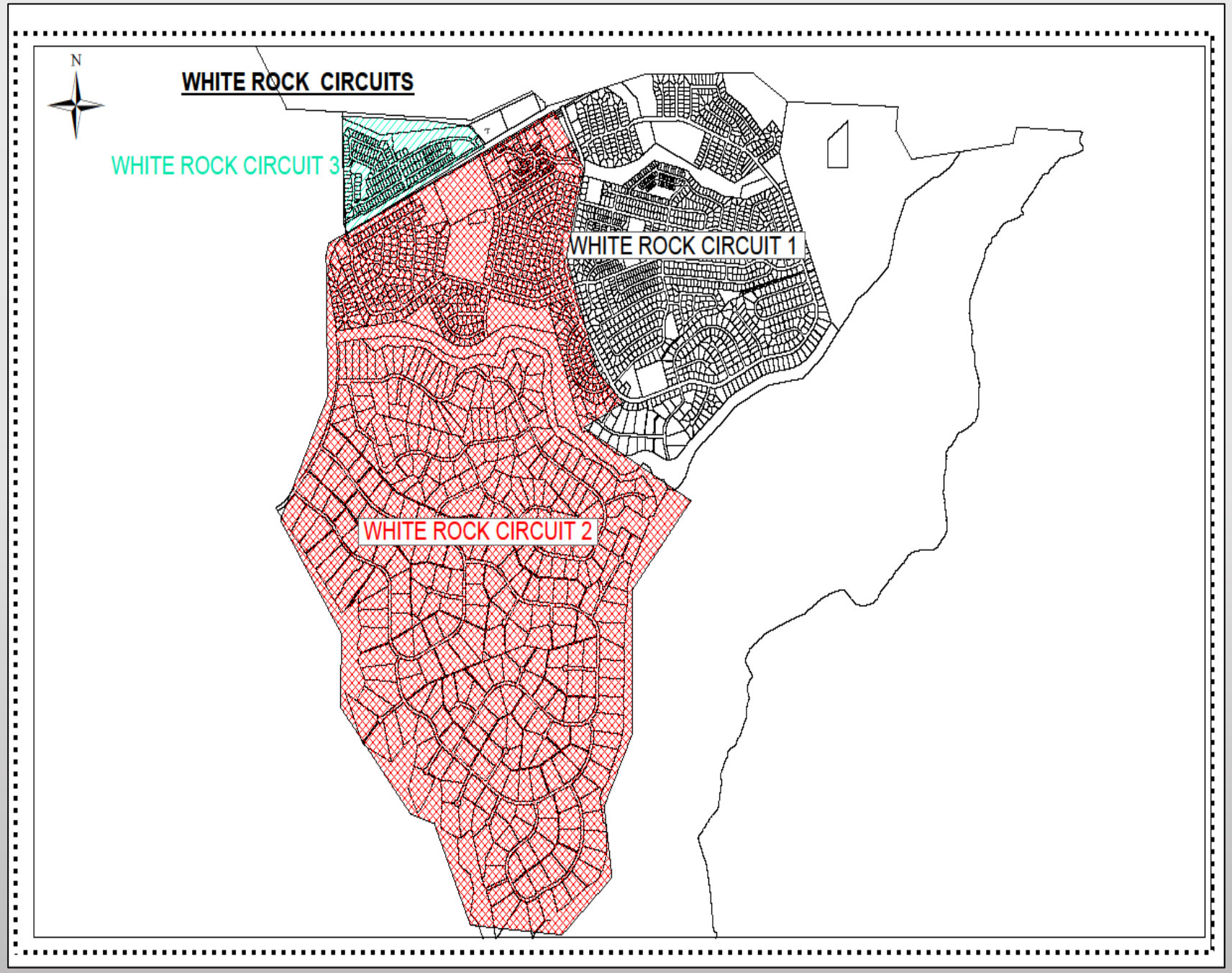
Circuit 13: Western Area and Ski Hill
Circuit 14: Eastern Area and Pajarito Cliff Site
Circuit 15: Quemazon , North Community, Ponderosa Estates
Circuit 16: North Mesa and Barranca Mesa
Circuit 17: Downtown Commercial North of Trinity
Circuit 18: Downtown Commercial South of Trinity and DP Road


LACDPU Townsite Electric Distribution System
EXISTING FEEDER SYSTEM CONFIGURATION
(AREAS IN RED PROVIDED BY LANL)
8 TOTAL FEEDERS (2 BY LANL)
N
W
E
S
0 700 1,400 2,800 4,200 5,600 7,000
Feet
LANL EA4
RENDIJA CANYON
FEEDER 15
FEEDER 16
BAYO CANYON
FEEDER 13
PUEBLO CANYON
FEEDER 17
FEEDER 14
FEEDER 18
BAYO PLANT
TOWNSITE
SUBSTATION
LANL LAMC
PV SITE
R CREST MHP

WHITE ROCK SUBSTATION

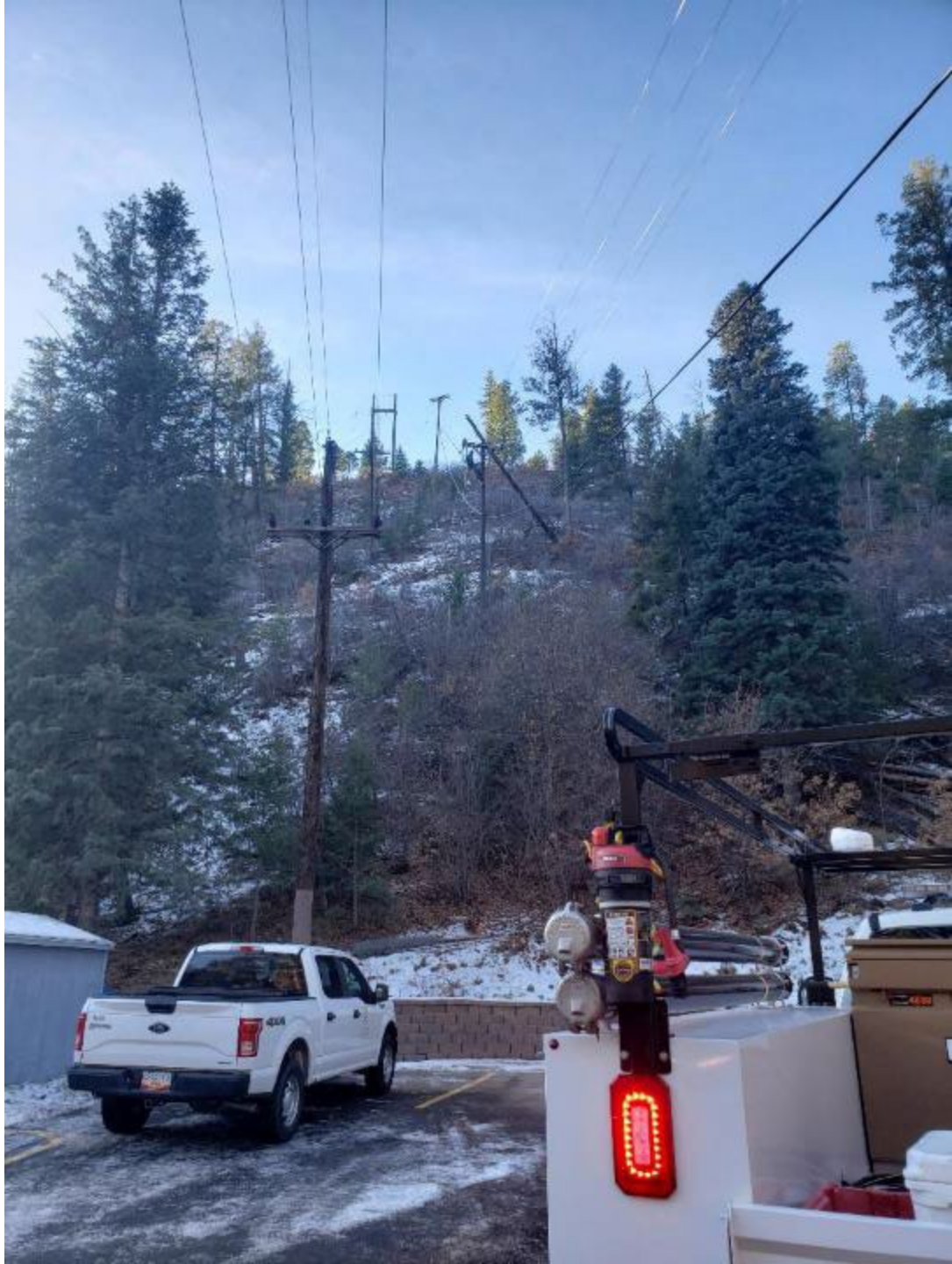


WHITE ROCK SUBSTATION


N
WHITE ROCK CIRCUITS
WHITE ROCK CIRCUIT 3
WHITE ROCK CIRCUIT 1
WHITE ROCK CIRCUIT 2

RECENT SYSTEM OUTAGES

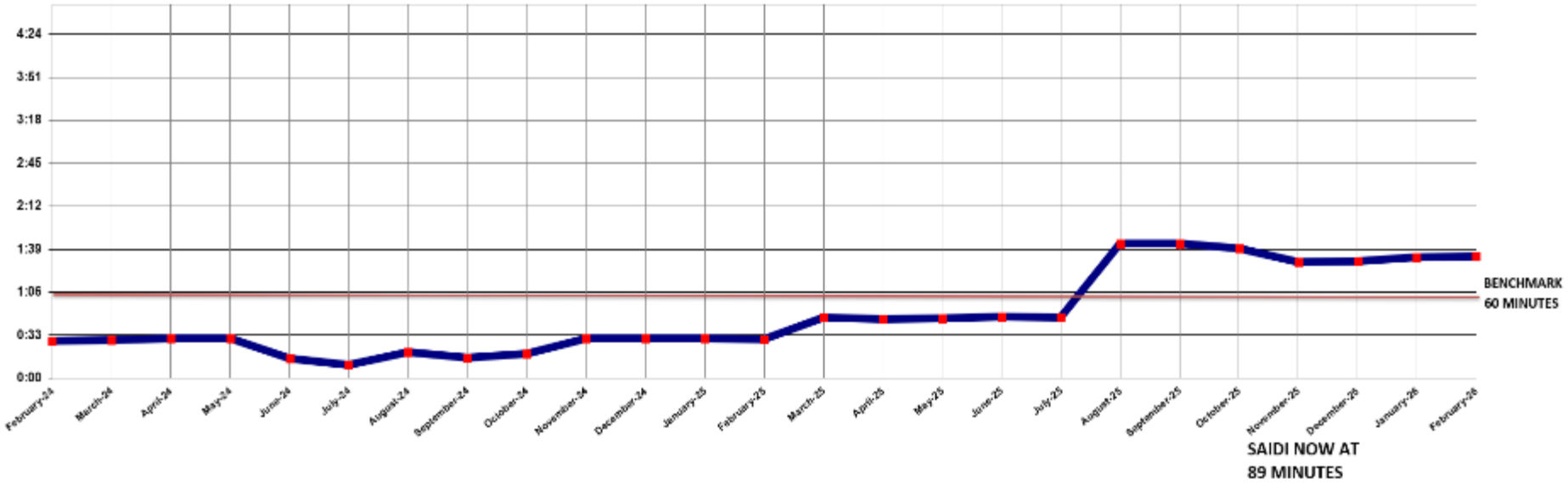
TREE CONTACT WITH POWER LINES



EACH POINT IS A MONTHLY SAIDI HISTORY
60 MINUTES = LACDPU SAIDI BENCHMARK

SAIDI = STANDARD AVERAGE INTERUPTION DURATION INDEX

SAIDI= (Sum of all customer outage durations)
(Total number of customers served)



SAIDI NOW AT
89 MINUTES

Strategy for Improving the SAIDI

- Continue to perform a root-cause analysis for every power outage.
- Continue with the Asset Management Program, “AMP”, for line inspections, operations & maintenance, “O&M”, etc.
- Continue to monitor line sections which have failed during the past; prioritize, and place into the AMP.
- Continue extensive tree trimming efforts , in house and with an on call contractor.
- Continue to dedicate one crew for overhead power line O&M.
- Continue to dedicate one crew for underground power line replacement.
- Manage Outage Response to minimize outage times and reduce SAIDI.
- Increase quantity of fault indicators in the system to track and identify underground faults faster.
- Install new three phase reclosers in the system to isolate primary line faults and restore power in a safer manner.
- Install a SCADA system to monitor the electric grid in real time

Short-Term Action Plans

- **Asset Management Program for OH**
- **Overhead Pole and Line Replacement Program**

- **Asset Management Program for UG**
- **UG Primary Replacement Program**

Short-Term Action Plans

New LASS Substation Addition

NEW LASS FEEDERS

13T - WESTERN AREA

15T- NORTH COMMUNITY

16T- BARRANCA MESA

S6- LOS ALAMOS MEDICAL CENTER

SM6- TRINITY DRIVE

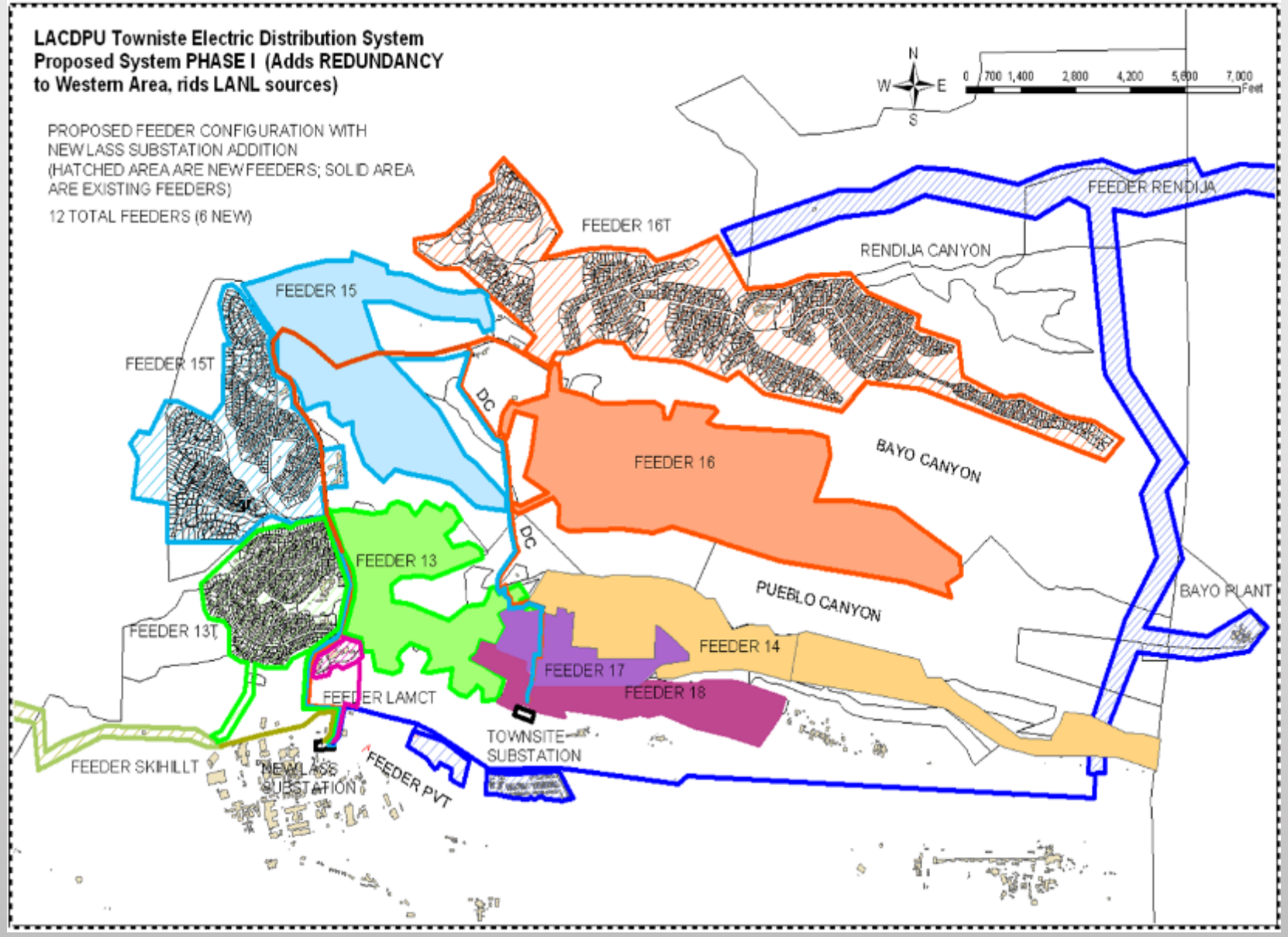
S18- EAST JEMEZ ROAD , EASTGATE,RENDIJA CANYON

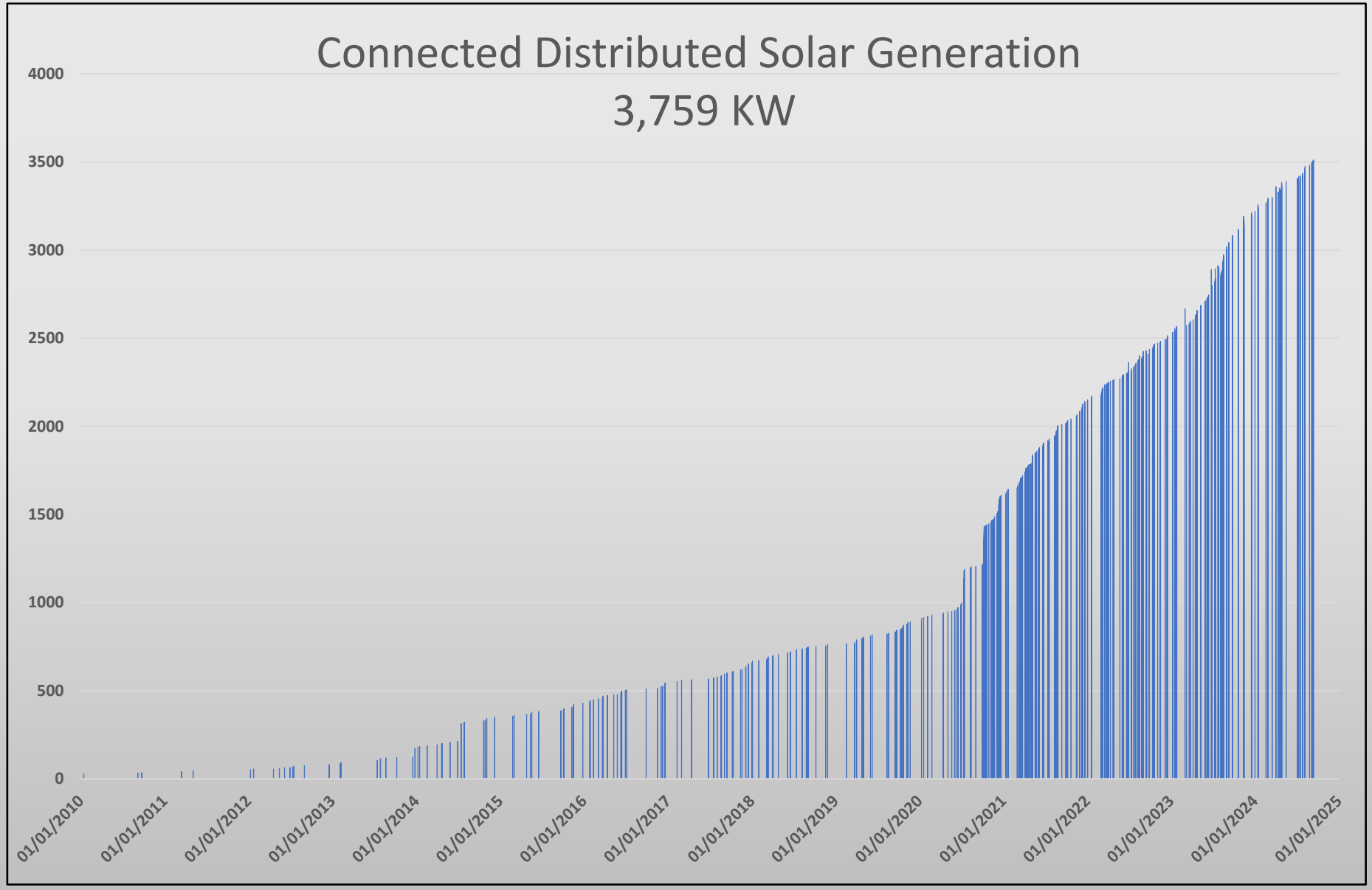
S3- ECO STATION, CONCRETE PLANT

The LASS Substation will add feeder sources to maintain and improve the SAIDI and the system reliability in the Townsite area as illustrated in the next slide.

- Provide new feeders 13T, 15T, 16T, S6, SM6.
- Reduce the number of customers on Townsite substation feeders 13, 15, & 16 (by moving half the consumers on those feeders to LASS). Reducing the number of consumers affected by primary feeder outages.
- Provide power to LACDPU customers at the Eco Station, LA Medical Center (S6) and Elk Ridge MH Park.
- Add 50% additional system redundancy during scheduled or unscheduled outages to Townsite Substation Feeders. Feeders 13T, 15T, & 16T on LASS can back feed feeders on Townsite 13, 15, 16 and the Ski Hill.

Los Alamos Distribution Area with LASS




Connected Distributed Solar Generation
3,759 KW
4000
3500
3000
2500
2000
1500
1000
500
0
01/01/2010
01/01/2011
01/01/2012
01/01/2013
01/01/2014
01/01/2015
01/01/2016
01/01/2017
01/01/2018
01/01/2019
01/01/2020
01/01/2021
01/01/2022
01/01/2023
01/01/2024
01/01/2025

FUTURE OUTLOOK

Planning for future upgrades is dependent on the funding provided to the department. The political environment and current disasters in the United States have compounded the supply chain crisis. Costs continue to escalate and lead times are still expanded.

Distributed Generation and Electric Vehicle Impacts on the System

The electric distribution grid is absorbing production from increased distributed generation (PV). The impact of the reverse flows could strain the reliability of the system.

Electric vehicle chargers and battery installations will increase the load on the system at off-peak times.

Homes are also increasing the size of their services to accommodate air conditioning and heat pumps. The upgrades to transformers and conductors required will be scattered throughout the county as areas are affected and show signs of stress or failure.

Future Goals Set for an ALL-Electric Los Alamos County

The Utility Board of Los Alamos County set a future goal to eliminate gas consumption in the County. This would mean that all homes and businesses would be completely operated with electricity.

The current distribution system will not support this as it exists today. Although the main backbone three phase systems have been upgraded, it would require replacement by 2050. The utility will require the reconstruction of all residential areas within the county.

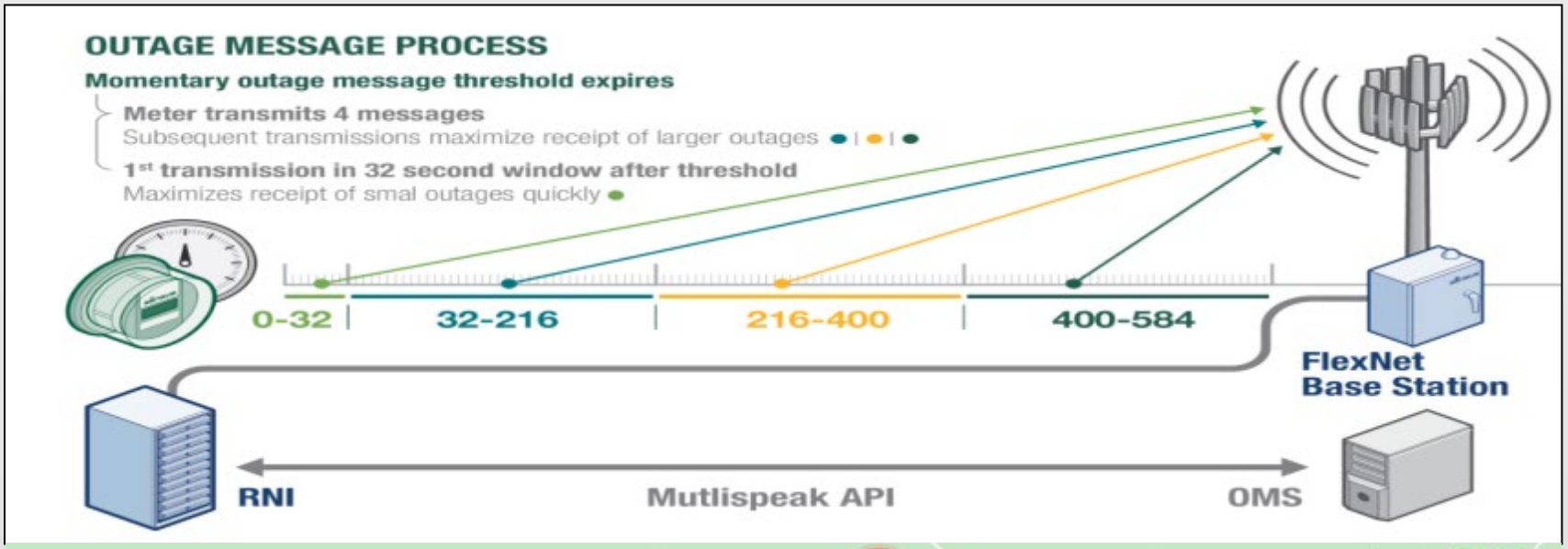
In addition, a very large number of homes do not have the correct power panel size to provide whole home electric consumption.

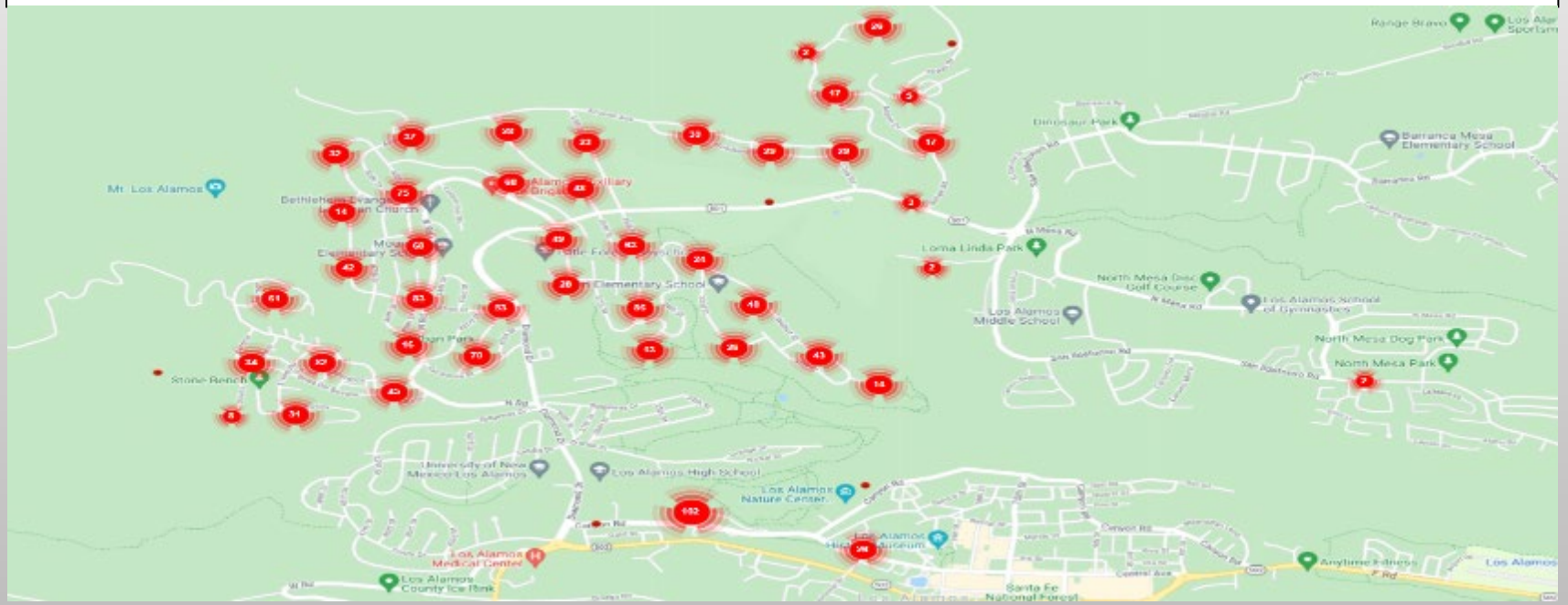
Distribution System SCADA

The DPU electric distribution department will develop and install a SCADA system which will monitor the electric equipment in the field.

The system will incorporate information from the AMI, ArcGIS, and the Milsoft Modeling system to provide real time system status to crews in the field and engineering.

AMI System


OUTAGE MESSAGE PROCESS
Momentary outage message threshold expires
Meter transmits 4 messages
Subsequent transmissions maximize receipt of larger outages
1st transmission in 32 second window after threshold
Maximizes receipt of smal outages quickly
0-32
32-216
216-400
400-584
FlexNet Base Station
RNI
Mutlispeak API
OMS


Mt. Los Alamos
Barranca Mesa Elementary School
Loma Linda Park
Los Alamos Middle School
North Mesa Dog Park
North Mesa Park
Los Alamos High School
Los Alamos Nature Center
Los Alamos Medical Center
Los Alamos County Ice Rink
Anytime Fitness
Santa Fe National Forest

Capital Project Proposals

2025 - SKI HILL $2,800,000
2025 - OPENNHEIMER / TRINITY / TIMBER RIDGE $1,200,000
2025 - 2026 - PIEDRA LOOP $ 550,000
2025 - 2026 - LOS PUEBLOS $1.0M
2026 - 2027 – Aragon, Ridgecrest, Garver, Catherine $1.5M
2026 – 2027 – Quemazon, North Road $750,000
2028 – Sandia, 41st – 47th, Ridgeway Tie $1M (Bond)
2028 – Grand Canyon, Bryce, Richard Ct, Rover $2M (Bond)
2028 - EA4 RECONSTRUCTION $7.5 MILLION (Bond)
2029 – Tewa, Otowi, Nambe Loop, Santa Clara $1M
2029 – La Senda $1.5M
2030 – Oakwood Loop, Nugget, Opal, Pinon $1.8M
2030 – Rover, Ridgecrest $1.9M
2031 – Sage $1M
2031 – Kimberly Loop $1M
2032 – Trinity from Diamond to Oppenheimer $1M
2032 – Briston Pl, Brighton, Paul Place, Todd Loop $600,000
2033 – Los Alamos Replacement $1M
2033 – White Rock Replacement $1M
2034 – Los Alamos Replacement $1M
2034 – White Rock Replacement $1M
2035 – Los Alamos Replacement $1M
2035 – White Rock Replacement $1M

QUESTIONS ?