

# ELECTRIC RELIABILITY PLAN

## INFORMATION AND DISCUSSION

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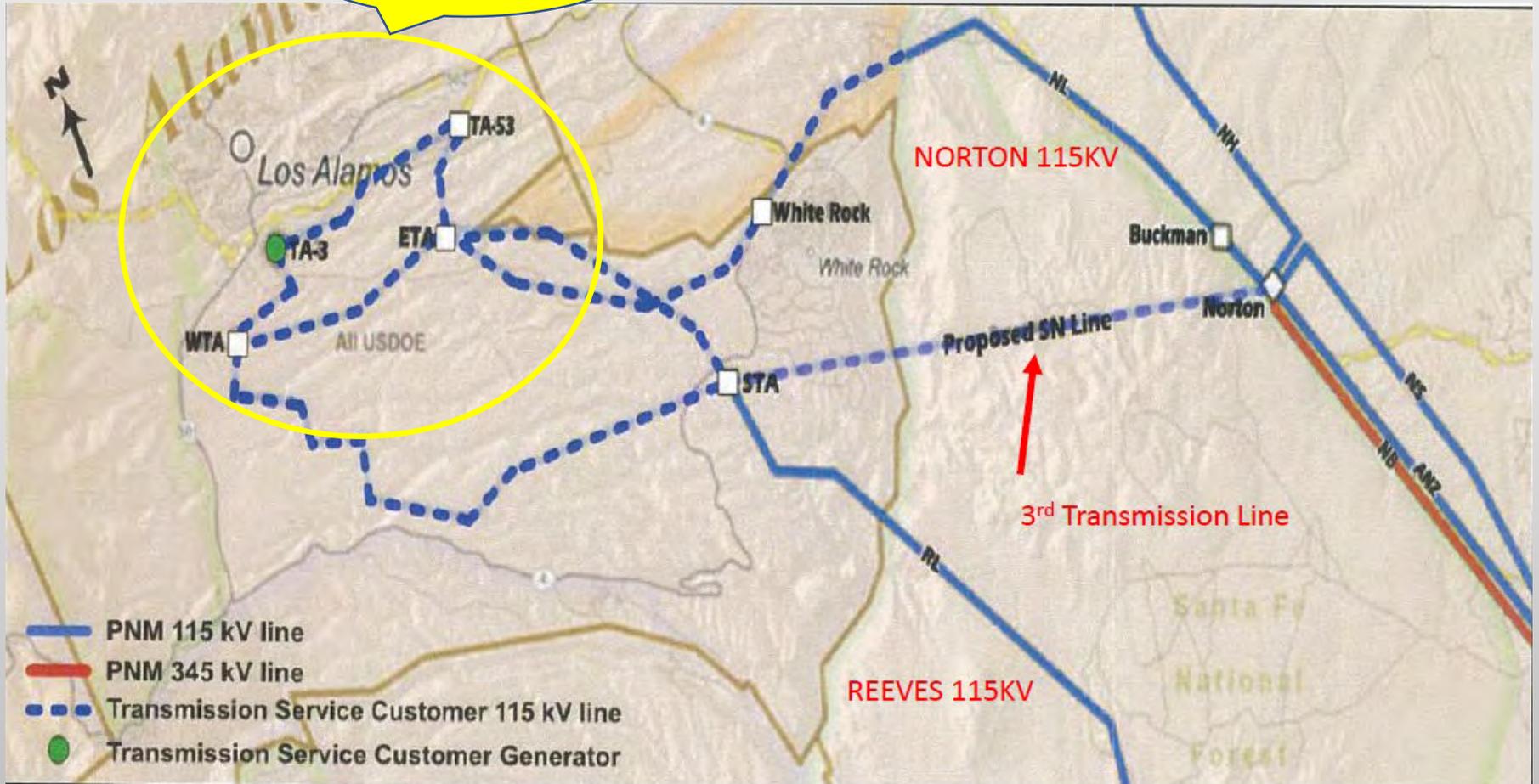


- TRANSMISSION SYSTEM
- DISTRIBUTION SYSTEM
- RELIABILITY MEASURES
- SHORT TERM ACTION PLANS
- LONG TERM ACTION PLANS

# REGIONAL 115KV TRANSMISSION

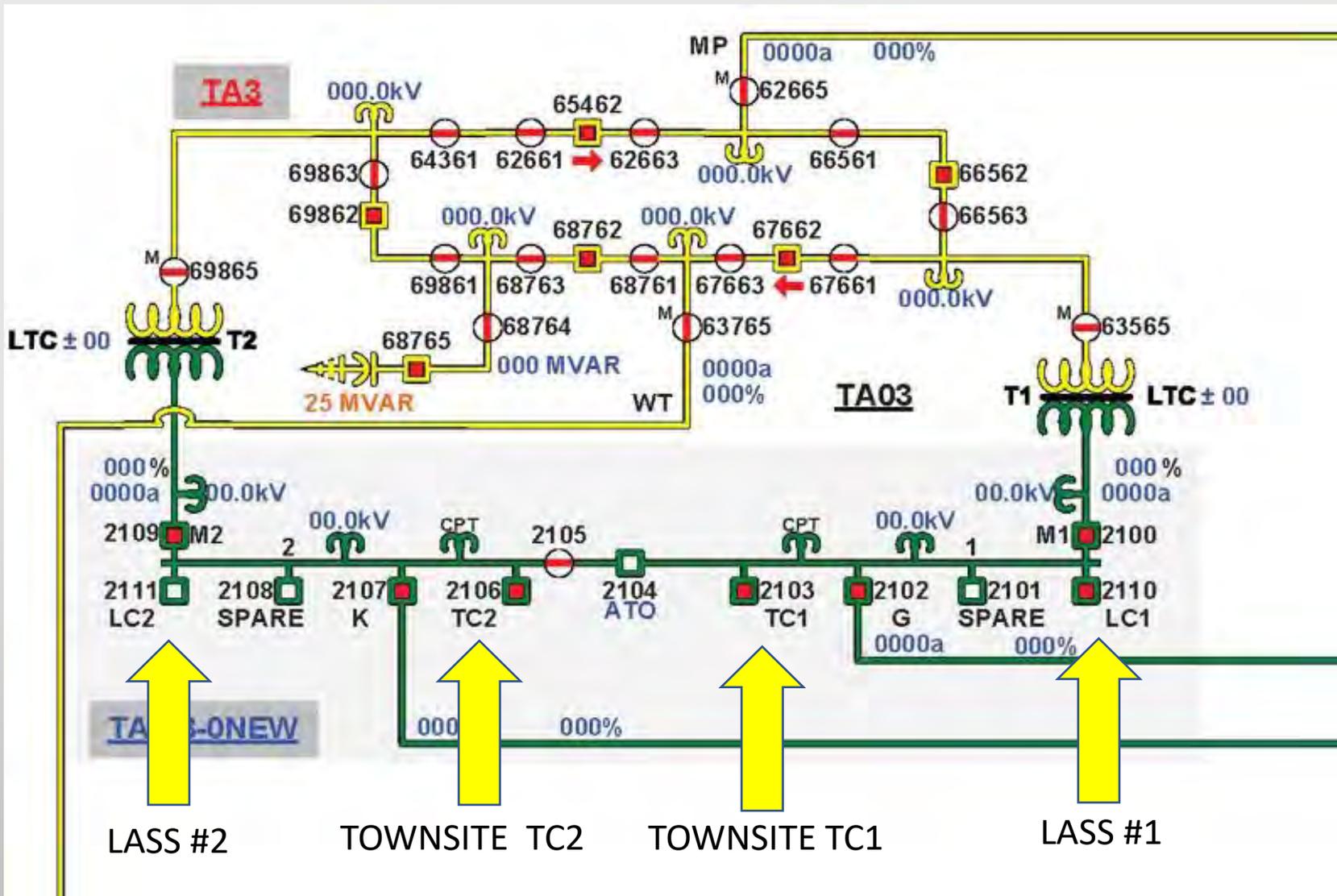
## FIGURE 5.0

LOS ALAMOS  
AREA



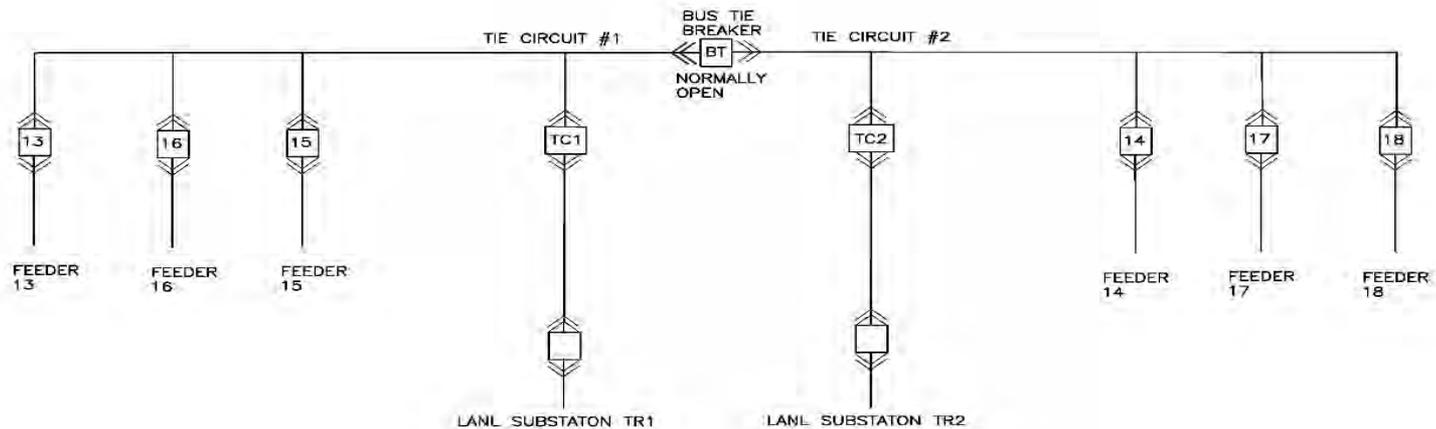


# TA-3 Substation



# TOWNSITE SWITCH STATION

LOS ALAMOS TOWNSITE SWITCHGEAR



TC1: SUBSTATION TIE CIRCUIT #1 2-500MCM COPPER 7850'

TC2: SUBSTATION TIE CIRCUIT #2 1-1000MCM COPPER 7850'

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

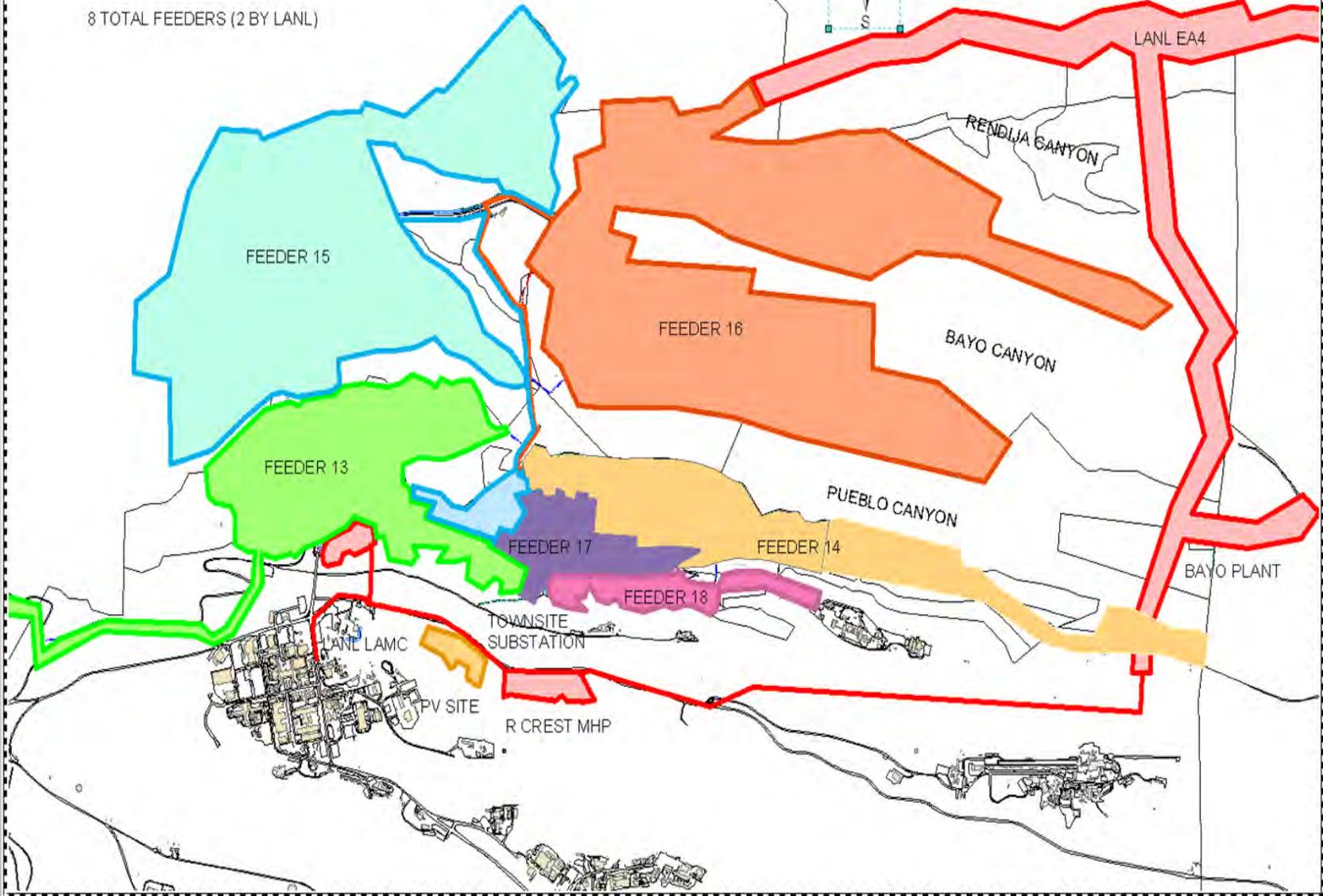
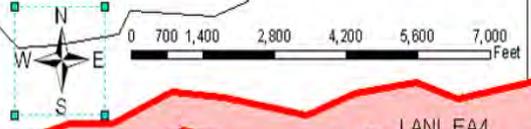
Circuit 17: Downtown Commercial North of Trinity

Circuit 18: Downtown Commercial South of Trinity and DP Road

# LACDPU Townsite Electric Distribution System

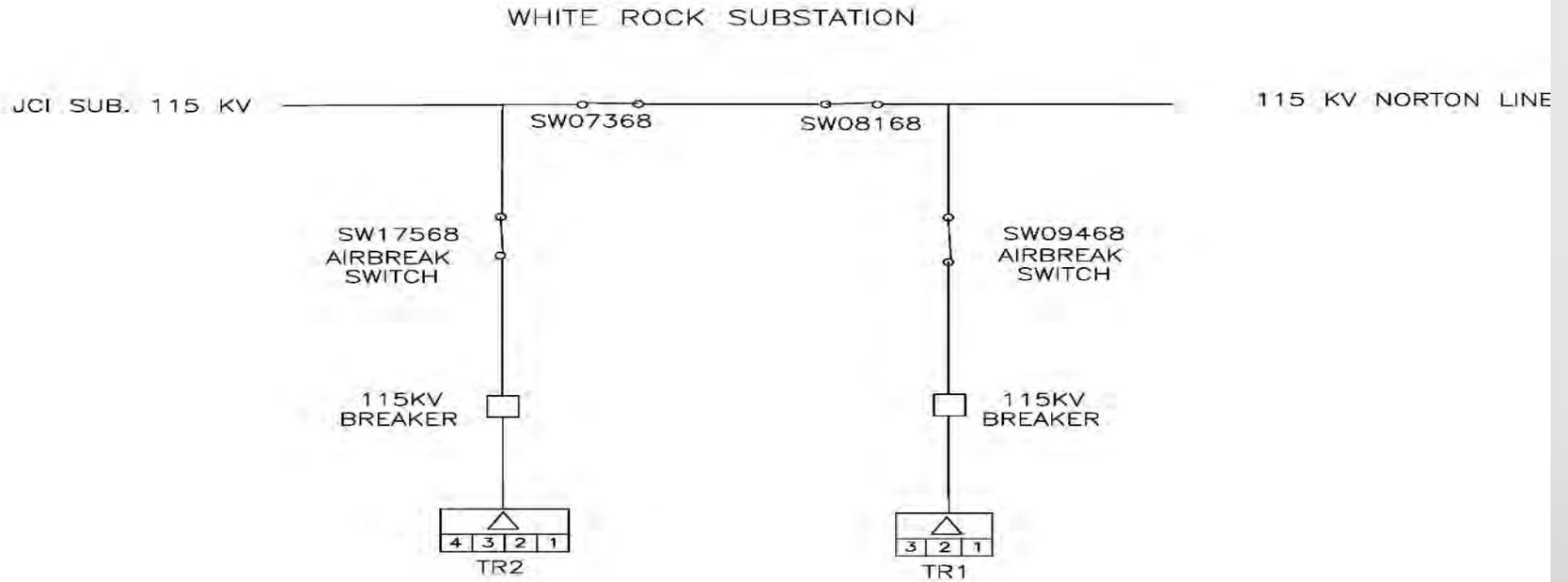
EXISTING FEEDER SYSTEM CONFIGURATION  
(AREAS IN RED PROVIDED BY LANL)

8 TOTAL FEEDERS (2 BY LANL)





# WHITE ROCK SUBSTATION



Circuit WR1: East of Rover

Circuit WR2: West of Rover

Circuit WR3: El Mirador Subdivision

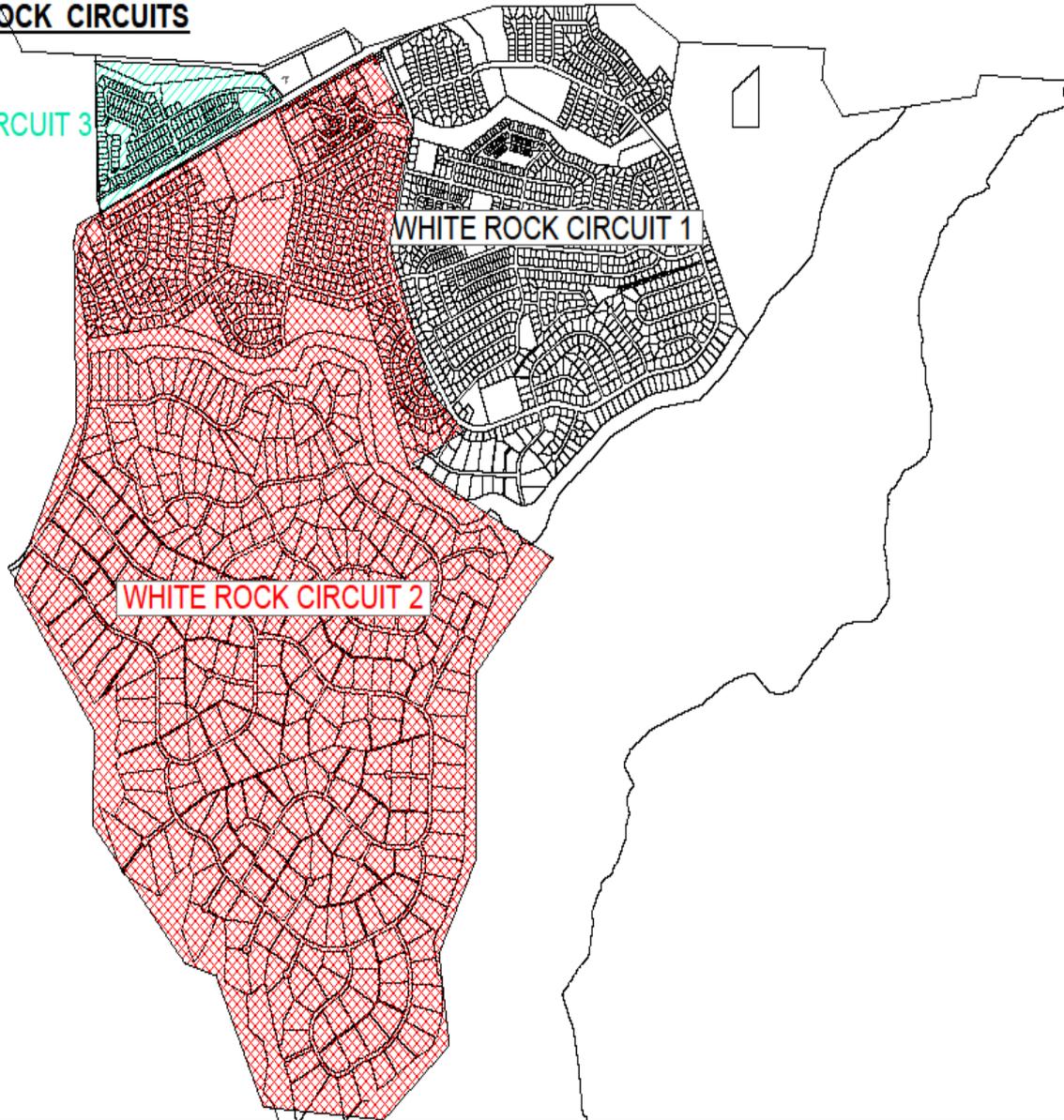


**WHITE ROCK CIRCUITS**

WHITE ROCK CIRCUIT 3

WHITE ROCK CIRCUIT 1

WHITE ROCK CIRCUIT 2



## RECENT SYSTEM OUTAGES



**THE DOUBLE CIRCUIT IN PUEBLO CANYON WITH A FALLEN PONDEROSA TREE ACROSS BOTH FEEDERS**

## RECENT SYSTEM OUTAGES



**CREWS REPLACING BROKEN CROSS ARMS CAUSED BY  
THE TREE IN THE PREVIOUS SLIDE**

## RECENT SYSTEM OUTAGES



**CROSSARMS TORN FROM THE POLE BY THE TREES ON  
THE LINES DOWN CANYON**

# RECENT SYSTEM OUTAGES



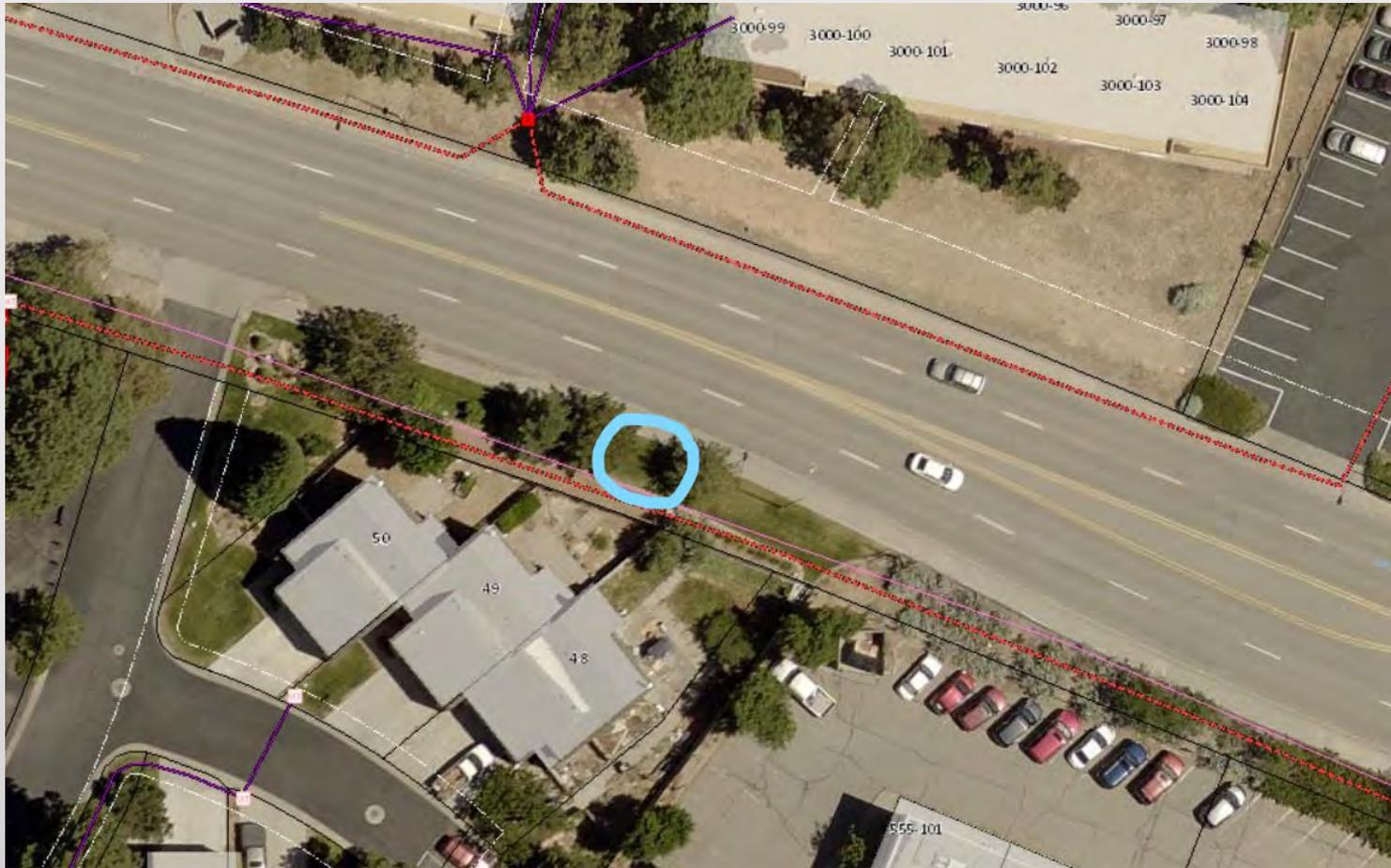
**DAMAGED CROSSARMS**

# RECENT SYSTEM OUTAGES

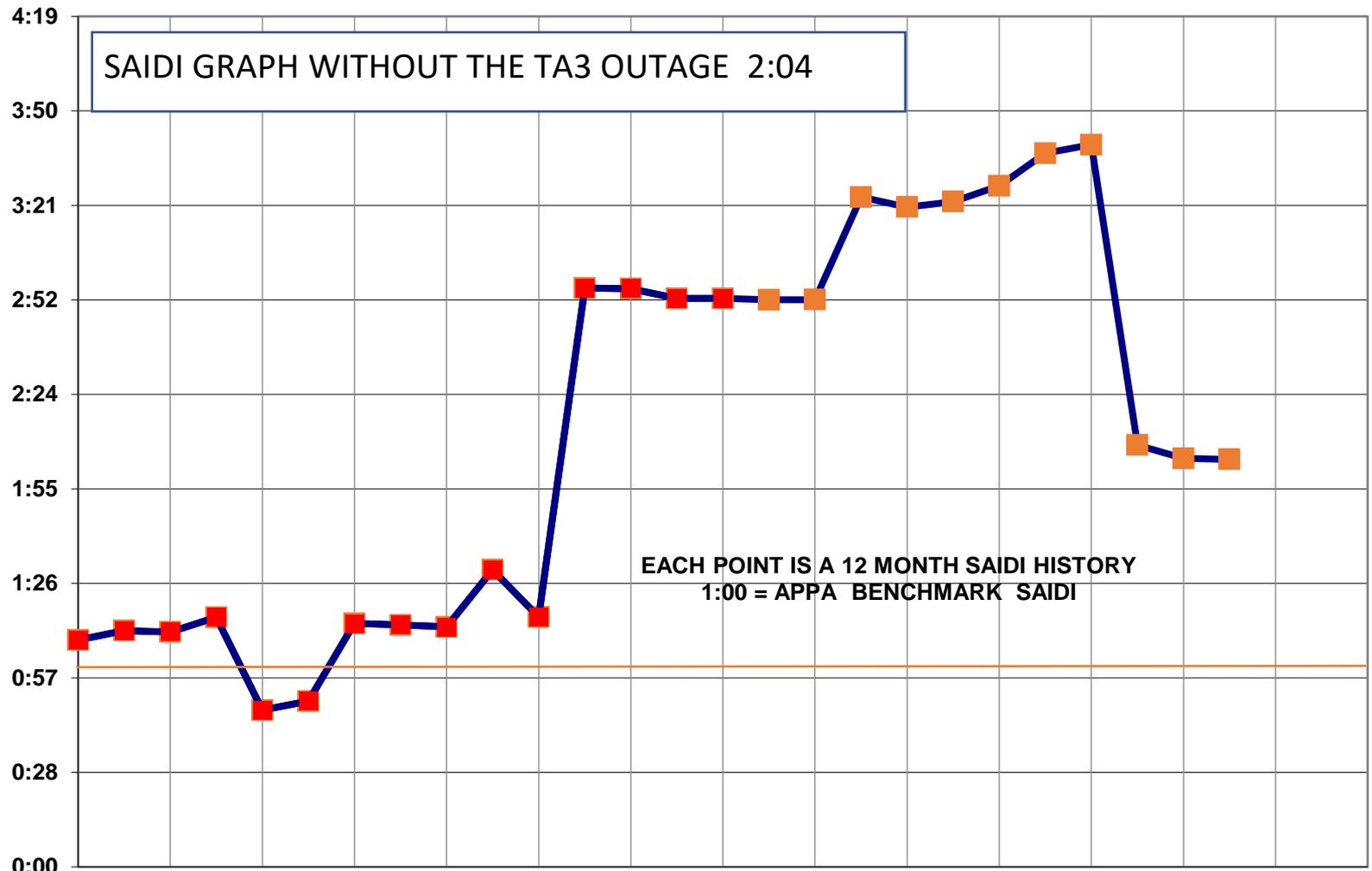


**LINEMAN REPAIRING DAMAGED CROSSARM  
SERVING WESTERN AREA WATER TANKS**

# RECENT SYSTEM OUTAGES



**UNDERGROUND FAULT ON FEEDER 13 BY  
TIMBER RIDGE 12-22-21  
Feeder 13 Replacement Project is now in Design  
Future budget pending**



January-21    March-21    May-21    July-21    September-21    November-21    January-22    March-22    May-22    July-22    September-22    November-22    January-23    March-23    May-23

## SAIDI 5 YEAR TOTAL (MINUTES)

	2018	2019	2020	2021	2022	AVG
LOS ALAMOS	110	12	48	176	128	82
NATIONAL(IEEE)	349	295	456	475	486	

# **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

# Long-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.**

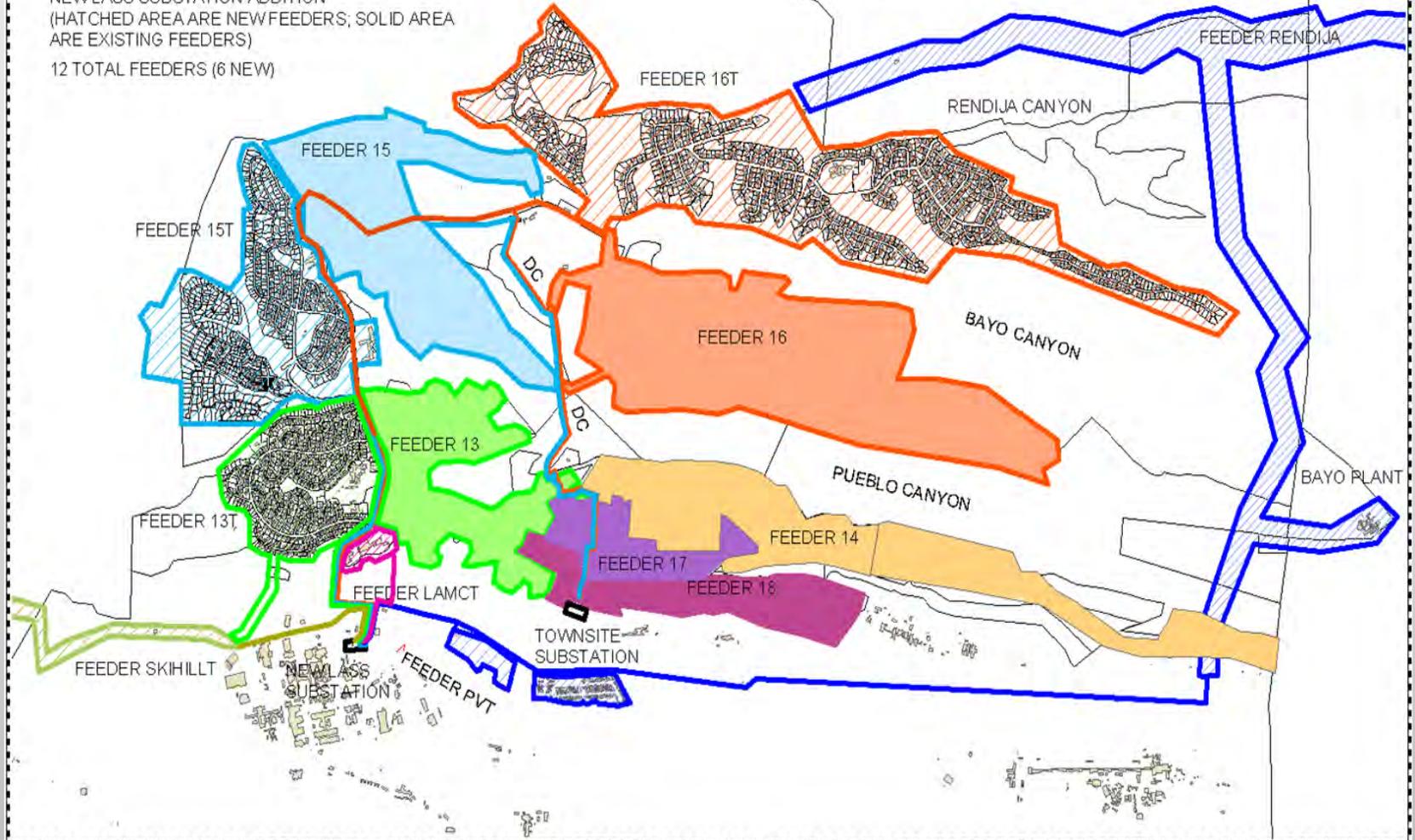
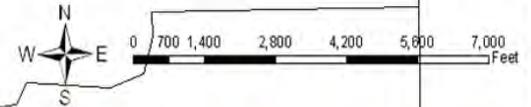
- **Provide new feeders 13T, 15T, 16T, S6, SM6.**
- **Reduce the number of customers on Townsite substation feeders 13, 15, & 16 (by moving half the customers on those feeders to LASS). Reducing the number of customers affected by primary feeder outages.**
- **Provide power to LACDPU customers at the 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

## LACDPU Townsite Electric Distribution System Proposed System PHASE I (Adds REDUNDANCY to Western Area, rids LANL sources)

PROPOSED FEEDER CONFIGURATION WITH  
NEW LASS SUBSTATION ADDITION  
(HATCHED AREA ARE NEW FEEDERS; SOLID AREA  
ARE EXISTING FEEDERS)

12 TOTAL FEEDERS (6 NEW)



# 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 is estimated to cost approx.\$250,000. 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.



# 10 Year Project Proposals

2023 -TOTAVI	\$300,000
2023 - LOMA LINDA	\$200,000
2024 - EA4 LINE DESIGN	\$400,000
2024 - SKI HILL	\$2,000,000
2024 - OPENNHEIMER / TRINITY / TIMBER RIDGE	\$1,200,000
2024 - DP ROAD PHASE II	\$600,000
2025 - EA4 RECONSTRUCTION	\$3,000,000
2025 - 2026 - PIEDRA LOOP	\$800,000
2025 - 2026 - LA SENDA	\$1,000,000
2027 - 2028 - LOS PUEBLOS	\$1,600,000
2028 - NAVAJO	\$300,000
2028 - EAST GATE SUBSTATION DESIGN	\$500,000
2029 - ESTATES	\$700,000
2029 - BROADVIEW	\$450,000
2029 - BIG ROCK LOOP	\$300,000
2029 - ARAGON AVE \$ 900,000	\$900,000
2030 – EASTGATE SUBSTATION	\$4,000,000
2030 - BRYCE AVE.	\$800,000
2030 - RIDGEWAY	\$450,000
2030 - WESTERN AREA	\$700,000
2031 - EASTERN AREA	\$600,000
2031 - PONDEROSA ESTATES	\$900,000
2032 - DENVER STEELS	\$600,000
2032 – ROVER	\$1,200,000
TOTAL	\$23,500,000

# FUTURE OUTLOOK

Planning for future upgrades is dependent on the funding provided to the department. The Covid crisis and current disasters in the United States have compounded the supply chain crisis. Costs continue to escalate and lead times are expanded. Many supply companies have stopped taking orders due to the backlog in orders.

## Distributed Generation and Electric Vehicle Impacts on the System

The electric distribution grid is absorbing production from increased distributed generation. The impact of the reverse flows will soon exceed the capacity of conductors and transformers in the system. Electric vehicle chargers and battery installations will increase the load on the system at traditionally off-peak times. This is a stress on the system due to the fact that solar systems do not function at night. Homes that are currently installing solar systems are also increasing the size of their services to accommodate EV chargers 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. Most repairs and upgrades will be performed by operations crews with operations budgets. The operating budget of the utility will have to increase to meet the challenges. The department will require the addition of four FTE positions to meet these goals.

## **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. The homes will have to be upgraded and new service lines will have to be installed. Current staffing levels will not support the expansions and upgrades needed to move toward total electrification.

QUESTIONS