2024 Wildfire Mitigation Plan

ANAHEIM PUBLIC UTILITIES

Approved and Adopted
May 22, 2024

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Executive Summary – 2024

The City of Anaheim (Anaheim) Public Utilities Department (APU) places top priority on the safety and resiliency of the local community. The APU Wildfire Mitigation Plan (WMP) serves to establish methods and procedures utilized to construct, maintain, and operate APU's electrical lines and equipment in a manner that will minimize the risk of APU assets being a point of origin or contributing source of a wildfire. The City Council, Public Utilities Board, and the City Manager's Office support the development of integrated strategic plans and their cross-functional implementation. This 2024 WMP was developed in collaboration with the Anaheim Fire & Rescue Department (AF&R) to meet both local safety initiatives and state regulations.

Public Utilities Code (PUC) Section §8387 established requirements for local publicly-owned electric utility WMPs which are updated annually with a comprehensive revision not less than every three (3) years. This legislation also established the Wildfire Safety Advisory Board (WSAB) with the responsibility to review each utility's WMP beginning in 2020 and provide advisory guidance opinions for improvements and future considerations in subsequent wildfire mitigation plans. APU incorporated these advisory guidance opinions as applicable within the 2024 WMP to build upon its initial foundation.

The WSAB issued the Advisory Opinion for the 2024 Wildfire Mitigation Plans of Electric Publicly Owned Utilities and Rural Electric Cooperatives, adopted on December 4, 2023 (WSAB 2024 Advisory Guidelines). The Guidelines were developed in collaboration between the WSAB, POUs, and POU Joint Associations (California Municipal Utilities Association, Golden State Power Cooperative, Northern California Power Association, and Southern California Public Power Association) to improve POU reporting on wildfire prevention efforts and WSAB's ability to review and advise on those reports. As such, unlike those issued in recent years, the 2024 WSAB guidelines did not include specific feedback on the individual POU WMPs filed for 2023.

The 2024 Guidelines recommend that the POU WMPs include:

Item	Guideline Description	Status
1	Executive summary	Included
2	Progress and achievements	Included
3	Independent Evaluator reports	Included with 2023 report
4	Performance metrics	Included

Item	Guideline Description	Status
5	Digital accessibility	Included
6	Revision log	Included
7	QA/QC program	To be included in a future independent evaluator's scope of work
8	Late WMPs and causes thereof	N/A, APU reports have been submitted by required timeframes

As the table demonstrates, APU's 2024 WMP meets Guideline items 1 through 6. Some of the Guideline items have been addressed prior to this 2024 WMP. For example, Item 5 – Digital Accessibility was addressed in the 2023 WMP to increase the level of transparency and information accessibility for public review. All present and past WMPs, Independent Evaluation Reports, and any supplemental filings, as appropriate, have a prominent location for access on APU's main website. This modification to provide easier access to the WMP and related documents was made in 2023 in response to previous comments by the WSAB which were also included under WSAB's Advisory Opinion for the 2024 Wildfire Mitigation Plans of Electric Publicly Owned Utilities and Rural Electric Cooperatives.

Some Guideline items are new and have been incorporated into this WMP. Guideline item 6, the Revision Log, is a new item from the 2024 Guidelines, and is addressed under Section 15 below. Guideline item 7 for a QA/ QC program is a new item in progress for implementation. This item will be included in the independent evaluator's scope (as sample auditing of implemented mitigation measures) as part of the next substantial revision of APU's WMP, which will be the 2026 WMP. Guidelines Item 8 related to late WMP submissions is not applicable as APU has timely submitted its WMP (and any required IE reports), by the July 1st deadline, for WSAB's review.

Heavy precipitation in 2023 ended the extended drought affecting Anaheim's wildland areas, with substantial vegetation growth resulting in three times the amount of available fuel load. As such, Anaheim Public Utilities and Anaheim Fire and Rescue (AF&R) work collaboratively to address wildfires as described in Section 5 of this WMP. APU's wildfire cameras captured one small brushfire on July 3, 2023, in the transition road median of the 91/ 241 freeway interchange. The brush fire was quickly extinguished by the fire crews and may have been below the reporting threshold, as CalFire's wildfire tracking map doesn't show any wildfires within or in the immediate vicinity of Anaheim for 2023.

APU owns and operates 130.47 circuit miles of electric lines in the geographic locations considered FTZs, which are identified in Figure 4. Within the FTZs, 98% of those lines are underground, which substantially mitigates the potential for wildfires in Anaheim. The remaining 2.63 miles of overhead lines are across 7 segments. APU applied for and received approval for $1.16 million of funding by the Federal Emergency Management Agency (FEMA) for an undergrounding design grant.

The undergrounding project's completed detailed design was submitted to FEMA in July 2023, for reviews that can take up to 12 months. APU has since responded to FEMA's follow-up questions on the project's construction, including implementation of FEMA's Programmatic Biological Opinion under the U.S. Fish and Wildlife Service requirements. Construction is currently planned to start in late 2024 for completion by mid-2026, pending the completion of FEMA's review. In addition to removing the overhead wires, the underground conversion will replace and/or consolidate overhead with new underground equipment, including 31 transformers, 2 capacitors, and 11 switches.

A transformer replacement program was initiated in 2021, focusing on replacement of priority overhead transformers over a five (5) year period based upon established criteria. Transformers in the FTZs are prioritized and replaced with FR3 fluid-filled transformers, beginning with the 2,000-foot undergrounding project completed in 2021, which has eliminated the need for APU to initiate a planned shutoffs for wildfire mitigation (FR3 is a transformer oil less prone to fires). As such, eight (8) FR3 transformers were installed in 2021 in the Tier 1 FTZ and thirty-one (31) FR3 transformers are planned to be installed by 2026, to convert all of the overhead facilities to underground within the FTZs. This will complete the replacement of all remaining non-FR3 overhead transformers in the FTZs.

Anaheim has partnered with University of California, San Diego (UCSD) on a network of wildfire cameras strategically placed throughout the City to monitor wildfire activity. The cameras are used by the Orange County Fire Authority (OCFA) and AFR Dispatch to focus resources and assess risk of the fires moving towards more densely populated areas including Anaheim. An incident was captured on Anaheim's wildfire cameras on July 3, 2023, where a small vegetation fire was quickly extinguished adjacent to the 241 and 91 freeway transition road's median. The cameras played a role in the 2018 Jim Fire which was contained after burning approximately 550 acres. The network of cameras are available for public view at https://ops.alertcalifornia.org/.

Anaheim installed wildfire cameras at two additional sites in 2023 bringing the total number to 7 locations (hosting a total of 14 cameras) within and adjacent to the APU service territory. These additional cameras view Tier 3 Fire Threat Zone (FTZ) in Weir Canyon and Gypsum Canyon areas as well as the Oak Canyon Nature Preserve, a 58-acre canyon adjacent to residential homes and a critical water treatment facility and reservoir, a key water source used by fire agencies to fight major wildfires including the Canyon 1 and 2 fires in 2017. The cameras have been instrumental in improving situational awareness and supporting fire response.

In 2023, APU also installed two additional weather stations in Weir and Gypsum Canyon areas, both in High Fire Threat Zones. These weather stations, collocated with the new wildfire cameras there, provide advance situational awareness to the emergency crews, to assist in prioritizing response and allocating resources.

Climate-related factors contributing to wildfire risk are identified in this WMP as well as assistance offered to customers to prepare and protect properties using APU rebates, educational workshops, and resiliency programs including service lateral undergrounding. This WMP includes metrics on customer participation levels.

In addition to use of FR3, APU also utilizes CALFIRE exempt overhead protective devices[1] that reduce the potential to start wildfires. These include use of twelve (12) sealed lightning arresters that prevent animals contacting the energized high-voltage section and installation of twelve (12) non-expulsion fuses that prevent any potential hot shards caused by blown fuses from falling on shrubs or grass below and causing fires. Further risk will be mitigated when these protective devices are replaced with pad-mount and subsurface equipment after the remaining overhead lines are converted to underground by2026.

The availability of proprietary utility equipment required to meet California wildfire mitigation goals can be a challenge for publicly owned utilities (POUs) when sourcing specialized components such as FR3 transformers, underground cable, and other wildfire mitigating equipment. APU is evaluating these supply chain challenges and initiating long lead material requests due to current and future supply chain constraints on the utility industry to strive towards the project completion goals detailed in this WMP.

Vegetation Management is a collaborative effort in Anaheim among APU, AF&R, who serves as the lead agency for Anaheim on wildfire mitigation, the Department of Public Works, who manages public right-of-way tree-trimming and performs vegetation management around electrical infrastructure, and the OCFA, who surveys for Invasive Shot Hole Borer Beetle (ISHB), Gold Spotted Oak Borer (GSOB), and other invasive pests threatening canyon areas. Additional Vegetation Management measures include controlled burns for managing flammable re-growth and annually uses goats as an ecologically sensitive method for clearing wild grass in canyon areas not easily accessible by equipment.

For ease of navigating the WMP, Section 1(B) -Table 3- Elements Consistent with WSAB 2023 Guidance provides a summary list of comments from the 2023 WSAB Opinion and Guidance document and maps the location within the WMP where the comment is addressed. In addition, Table 3A – Elements Consistent with WSAB 2024 Guidance provides a summary of the recommendations from the 2024 Guidance and where the recommendations are addressed within the WMP, if applicable.

[1] California Power Line Fire Prevention Field Guide, 2021 Edition, https://osfm.fire.ca.gov/media/3vqj2sft/2021-power-line-fire-prevention-field-guide-ada-final_jf_20210125.pdf

SECTION 1 – Introduction

A. Introduction

APU began providing electric utility services to the City of Anaheim in 1895. Anaheim's population has grown to approximately 350,000 and there are over 20,000 businesses located in the City. Anaheim is the 10th largest city in California and the only municipally-owned electric and water utility in Orange County. APU is governed by the Anaheim City Council who appoints a Public Utilities Board (PUB) that serves as an advisory body consisting of local residents to provide recommendations and reviews APU's operations, finances, and conducts public hearings.

The following table provides a brief overview of the APU service area and topology.

Table 1: Anaheim Public Utilities Context-Setting Table

Attribute	APU	
Service Territory Size	50.87 square miles	
Owned Assets	☑ Transmission ☑ Distribution ☑ Generation 202 MW Electric Generation 14 Substations 18,184 Million Gallons (MG) of Water Production 763 miles of Water Distribution 920 MG Open Water Reservoir 35.75 MG Closed Water Reservoir 23 miles of Overhead Fiber Optic 111 miles of Underground Fiber Optic	
Number of Customers Served	126,413 electric customer accounts 64,695 water customer accounts	
Population Within Service Territory	346,842	
Customer Class Makeup	*Number of Accounts*	*Share of Total Load (MWh)*
	83.53% Residential 0.76% Government 0.03% Agricultural 15.46% Small/Medium Business 0.22% Large Commercial/Industrial	26.87% Residential 4.78% Government 0.24% Agricultural 28.42% Small/Medium Business 39.69% Large Commercial / Industrial
Service Territory Location/Topography	86.42% Urban 8.92% Shrub 2.50% Herbaceous 1.00% Barren/Other 0.89% Hardwood Woodland 0.16% Agriculture 0.07% Water 0.03% Hardwood Forest 0.001% Conifer Forest	

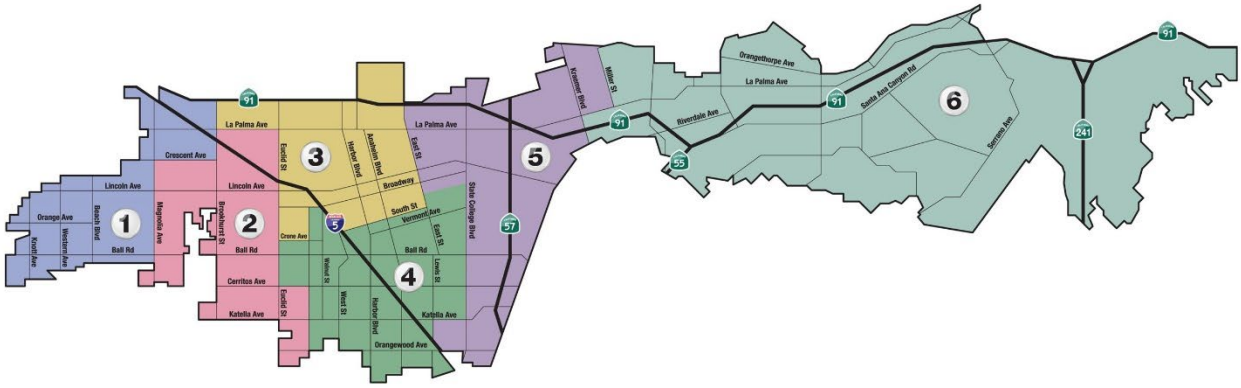
Attribute	APU
Service Territory Wildland Urban Interface (based on total area)	11.5% Wildland Urban Interface 0.7% Wildland Urban Intermix
Percent of Service Territory in APU FTZs[2] (based on total area)	☑ Includes maps Tier 1 – Elevated: 7.44% Tier 2: 0.64% Tier 3: 13.86%
Prevailing Wind Directions & Speeds by Season	Wind direction in Anaheim is most often from West for 9.3 and from East for 2.6 months, respectively, with an average wind speed of 2-14 mph
Total APU Miles of Owned Lines Underground and Overhead	Transmission Overhead: 1.23 miles, 18 Poles Overhead Sub-Transmission: 28.13 miles, 873 Poles Underground Sub-Transmission: 59.77 miles Overhead Distribution: 384.48 miles, 15,994 Poles Underground Distribution: 782.24 miles *Miles per circuit measured from APU GIS* *See Section 1 (A) for Description of Assets*
Miles of APU Lines in Tier 3 – Extreme	Transmission Overhead: 0 miles, 0 Poles Overhead Sub-Transmission: 0 miles, 0 Poles Underground Sub-Transmission: 1.20 miles Overhead Distribution: 0.88 miles, 27 Poles Underground Distribution: 19.81 miles
Miles of APU Lines in Tier 2- Very High	Transmission Overhead: 0 miles, 0 Poles Overhead Sub-Transmission: 0 miles, 0 Poles Underground Sub-Transmission: 0 miles Overhead Distribution: 0.23 miles, 10 Poles Underground Distribution: 0.88 miles
Miles of APU Lines in Tier 1 – Elevated	Transmission Overhead: 0 miles, 0 Poles Overhead Sub-Transmission: 0 miles, 0 Poles Underground Sub-Transmission: 0.61 miles Overhead Distribution: 1.51 miles, 75 Poles Underground Distribution: 107.24 miles
No. of Substations within the FTZs	1 Substation – Tier 1
Customers have ever lost service due to an IOU PSPS event?	☐ Yes ☑ No
Customers have ever been notified of a potential loss of service due to a forecasted IOU PSPS event?	☐ Yes ☑ No
Has developed protocols to pre-emptively shut off electricity in response to elevated wildfire risks?	☑ Yes ☐ No
Has previously pre-emptively shut off electricity in response to elevated wildfire risk?	☐ Yes ☑ No

[2] See Section 5 for description of APU Fire Threat Zones

APU is a Participating Transmission Owner (PTO) with the California Independent System Operator (CAISO), is interconnected to the regional grid at 220 kilovolts (kV) by four Southern California Edison (SCE)-owned and operated transmission lines, and distributes power from its fourteen (14) substations through its 69kV sub-transmission system. The 12kV distribution system located throughout Anaheim distributes power through approximately 1,000 circuit miles of distribution lines. APU's historic peak demand is 596 Megawatts (MW).

Anaheim is about 50 square miles and is divided into six Council Districts (see Figure 1). For the purpose of this WMP, the areas considered to be in the FTZs are only in District 6, or the eastern portion of Anaheim.

Figure 1 : Anaheim Service Territory and Council District Boundaries



In 1990, the Anaheim City Council authorized an Underground Conversion Program to underground overhead lines along major thoroughfares, and in 2016 amended the program to expand the types of eligible projects that include reliability improvements such as wildfire safety. To date, 140.1 circuit miles have been undergrounded throughout the Anaheim service territory as a result of this program. APU also features the first fully underground substation in the United States that is located in District 6 that provides reliability, physical security, and operational benefits to the community. APU is also a full-service water utility and has its Walnut Canyon Reservoir, a 920-million-gallon facility, in the eastern part of Anaheim that has been used extensively by water carrying aircraft during regional fires. As a customer-owned utility, APU emphasizes safety, reliability, and affordability in its daily operations and long-term investments.

Figure 2: (a) Park Substation (b) Walnut Canyon Reservoir during Canyon Fire 2

B. Overview and Objectives

The primary goals of this WMP are to minimize the probability that APU-owned infrastructure is the contributing source of ignition of a fire and to improve resiliency of its electrical grid by incorporating methods and procedures to construct, maintain, and operate APU's electrical lines and equipment safely. Any references throughout this WMP regarding wildfire mitigation are efforts to minimize the probability that APU-owned infrastructure is a contributing source towards the ignition of a wildfire. The provisions set forth below outline the preventative strategies and actions for fire prevention and suppression activities and specific operational response during elevated fire and weather conditions to limit potential electric sources of fire ignition in the FTZ within APU's service territory.

The Anaheim WMP was initially developed to meet the provisions mandated in Public Utilities Code Section § 8387, requiring all public utilities and cooperatives to assess whether portions of the geographical area where the utility's overhead electrical lines and equipment are located has a significant risk of a catastrophic wildfire resulting from those electrical lines and equipment and if so, present mitigation measures the utility intends to undertake to minimize that risk. Public Utilities Code Section § 8387 outlines the elements to be included when assessing the risks and formulating a wildfire mitigation plan.

Table 2 is a summary of the elements required within a wildfire mitigation plan as compared to the elements included in this WMP.

Table 2: Statutory Cross References with Public Utilities Code Section 8387(b)

Requirement	Statute and Description	Section Number
Persons Responsible	**PUC § 8387(b)(2)(A):** An accounting of the responsibilities of persons responsible for executing the WMP	9(D), 10, 12
Objectives of the Plan	**PUC § 8387(b)(2)(B):** The objectives of the WMP	1
Preventative Strategies	**PUC § 8387(b)(2)(C):** A description of the preventive strategies and programs to be adopted by the POU to minimize the risk of its electrical lines and equipment causing catastrophic wildfires, including consideration of dynamic climate change risks.	3, 7, 8, 9, 10
Evaluation Metrics	**PUC § 8387(b)(2)(D):** A description of the metrics the POU plans to use to evaluate the plan's performance and the assumptions that underlie the use of those metrics.	13
Impact of Metrics	**PUC § 8387(b)(2)(E):** A discussion of how the application of previously identified metrics to previous wildfire mitigation plan performances has informed this plan.	13
De-Energization Protocols	**PUC § 8387(b)(2)(F):** Protocols for disabling reclosers and de-energizing portions of the electrical distribution system that consider the associated impacts on public safety, as well as protocols related to mitigating the public safety impacts of those protocols, including impacts on critical first responders and on health and communication infrastructure.	9(B), 9(D)
Customer Notification Procedures	**PUC § 8387(b)(2)(G):** Appropriate and feasible procedures for notifying a customer who may be impacted by the de-energizing of electrical lines. The procedures shall direct notification to all public safety offices, critical first responders, health care facilities, and operators of telecommunications infrastructure with premises within the footprint of potential de-energization for a given event.	9(D), 10
Vegetation Management	**PUC § 8387(b)(2)(H):** Plans for vegetation management.	8(A)
Inspections	**PUC § 8387(b)(2)(I):** Plans for inspections of POU's electrical infrastructure.	8(B)

Requirement	Statute and Description	Section Number
Prioritization of Wildfire Risks	**PUC § 8387(b)(2)(J):** A list that identifies, describes, and prioritizes all wildfire risks, and drivers for those risks, throughout POU's service territory. The list shall include, but not be limited to, both the following: i. Risks and risk drivers associated with design, construction, operation, and maintenance of POU's equipment and facilities. ii. Particular Risks and risk drivers associated with topographic and climatological risk factors throughout the different parts of POU's service territory.	4
CPUC Fire Threat Map Adjustments	**PUC § 8387(b)(2)(K):** Identification of any geographic area in POU service territory that is a higher wildfire threat than is identified in a California Public Utilities Commission (CPUC) fire threat map, and identification of where the CPUC should expand a high fire threat district based on new information or changes to the environment.	5
Enterprise Risk	**PUC § 8387(b)(2)(L):** A methodology for identifying and presenting enterprise-wide safety risk and wildfire-related risk.	2
Restoration of Service	**PUC § 8387(b)(2)(M):** A statement of how the POU will restore service after a wildfire.	9(D), 10
Monitor and Audit	**PUC § 8387(b)(2)(N):** A description of the processes and procedures the POU shall use to do all of the following: i. Monitor and audit the implementation of the WMP ii. Identify any deficiencies in the WMP or its implementation, and correct those deficiencies iii. Monitor and audit the effectiveness of electrical line and equipment inspections, including inspections performed by contractors, that are carried out under the plan, other applicable statutes, or commission rules.	13, 14

Requirement	Statute and Description	Section Number
Qualified Independent Evaluator	**PUC § 8387(c):** The local publicly owned electric utility or electrical cooperative shall contract with a qualified independent evaluator with experience in assessing the safe operation of electrical infrastructure to review and assess the comprehensiveness of its wildfire mitigation plan. The independent evaluator shall issue a report that shall be made available on the Internet Web site of the local publicly owned electric utility or electrical cooperative, and shall present the report at a public meeting of the local publicly owned electric utility's or electrical cooperative's governing board.	14

PUC § 8387 also requires POUs to submit annual updates of their wildfire mitigation plans to the WSAB with comprehensive revisions at least once every three (3) years thereafter. After the submission of its WMP, and upon review by the WSAB, who subsequently issues an advisory opinion, APU reviews the recommendations from the WSAB and incorporates them if deemed relevant. All Anaheim WMPs submitted to the WSAB and Independent Evaluation reports are posted on APU's WMP webpage for public access from the APU homepage: https://anaheim.net/6099/Public-Utilities.

In November 2022, the WSAB published its Guidance Advisory Opinion for the 2023 Wildfire Mitigation Plans of Electric POUs and Rural Electric Cooperatives. The Guidance included 21 recommendations that are summarized in Table–3 - Elements Consistent with WSAB 2023 Guidance and incorporated into APU's 2023 WMP.

The WSAB's 2023 Guidance also provided a revision template for updating wildfire mitigation plan formats if POUs had not previously developed their own wildfire mitigation plan format. APU reviewed and considered the proposed WSAB revision template and determined that the existing APU WMP format provides information that exceeds the section format in the WSAB revision template, and that it is more advantageous for readers and stakeholders of this WMP to maintain a format that is consistent with previous APU WMPs.

However, key elements from the WSAB revision template were incorporated into this WMP as detailed below:

1) Objectives of the WMP.
2) A Fire Threat Assessment including location and weather condition warnings.
3) Identification of utility assets located in FTZs.
4) Identification of key wildfire risks and risk drivers.
5) A description of the preventative strategies and programs adopted to minimize the risk of APU electrical lines and equipment causing catastrophic wildfires including vegetation management, system inspection, operational strategies, and construction standards.
6) A description of the factors used to determine when it may be necessary to de-energize electrical lines and deactivate its reclosers.
7) A description of the metrics used to evaluate annual and historical WMP performance and discussion of how to use performance metrics to enhance ongoing Plans.

8) An accounting of the responsibilities of persons responsible for executing the WMP.
9) Monitoring and audit provisions that support implementation of the WMP, and identifying any deficiencies or areas for improvement.
10) Ongoing monitoring and audit of the effectiveness of electrical line and equipment inspections; and
11) A description of community outreach and education, covering communication about wildfire prevention, utility wildfire mitigation efforts and strategies, and potential de-energization and re-energization practices.

Table 3: Elements Consistent with WSAB 2023 Guidance

Category	WSAB Recommendation	2023 WMP Section
General Comments, Reporting, and Staffing		
A. Reporting Based on Threat Level	The WSAB invites the POU representative organizations to work with us and develop an approach to streamline the WMP requirements for POUs with low likelihood of wildfires.	1(B)
	POUs with no overhead assets within or abutting high wildfire threat areas should consider whether the specific topics listed in PUC Section 8387(b)(2) are necessary to include in each annual WMP that they develop and file with the WSAB.	N/A
	POUs with no overhead assets within or abutting high wildfire threat areas should consider whether hiring an Independent Evaluator is necessary for the annual updates between comprehensive revision WMPs and when hiring an Independent Evaluator is reasonable, such as when the utility's wildfire circumstances substantively change.	N/A
B. Comprehensive Revision and Revision Template	POUs should consider using the WSAB proposed comprehensive revision template described herein for their 2023 WMPs.	1(B)
	POUs that have not used the previous CMUA template because they have developed their own comprehensive WMP formats may continue that practice, while including the context-setting template and statutory cross-reference table.	1(B), Table 1, Table 2
	Refer back to the 2022 recommendations along with those for 2023 provided below for preparation of next year's WMPs.	1(B)

Category	WSAB Recommendation	2023 WMP Section
C. Metric Development and Evaluation	Adopt thoughtful, relevant metrics that appropriately reflect the significant variation in circumstances among POUs, including size, location, and asset situation or type.	13
D. Independent Evaluations	Procure IE for a review of the 2023 comprehensive revision WMPs and the IE to provide an analysis that goes beyond simply documenting compliance with the statute to recommend wildfire mitigation changes or improvements that will improve the wildfire risk profile of the utility.	14
	Documentation of IE recommendations, WMP changes, and IE acceptance of those changes as adequate for the current WMP.	14
Grid Assets, Operations and Inspection		
	Evaluate asset management programs, including examining legacy equipment issues.	3
	Describe grid design and system hardening programs.	6, 8, 9
	Identify and assess those assets that would not be directly subject to the protocols of the CPUC's GO 95 due to their construction prior to the GO first being adopted.	8(E)
	The WSAB recommends POUs consider the pre-staging of utility personnel at clearing points during de-energization event.	10(B)
Risk Assessment and Climate Mapping		
	Identify cost-effective risk assessment tools to help focus wildfire mitigation activities.	2, 3
	Understand and incorporate climate change data in risk assessments and wildfire mitigation decision making and prepare for these changes proactively rather than reacting to them as they happen.	3, 4
Vegetation Management		

Category	WSAB Recommendation	2023 WMP Section
	Explore the risks of widespread invasive annual grasses that extend across the State.	8(A)
	Investigate mitigation methods to avoid the development of potentially risky grasses in cleared areas.	8(A)
	Focus on ecologically relevant replanting and avoid the short-run simple practice of relying on greater clearances.	8(A)
Community Communication and Outreach		
	Include information in WMPs about how POUs and their customers and community minimize wildfire impacts through backup power resources.	9(D)
WSAB Advisory Guidance Specific to Anaheim Public Utilities 2022 WMP Submittal		
	WSAB encourages development of a more easily found track to the WMP information from the main Anaheim web page.	1(B)
	Clarify in the future what is meant by the term "brush" – some brush such as chaparral when abated can be replaced by more flammable invasive grasses.	5
	The WSAB would like to understand the source of information about the approximately 10 species of trees responsible for 75% of fire ignitions in California.	8(A)

APU will continue to review the WSAB annual Guidance recommendations, incorporate the additional information in the APU WMP to address these recommendations as applicable, and amend Table 3A below to identify the relevant sections within APU's WMP. As such, this WMP represents the combined effort of the POU industry associations to further the development of a template to respond to the WSAB's Guidance in future reporting wildfire mitigation plan cycles. APU is an active participant in the California Municipal Utilities Association (CMUA) wildfire working groups and continues to support and work with the CMUA and WSAB to streamline future wildfire mitigation plan requirements for POUs.

As part of its 2024 advisory guidelines, WSAB's evaluation of the POUs' 2023 WMPs pointed to limitations associated with the current approach of communicating with the POUs through advisory opinions and recognized the need to engage with the POUs and the POU Joint Associations. As such, the WSAB has reevaluated past comments from the POUs and Joint Associations and discussed additional opportunities for collaboration, working through various WMP content issues, and identifying useful programs and practices that may be suitable for wider use among California's utilities. Based on these factors, the WSAB has envisioned a new

collaborative approach set forth below to improve POU reporting on its wildfire prevention efforts and WSAB's ability to review and advise on those reports.

The recommended approach will allow the WSAB to continue to meet its statutory obligations while creating a framework that allows POUs to develop comprehensive WMP reports customized to each unique POU. The WSAB recommends that POUs and the Joint Associations participate in meetings or workshops as requested by the WSAB to engage with the WSAB and to exchange information and ideas through discussions on topics listed under Table 3A below, where APU has listed the corresponding section in this WMP where the requirements are met.

Table 3A: Elements Consistent with WSAB 2024 Guidance

WSAB Recommendation	2024 WMP Section
POU progress and achievements by including more detailed information for each project in the following WMPs	7 and 8(c)
Performance metrics	13
QA/QC program	14
Independent Evaluator (IE) reports	14
Executive summaries	Executive Summary
Late WMP submissions (address causes thereof)	Not Applicable to APU
Revision log	15
Digital accessibility	Executive Summary
Other items that come up during aforementioned discussions between WSAB and Joint Associations	Not applicable at this time

To implement APU's WMP, a matrix identifying persons responsible for executing the WMP, resources utilized to assess field conditions when elevated fire and weather indicators reach certain thresholds, and education and training for field personnel, stakeholders, and the public is located in Section 13. Finally, metrics using historical and incident driven data measure the effectiveness of the mitigation efforts and drive future enhancements.

SECTION 2 - Enterprise-Wide Safety Risk Assessment

There are various methods to evaluate risk, and APU follows the Committee of Sponsoring Organizations of the Treadway Commission (COSO) Enterprise Risk Management - Integrated Framework. Similar to the risk management standards established by the International Organization of Standardization (ISO) 31000, the purpose is to identify and manage potential enterprise and safety risks, including those associated with electrical infrastructure igniting or contributing to a wildfire, that could threaten the community, interrupt core business functions, and threaten business continuity or impact recovery.

APU's enterprise risk management framework begins with an organizational structure ranging from Elected and Appointed Officials, Executive Management, Division Managers, and Subject Matter Experts (Risk Owners) who identify credible and foreseeable threats utilizing industry experience, and accounting for APU's unique characteristics and safety assessments. Similar to the "bowtie" method (see Figure 3) for identifying where new or enhanced controls may be worthwhile, a repository of identified risks (see Table 4) are prioritized based on consequence to the business enterprise and frequency of occurrence. For each risk, mitigation plans are established, with a Risk Owner identified to oversee implementation and progression of the mitigation measures, and a member of the senior management team who is held responsible and accountable for the risk.

Ongoing efforts of reviewing and revising the risks as new threats evolve keep this process dynamic. APU measures and monitors the effectiveness of the mitigation efforts through various means including the agency-level Utilities Success Indicator report. Examples of safety and wildfire risks include loss of electric service to critical infrastructure, loss of communication connectivity, impacted roadways limiting access to FTZ areas and facilities, and regional grid emergency shut-off events.

Risk drivers related to wildfire potential for electric utilities commonly focus on operational and/or electrical infrastructure, vegetation, resource coordination, and the resulting loss of power to critical facilities. These internal factors are addressed with strategies to mitigate the risk within the APU 2024 WMP. Other risk drivers, including natural elements such as climate change and weather conditions are global and require a dynamic approach using forecasting tools to manage the risk.

SECTION 3 - Overview of Risks and Risk Drivers Related to Wildfires

As previously mentioned, a repository of wildfire-related risks from utility operations and/or equipment sparking a wildfire were identified and prioritized based on the threat to the community, core business impact, consequences, and risk mitigation path. The "bowtie" method in Figure 3 illustrates this process.

Figure 3: Wildfire "Bowtie" Risk Mitigation Chart

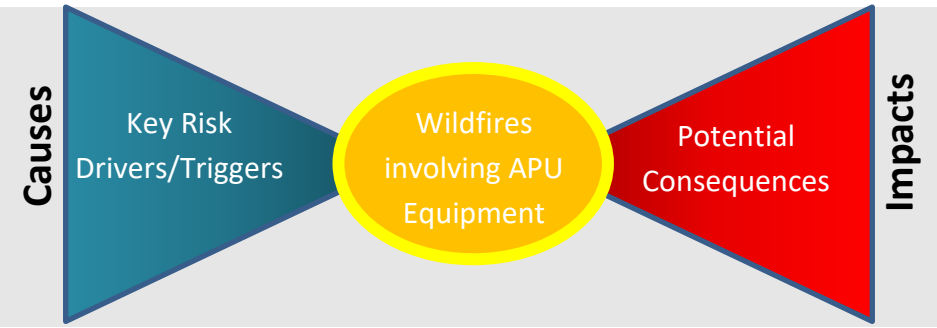


Table 4 summarizes the analysis conducted to identify APU's exposure and impacts from a wildfire and to identify current controls and mitigations to reduce the significant risk of a wildfire occurring. It is important to note that the below listed potential risk drivers/triggers are an indication that a risk event could occur, but do not necessarily reflect actual conditions or threatened conditions.

Table 4: Risk Mitigation for Wildfire Ignition

Risk- APU Equipment including Third Party Attachment Igniting a Wildfire		
Potential Drivers	**Description of Driver**	**Mitigation Measures and Programs**
Topology	Wildland areas and steep terrain with exposure to overhead power lines.	• Vegetation Management • Construction Standards • Water infrastructure reliability improvements to help protect homes near wildland areas • Ensure availability of water in Walnut Canyon Reservoir for water aircraft support • Patrols of utility equipment and structures
Elevated wildfire conditions	High winds and other weather conditions plus topology more conducive to the spread of wildfire.	• Construction Standards • Disable Reclosers • Wildfire Cameras • Weather Stations • Pole Loading • Threat Level Communications and Public Outreach

Risk- APU Equipment including Third Party Attachment Igniting a Wildfire		
Potential Drivers	**Description of Driver**	**Mitigation Measures and Programs**
Climate Change	Expanding FTZs and more extreme weather conditions caused by extended drought seasons and lack of early fall rains.	• Inventory Assessment in the FTZs • Vegetation Management
Contact by a foreign object	Vegetation, metallic balloons, avian, vehicle accidents, for example, coming into contact with APU overhead electric facilities.	• System Inspection • System Patrols • Vegetation Management • Construction Standards • Avian Deterrents • Conductor Spacing • Undergrounding
Failure of Equipment	Electrical equipment containing flammable material or potential for arcing when operated in a FTZ.	• System Inspection • System Patrols • Transformer replacement
Downed Conductors including Third Party attachments	Energized electrical wires falling and coming into contact with wild grass, brush, and other vegetation below.	• System Inspection • System Patrols • Reclosers Blocking • Vegetation Management • De-Energize Equipment • Undergrounding
Energized lines coming into contact with each other	Multiple energized lines in contact with each other creating arcing and sparking in dry conditions.	• Construction Standards • Conductor Spacing • De-energize Equipment • Undergrounding
Operational Procedures	Automatic operations to re-energize a line after an interruption or programmable settings that de-energize during specific conditions.	• Disable Reclosers • De-Energize Lines for Wildfire Mitigation • Notification to AF&R emergency operations to determine necessity of activation of local Emergency Operations Center (EOC) and establishment of incident command • Evacuation Assessment • Initiate citywide communications and public outreach • Staffing of 311 Call Center to assist with customer inquiries

Risk- APU Equipment including Third Party Attachment Igniting a Wildfire		
Potential Drivers	**Description of Driver**	**Mitigation Measures and Programs**
Lack of Coordinated Response	When ignition is identified, a well-coordinated response to suppression and de-energizing lines to limit progression of the fire.	• Customer Support and Emergency Response coordination with local and regional first responders • Coordination with SCE • Staffing of EOC and inter-departmental collaboration on traffic, emergency management, and communications

If the risk drivers listed above were to occur and resulted in an incident, then the potential consequences in a "worse-case-scenario" could include:

- Personal injury or fatalities to the public, employees, and contractors
- Damage to real and personal property
- Damage and loss of City of Anaheim owned assets and facilities
- Reliability impacts
- Reputational damage
- Claims and litigation.

As an overview of the 2024 WMP, the preventative strategies discussed further in this WMP are mapped to these potential risk drivers in Table 5 and placed in one or more of the following categories: (1) Situational Awareness, (2) Design and Construction, (3) Inspection and Maintenance, (4) Operational Practices, and (5) Response and Recovery.

Table 5: Categorization of APU Potential Wildfire Risk Drivers and Corresponding Preventative Strategy

Risk Driver	Categorization	Assessment/ Preventative Strategy Sections
Topology	Situational Awareness	5, 6
Elevated Wildfire Condition	Situational Awareness	5, 6, 7
Climate Change	Situational Awareness	4
Contact by Foreign Object	Design & Construction	8(E)
Equipment Failure	Design & Construction / Inspection & Maintenance	8(B-D), 9(A)
Downed Conductors including Third Party attachments	Design & Construction / Inspection & Maintenance	8(B-D), 9(A)
Energized lines contact together	Design & Construction / Inspection & Maintenance	8(C-D)
Operational Procedures	Operational Practices	9(A-E)
Lack of Coordinated Response	Response & Recovery	10, 11, 12

SECTION 4 - Dynamic Climate Change

According to the U.S. Environmental Protection Agency (EPA), the United States average temperature has risen by 0.5 degrees Fahrenheit over the past century and is projected to rise another 3 to 12 degrees Fahrenheit over the next one hundred (100) years[3]. Although these increases are seemingly small changes to the climate, this increase in temperature could result in potentially dangerous shifts in climate and weather. Recorded impacts of the changing climate to the Earth's atmosphere include rain and snowfall patterns that are shifting and changing with more extreme weather patterns starting to become more frequent, resulting in increased floods, droughts, or intense rain, as well as more frequent and severe heat waves. Data from National Oceanic and Atmospheric Administration (NOAA) shows increases in observed sea level rise around the United States and globally. The impacts of climate change can be categorized as economic, environmental, or social.

Economic impacts could result when residences and businesses in the FTZ lose their ability to afford rising fire insurance premiums or cancellation of policies, which in Anaheim includes approximately 6,439 structures with heightened exposure to wildfires. The cost for resilient infrastructure, increased labor and maintenance within the FTZ could increase operation and maintenance expenditures for utilities.

Wildfires may impact the local environment, including increased potential for flooding from the loss of trees and vegetation to stabilize hillsides. Prolonged periods of drought will likely result in a prolonged fire season, potentially year-round. Climate change impacts may result in FTZ area expansion from the higher into lower elevation wildlands and canyons. The majority of wildland and canyons in Anaheim have been designated as Tier 3 FTZ (see Figure 4: Anaheim Public Utilities Fire Threat Map) and overhead electrical infrastructure within the FTZs have been identified in this WMP along with mitigation strategies.

Social impacts involve public safety and the potential devastation from lives or homes being lost during extreme wildfires. The Canyon Fire 2 in October 2017 did not result in any fatalities; however, there were 14 homes destroyed, 44 homes damaged, thousands of people evacuated, and over 9,000 acres burned from the wind-driven event that was initiated by remaining embers from a previous brush fire. As a result, the Anaheim City Council supported certain fee waivers and accelerated permitting to assist homeowners with restoring their lives.

APU is actively evaluating the impacts of climate change on its service territory and probability of wildfire ignition. APU includes a Tier 1 – Elevated FTZ, detailed in Section 5, as a monitored area for wildfire activity to continually evaluate any conditions that may affect the likelihood of wildfires. Operational procedures are in place to maintain water levels in the Walnut Canyon Reservoir to accommodate fire-fighting aircraft. APU and AF&R evaluate environmental and climate conditions annually and on as-needed basis to review impacts to APU territory and to propose modifications to future APU WMPs and operational practices.

[3] United States Environmental Protection Agency, https://climatechange.chicago.gov/climate-change-science/future-climate-change

SECTION 5 - Assessment of High Fire Threat in APU's Electric Service Territory

A statewide fire threat map was developed to delineate the boundaries to identify, evaluate, and adopt stricter fire-safety regulations that apply only to overhead power lines, electric equipment, and communications lines located within those boundaries. The map was developed by a peer group of utility personnel and fire safety professionals known as the Peer Development Panel (PDP) with the oversight by an Independent Review Team (IRT) appointed by the California Department of Forestry and Fire Protection (CAL FIRE) and the California Public Utilities Commission (CPUC).

The 2018 CPUC High Fire-Threat District (HFTD) map designates Tier 2 and Tier 3 high fire-threat areas, and the 2022 Cal-Fire Fire and Resource Assessment Program (FRAP) map designates Very High Fire Hazard Severity Zones (VHFHSZ). The APU Fire Threat Map identifies Tier 2 – Very High and Tier 3 – Extreme FTZs that align with the CPUC HFTD Tier 2 and Tier 3 boundaries. The APU Fire Threat Map additionally includes a Tier 1 – Elevated designation that aligns with the CAL FIRE VHFHSZ boundary. Tier 1 – Elevated is not identified by the CPUC HFTD map. Due to the proximity to the Tier 2 and Tier 3 FTZs, Tier 1 – Elevated is included in the APU Fire Threat Map as a monitored area for wildfire activity to continually evaluate any conditions that may affect the likelihood of wildfires.

APU and AF&R, with outreach to SCE and the OCFA, developed the Anaheim FTZ boundaries identified in Figure 4 - Anaheim Public Utilities Fire Threat Map. APU and AF&R review the map annually and on an as-needed basis to address any changes to the FTZs. The map was established based on criteria for FTZ tiers listed in Table 6.

Figure 4: Anaheim Public Utilities Fire Threat Map

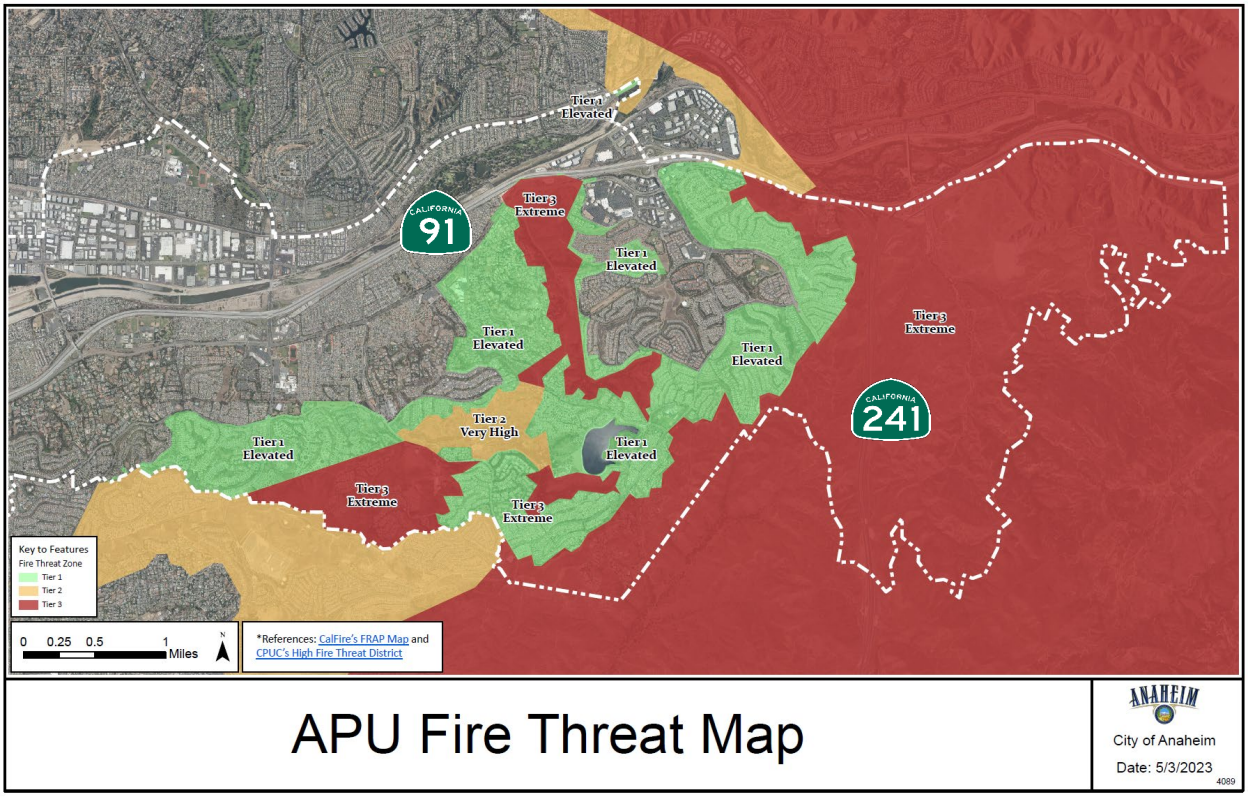


Table 6: Tiered Fire Threat Zones in Anaheim

Zone	Description
Tier 3 - Extreme	Areas where there is an extreme risk, including likelihood and potential impacts on people and property, from utility related wildfires, typically wildland areas where topography, historical wind speeds, the availability of water resources, and emergency responder circulation routes affect response times to combat wildland fires.
Tier 2 – Very High	Areas where there is a very high risk, including likelihood and potential impacts on people and property, from utility related wildfires due to vegetation.
Tier 1 - Elevated	Areas where there is an elevated risk, including likelihood and potential impacts on people and property, from utility related wildfires. Areas are well developed and have access to fire hydrants, with roadways that are accessible to fire and utility personnel.

Topography has a considerable effect on wildland fire behavior and on the ability of fire fighters and their equipment to take action to suppress wildland fires. Due to topography, a fire starting at the bottom of a canyon may expand quickly to the ridge top before initial fire responders can arrive. Rough topography greatly limits road construction, road standards, and accessibility by ground equipment.

A relatively large portion of East Anaheim is covered by natural vegetation. Of these different vegetation types, coastal sage shrubs, chaparral, and grasslands reach some degree of flammability during the dry summer months and, under certain conditions, during the winter months. For example, as chaparral gets older, twigs and branches within the plants die and are held in place. A stand of brush 10 to 20 years of age, such as shrubs, vegetation or prunings where the diameter is not greater than three inches at the widest point, usually has enough dead material to produce fire spread rates about the same as in grass fires when the fuels have dried out. In severe drought years, additional plant material may die, contributing to the fuel load.

There will normally be enough dead fuel that has accumulated in 20- to 30-year-old brush for fire spread rates to be about twice as fast as in a grass fire. Under moderate weather conditions that produce a fire spread rate of one-half foot per second in grass, a 20- to 30-year old stand of chaparral may have a fire spread rate of about one foot per second. Fire spread rates in old brush (40 years or older) has been measured at eight times as fast as grass, at about four feet per second. Under extreme weather conditions, the fastest fire spread rate in grass is 12 feet per second or about eight miles per hour. Anaheim is relatively flat with the exception of the eastern portion of Anaheim where the Wildland Urban Interface (WUI) presents greater risk of wildfire. To manage surface fuel in the FTZs, AF&R manages the Brush Abatement Program, which is detailed in Section 8(A) Vegetation Management.

Within Anaheim's boundaries there are four Tier 3 FTZ areas; these areas are exposed, generally steep north facing slopes with coastal sage shrubs and mixed chaparral. Tier 3 contains one (1) normally-deenergized 12 kV overhead segment totaling approximately 0.88 miles. There are also seven (7) segments of 12 kV overhead line in Tier 1 - Elevated and adjacent to Tier 2 FTZs totaling approximately 1.75 miles. These remaining overhead segments in FTZs are planned for undergrounding in 2024 and 2025, see \\coafiler01\Utilwide\PUB\PUB - 2024\5.22.24\2024 Wildfire Mitigation Plan Update\Section - Link7WMP for additional information regarding planned underground project scope.

Also located within the FTZs are SCE's high voltage overhead 500 kV transmission lines which serve as one of several interconnection paths for Anaheim to the regional power grid. SCE is subject to regulatory oversight by the Office of Energy Infrastructure Safety (OEIS) and California Public Utility Commission (CPUC), who review and approve SCE's wildfire mitigation plan respectively to address its transmission assets, including the areas that pass-through Anaheim. APU coordinates with SCE on situational awareness of fire conditions, as well as operational activities that may include SCE de-energizing the high voltage transmission lines. The impact to APU is mitigated since there are multiple transmission lines that serve Anaheim.

SECTION 6 - Overview of Preventative Strategies and Programs

Table 7: Preventative Strategies and Programs

Situational/Conditional Awareness
Collaboration with AF&R, Fire Safe Councils and OCFA in preparation for RFW and SAWTI events
Fire cameras installed in Anaheim's FTZs and connected to the regional network AlertWildfire.org
Weather monitoring stations installed in FTZ and network access for local weather station data
Training for AF&R Dispatch Center and APU Operators in fire camera view and operations
Daily monitoring and reporting of elevated fire weather conditions including RFW and SAWTI
On-site visual inspection by APU troubleshooter and CERTS during elevated conditions
Training for APU Operations on Disabling Reclosers
Training for APU Operations on De-energize/Restore protocols and communications
Design and Construction
Modified Construction Standards for FTZ
Wood to Ductile Iron pole replacement
Concealed lightning arrester replacement
Insulated covers on equipment mounting brackets
Increase overhead wire spacing
Increased wind loading for pole strength and integrity
Installation of avian diversion equipment
Expulsion-proof fusing
Undergrounding electric lines in FTZ
Inspection and Maintenance
Vegetation Management- Line Clearance
Surface fuel management
Vegetation tracking and recording
Detailed distribution overhead and underground lines and infrared thermography inspections
Distribution wood pole intrusive testing
Visual inspection and infrared thermography of distribution substations
Substation equipment oil sampling
Operational Practices
Overhead Distribution line patrols
Disable reclosing during RFW and SAWTI Extreme conditions
Independent fiber-optic communication network
Response and Recovery
Wildfire Mitigation Response Procedures - Operation and communication protocols including emergency shut-off
Communication strategy for de-energize/restore response
Emergency Response planning for Stakeholder support during an outage
Field Operations recovery procedures
Post event customer support and protection services
Modifications to policies, practices, and procedures
Waiver of electric and water service connection fees
Waiver of electric and water design/engineering, plan checks, and inspection fees
Impacted customer payment extensions, payment plans
Irrigation controllers provided at no cost to extend longevity of landscaping

SECTION 7 - Situational Awareness

In Southern California, the period for active fire conditions can exist year-round; however, conditions contributing to a higher risk of a fire igniting and spreading is attributed to the amount of dry fuel sources, high winds, low relative humidity, and dry lightning conditions. APU collaborates with multiple stakeholders including, but not limited to: AF&R; APU's Water Division; the National Weather Service (NWS); and adjacent electric utilities including SCE and San Diego Gas and Electric (SDG&E) to leverage situational awareness. Additionally, APU utilizes the camera networks, web-based real-time monitoring data from local weather stations, and fire condition warning systems that gauge fire threat conditions so that APU can mobilize personnel and take specific actions to mitigate a higher fire threat.

AF&R provides daily assessment of conditions classified as Normal, Elevated, Extreme, and Red Flag Warning conditions for mountainous (East Anaheim) areas. Additionally, APU's in-basin generation report is issued daily to operators, which includes the AF&R conditions classifications for heightened awareness of all APU staff. A Red Flag Warning (RFW) is issued by the NWS for weather events which may result in extreme fire behavior that will occur within 24 hours. A RFW is typically issued when relative humidity is at or below fifteen percent (15%) and sustained winds are expected to reach twenty-five (25) miles per hour (mph) or higher and/or wind gusts exceed thirty-five (35) mph for six (6) or more hours. Also, lightning under dry conditions may trigger a RFW. Anaheim is located within the CAZ554 region and monitors RFW events for the Orange/Inland Empire. At the onset of a RFW for the mountainous areas, AF&R notifies APU and AF&R deploys fire watchers for on-site assessment of conditions.

In conjunction with the RFW, another early warning system is the Santa Ana Wildfire Threat Index (SAWTI), which was developed through collaboration with Cal-Fire, UCLA, the United States Forest Services (USFS), NWS, SDG&E, and the Desert Research Institute. The SAWTI classifies fire threat potential from No Rating, Marginal, Moderate, High, and Extreme based on the likelihood of a catastrophic wildfire fueled by high winds. High winds contribute to increased dry fuel source, but also can cause power lines to come into contact with each other and produce a spark which potentially can cause a fire ignition. APU monitors and reports the SAWTI for Zone 2 - Orange/Inland Empire on a daily basis to key personnel.

Weather forecasts and weather indexes are early-warning tools to proactively prepare for critical fire weather conditions; however, real-time monitors track the changing dynamics of these conditions and can inform key decisions impacting response times. High-resolution cameras and weather stations are utilized in Anaheim for this purpose. AF&R and APU jointly evaluated a regional network of fire cameras that is being deployed in the FTZ to provide high-resolution video, near-infrared capabilities, and the ability to zoom into areas to identify ignition points more quickly. Because wildfires can spread rapidly in windy and dry conditions, the ability to recognize and respond expeditiously can make a significant difference in saving lives and properties.

AF&R and APU joined with University of California San Diego-Scripps (UCSD) to become part of this regional network of fire cameras and to include locations in Anaheim through an agreement approved by the Anaheim City Council on May 14, 2019. This allows access to the larger regional system that spans the state of California. This regional network is owned and

managed by UCSD-Scripps, with network partnerships including SDG&E, SCE, OCFA, and CAL FIRE. This network provides AF&R Dispatchers and APU Operators with the ability to view camera images and provides additional capabilities to AF&R to remotely control the cameras and more quickly verify an ignition while environmental conditions are being monitored in real time. AF&R can more quickly validate 911 calls reporting a fire by first using the cameras and then deploy the necessary resources based on the visual information. These cameras are now part of the Alertwildfire.org regional public access network of high-resolution cameras used by fire agencies as a topographical visual tool for scouting fires.

The link for public access of regional network of fire cameras is: AlertCalifornia.org.

Figure 5: AlertCalifornia.org Portal

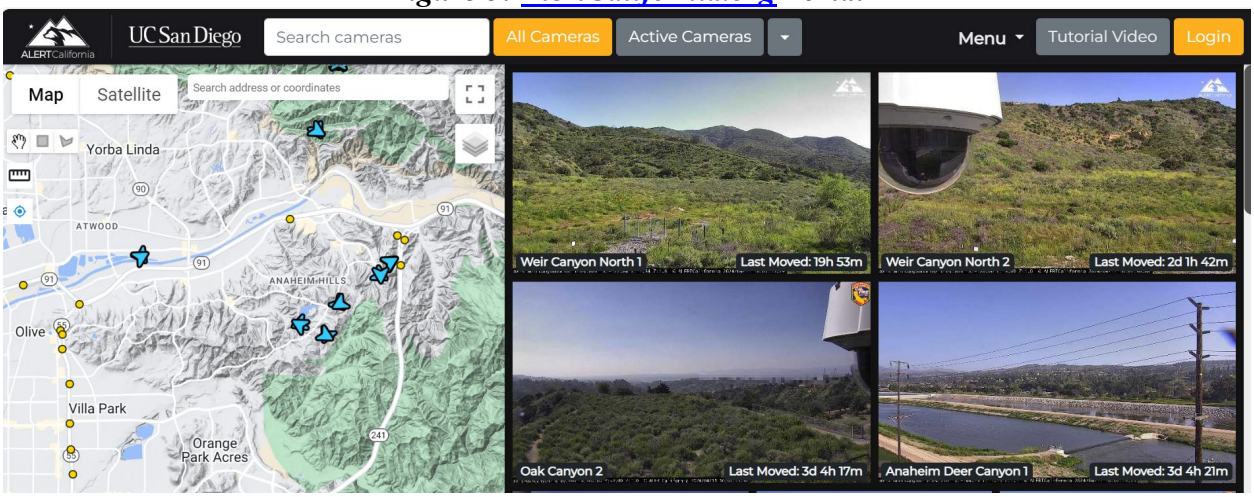


Figure 6: High Resolution Camera Installation and Camera Image Overlooking Anaheim

Figure 7: Anaheim Camera Image of 91/241 Freeway Interchange

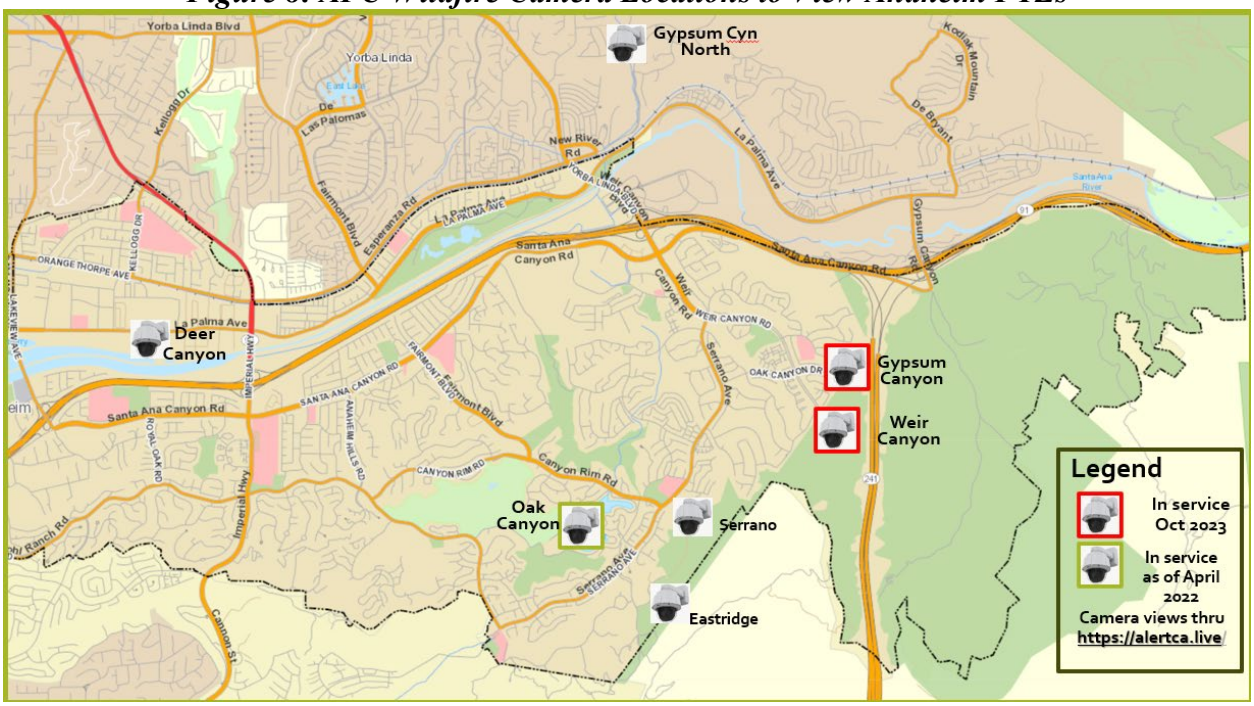
Anaheim has strategically placed one of its Pan-Tilt-Zoom (PTZ) cameras to capture real-time situational awareness in Gypsum Canyon, the originating location of the 2017 Canyon Fire 2. This camera was recently used by AF&R Dispatch to visually capture movement of the 2021 Blue Ridge Fire. A second camera was installed at a substation to provide a different easterly vantage point. Cameras at two (2) additional locations facing south were installed and visually captured progress of the Orange County 2021 Silverado Fire.

In 2022, APU installed temporary facilities for an additional site with two cameras to overlook Oak Canyon, a FTZ within a residential area. Permanent facilities to house the camera and networking equipment were completed in November 2022.

In 2023, cameras at two (2) locations were installed overlooking the Gypsum and Weir Canyon areas, both within a Tier 3 FTZ. These sites required the installation of camera infrastructure and over nine thousand (9,000) feet of fiber optics extension and networking equipment to connect camera control and video through the AlertCalifornia - Home system and with coordination through UCSD Scripps Institute.

There are seven (7) locations where fourteen (14) wildfire cameras are installed and are depicted under Figure 8 below.

Figure 8: APU Wildfire Camera Locations to View Anaheim FTZs



Weather stations that measure 10-minute intervals that can include temperature, wind speed, wind conditions, and humidity levels are located at APU's electric and water facilities in East Anaheim. The data is used by AF&R and APU to direct resources and make operational decisions based on the measured peak wind gust, as detailed in 8 (E). In addition to the fire camera network, a network of local weather station data is publicly available through the NWS, NOAA Weather, and Hazards Data Viewer. Within Anaheim, there are six (6) weather stations through partnerships with SCE, the California Air Resources Board (CARB), and the Citizen Weather Observer Program (CWOP). Weather station data for each APU site is accessed online using Microsoft's Power BI software, shown in Figure 9, including access to trending and historical data.

Figure 9 – Location of APU Weather Stations Monitoring Fire Threat Zones

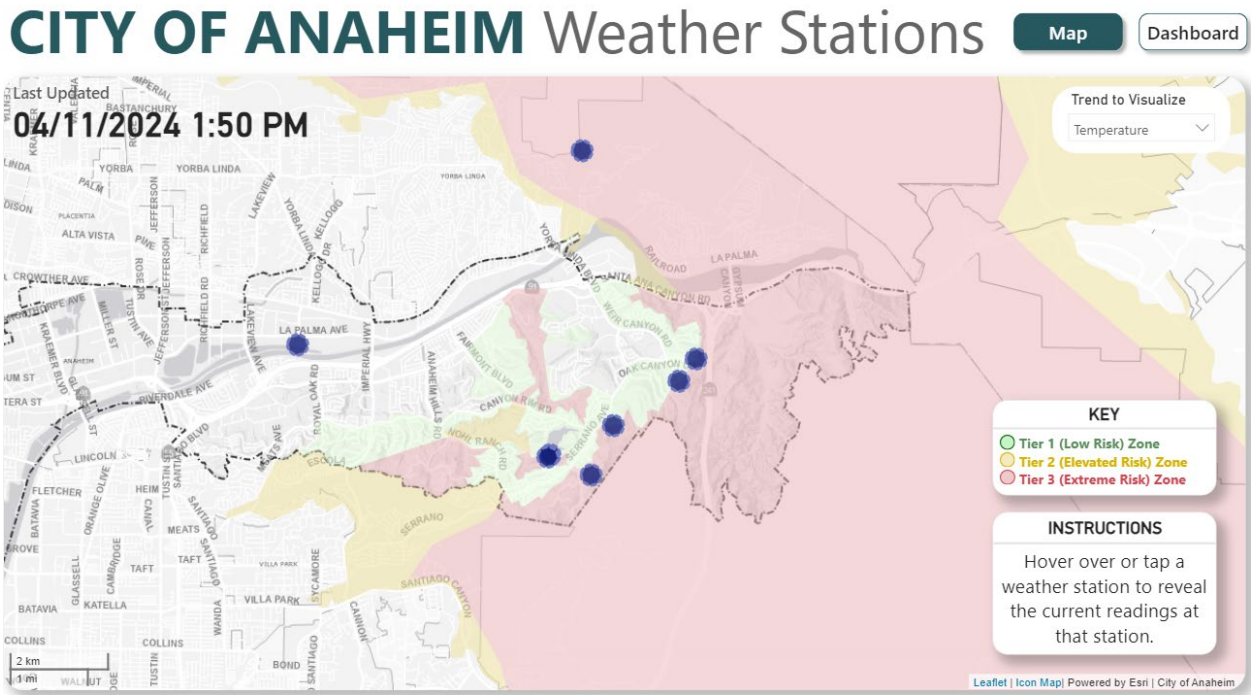
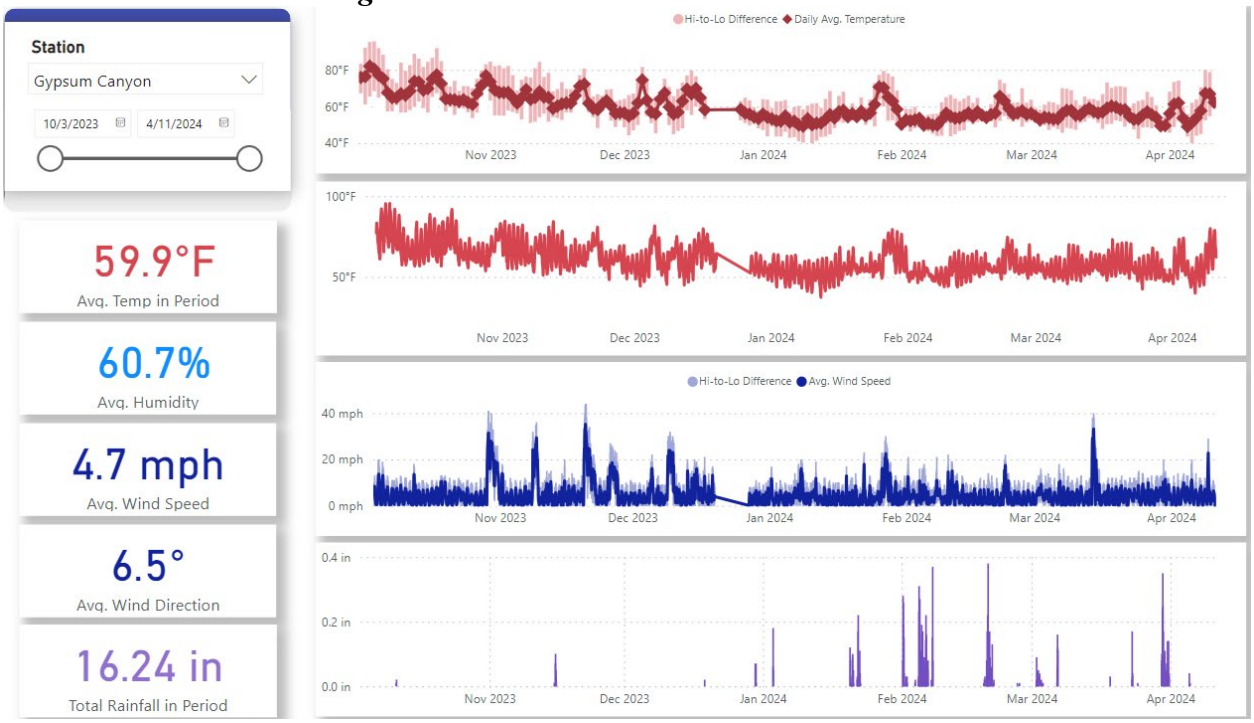


Figure 9A: APU Weather Station Dashboard



Further enhancements in 2024 were made to take advantage of Power BI capabilities so that now, when viewing the weather station live data, the associated camera images are also displayed. This provides enhanced situational awareness where the weather data and live camera feed are displayed together, allowing the emergency crews to allocate their resources, accordingly.

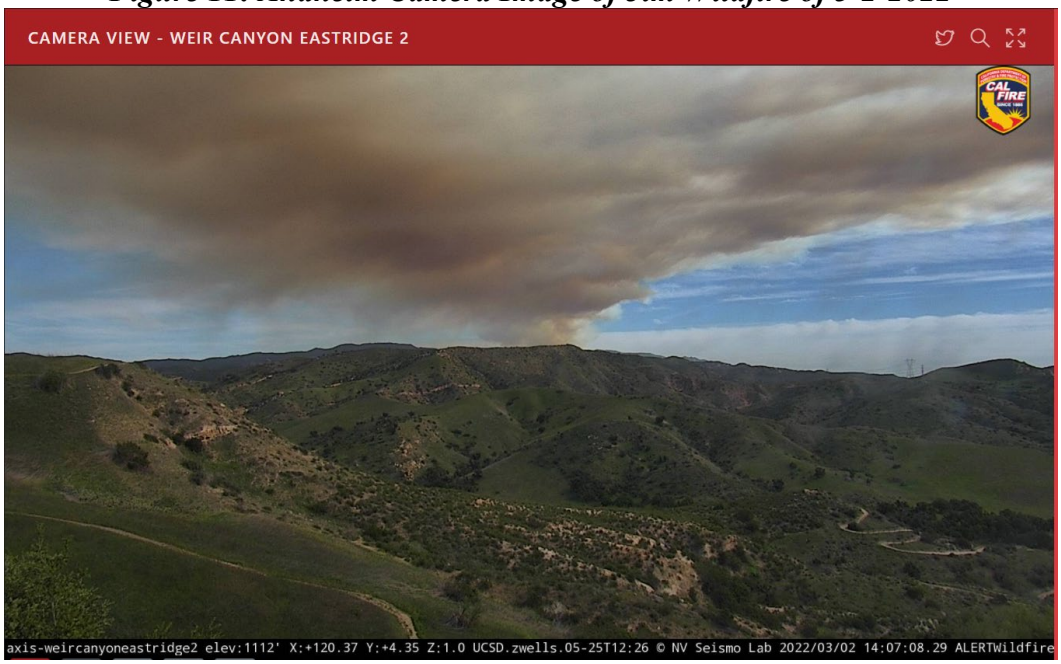
Figure 9B: Power BI Displaying Each APU Weather Station with Associated Wildfire Cameras

The [AlertCalifornia – Home] network cameras and weather stations are monitored by the AF&R Dispatchers and utilized as another real-time data source for monitoring fire threat conditions, and where appropriate, warrant APU operational actions that are discussed in this WMP. The fire cameras proved to be very useful to AF&R in October 2019 during the Contempo Fire that ignited in the FTZ in East Anaheim, south of the 91 freeway near Coal Canyon. The cameras were used to help verify ignition, direct aircraft, and position ground crews to keep the wildfire from spreading and was contained to only 5 acres. Figure 10 below depicts the image captured by AF&R Dispatch of that wildfire from the cameras.

Figure 10: Anaheim Camera Image of Contempo Wildfire on 10-26-2019

More recently, the wildfire cameras allowed the tracking of the 500-acre Jim Wildfire on March 2, 2022, in the Cleveland National Forest in eastern Orange County, with the camera image captured under Figure 11 below.

Figure 11: Anaheim Camera Image of Jim Wildfire of 3-2-2022



Then, on July 3, 2023, a brush fire in the high fire threat zone transition road median from the 91 freeway to the 241 tollway was captured by the APU wildfire cameras located 3 miles away.

Anaheim Fire & Rescue had the camera focus on the incident while the fire crews responded quickly to extinguish the fire.

Figure 11A – Vegetation Fire in Transition Road Median of 91 / 241 Tollway on July 3, 2023

SECTION 8 – Preventative Strategies for Building Infrastructure Resiliency

The goal of a wildfire mitigation plan is to minimize the risk of electric infrastructure being a contributing factor to the ignition of a wildfire. A prudent approach is taken to consider and, where appropriate, implement changes and improvements to physical infrastructure that are practical preventative measures in construction and maintenance practices to meet that goal. APU utilizes established guidelines and industry best practices for safe design and construction of its electric system, using resources such as the CPUC General Orders (GOs). GOs outline safe clearances, integrity of construction, and maintenance requirements to achieve a level of infrastructure resiliency to withstand elevated to extreme environmental conditions.

A. Vegetation Management

For the safety and reliability of service where overhead conductors traverse trees and vegetation, APU performs vegetation management activities consistent with the guidelines outlined in GO 95 – Rules for Overhead Electric Line Construction, Section III – Minimum Allowable Clearances – Case Number 14 Extreme and Very High Fire Threat Zones in Southern California, to establish necessary and reasonable clearances between the vegetation and the energized conductors in FTZs. GOs are technical requirements established by the CPUC for investor-owned utilities and are utilized by APU as best industry practice for utility operation and construction.

Dead or rotten trees and brush at risk of falling into energized conductors are inspected, identified, and removed as recommended by the Certified Arborist and Certified Power Line Clearance Tree Trimming Supervisor on staff with Anaheim, who oversees the vegetation management contractors. Tree health is assessed as a part of inspections and include a 360-degree, ground-based visual inspection of the tree crown, trunk, trunk flare, above ground roots and branch and stem defects, drilling evaluation of target risk, increment boring, probing, sounding, sub-surface root and soil assessment, root collar excavation, and site conditions around the tree in relation to targets.

All work is performed in accordance American National Standards Institute (ANSI) A300 (Part 9) – 2017 Tree Risk Assessment Tree Failure and the companion publication Best Management Practices: Tree Risk Assessment 2nd edition, as well as the Utility Best Management practices tree risk assessment and abatement for fire prone states and provinces in the western region of North America, as adopted by the Utility Arborist Association. Property owners are informed of any tree clearing activities prior to the commencement of work. APU contractors perform power line clearance tree trimming for approximately 13,000 trees annually across the City, with approximately 5% of those trees within the FTZ. Trees within the FTZs, including those next to an APU substation in High Fire Threat Zone, are prioritized for trimming to be completed prior to summer before extreme temperatures begin to elevate wildfire risk.

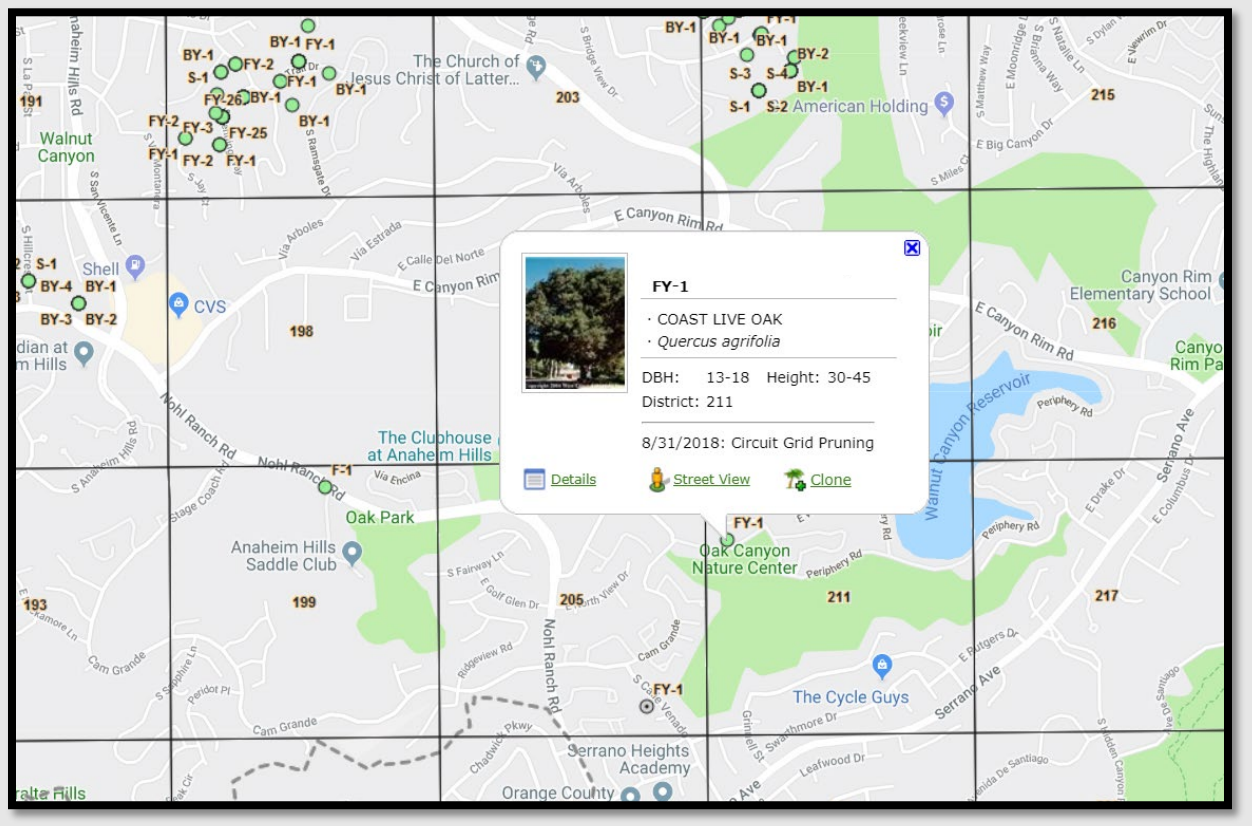
PG&E notes on page 80 of their 2019 WMP that there are ten (10) species of trees that have been responsible for 75% of the past fire ignitions in California[4]. The susceptibility of a tree species to wildfire depends on various factors such as its flammability, moisture content, growth habit, and

[4] Black Oak, Gray Pine, Tanoak, Coast Live Oak, Live Oak, Ponderosa Pine, Eucalyptus/Blue Gum, Douglas Fir, Valley Oak and Monterey Pine

location. These species of trees make up approximately 12% of trees within APU FTZs and approximately 40% of overall tree species in APU service territory.

Anaheim tracks the location, species, condition, and trimming schedule for trees near power lines in the FTZs to maintain a defensible space. Clearances are increased around overhead power lines within FTZs where the combination of high wind potential and dry vegetation may increase the risk of fire ignition. The attributes of the tree and Global Positioning System (GPS) coordinates are archived in Geographic Information System (GIS) mapping, and annual inspections and trimming appropriate for the growth pattern of that species is recorded. Figure 12 depicts the attributes recorded for each tree within the FTZs.

Figure 12: Tree Inventory Tracking in a GIS Map



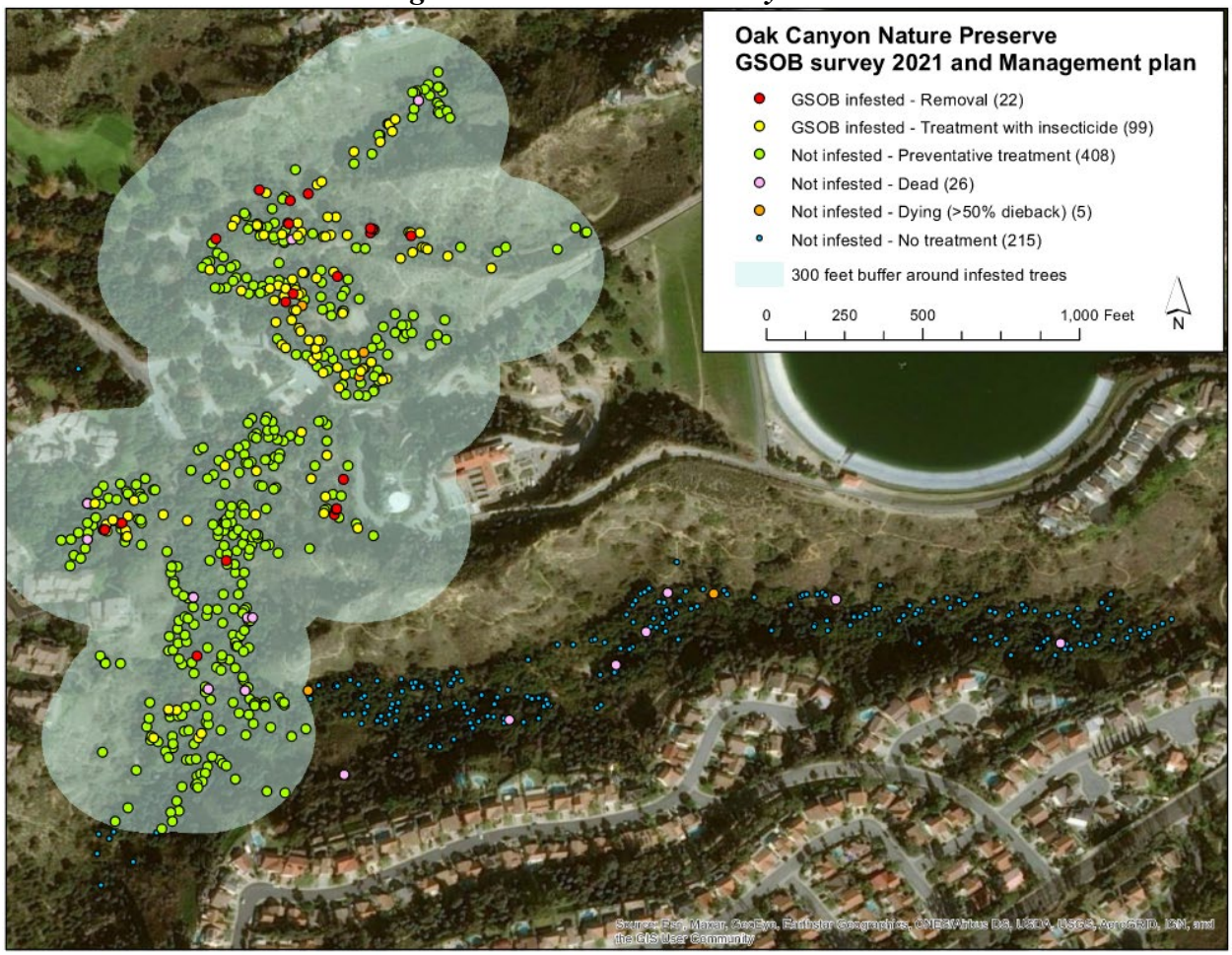
In certain years, heavy rains contribute to increase growth of wild grass in Southern California and as the season transitions, the hot weather dries out the grass attributing to increase surface fuel and higher risk of ignition. As mentioned earlier, surface fuels are managed by removing the vegetation within the FTZs under the Brush Abatement Program managed by AF&R using a combination of goats to remove grass, mechanical tools to remove brush, and replanting native plants to reestablish a natural fire break and is divided into three phases:

- Phase I Natural Brush Abatement – The use of goats to remove flash and invasive fire fuels.
- Phase II Mechanical Brush Abatement – The use of machinery and tools to trim existing trees and brush 10’ from the ground and remove dead and invasive trees and shrubs.
- Phase III – To replant with native plants and shrubs to reestablish nature’s natural fire break.

APU performs vegetation clearing around the base of power poles in accordance with PRC § 4292 where CAL FIRE non-exempt switching equipment is located, or animal contacting energized electric lines is most prominent. Surface fuel clearing is performed after rains have subsided and ambient temperatures begin to rise.

As part of an Orange County grant program in coordination with OCFA, a survey of trees, initially observed by the Anaheim Community Services Department staff to be infested with an Invasive Shot Hole Borer Beetle (ISHB) and Gold Spotted Oak Borer (GSOB), was conducted by scientific experts in biology and entomology from the University of California Cooperative Extension (UCCE) in the Oak Canyon Nature Preserve and Deer Canyon. The survey determined to either treat or remove infested trees. Through 2022, the program has removed 50-60 trees and treated approximately 400 infected trees. Figure 13 below shows the results of the 2021 GSOB survey. Additional surveys will be performed in FTZs for ISHB and GSOB infestations and treated trees will be evaluated for treatment effectiveness. As a part of the program, approximately 55, fifteen-gallon coast live oak trees were planted at the Oaks Canyon Nature Center to repopulate native trees in the area.

Figure 13: GSOB 2021 Survey Data



B. System Inspection and Maintenance

APU conducts routine inspections of distribution and substation equipment to assess condition and prioritize maintenance or replacement. The prioritization method follows industry practice, which aligns with CPUC guidelines as delineated in GO 95 Rule 18, GO 165 – Inspection Requirements for Electric Distribution and Transmission Facilities, and GO 174 Section III-Rules for Electric Utility Substations – Inspection Programs. A visual inspection of over 8,700 underground substructures and above surface equipment was completed in 2022. Inspection of the overhead system, which included intrusive pole testing of over 17,000 poles, including sub-transmission, distribution wood poles, wood streetlight poles, and associated overhead conductors and equipment was completed in 2018 with the next inspection cycle scheduled to start in 2023. Underground distribution equipment is on a 3-year inspection cycle. Surface-mounted and overhead equipment is inspected on a 5-year cycle, consistent with GO 165 guidelines and patrolled annually or prior to a RFW or SAWTI weather event. Qualified substation personnel inspect each of the fourteen (14) substations visually and with infrared scans monthly for anomalies that may include hot spots, rusting, leakage, or visible signs that maintenance or replacement is warranted. Oil samples of substation transformers are tested annually for anomalies such as rising gases or moisture contaminants that could lead to pre-mature failure of the equipment.

APU utilizes ArcGIS Survey123 and ArcGIS Collector to record and collect all inspection data points and photos of electrical assets in the field. The data is loaded directly into the GIS Inspection website and linked to specific asset tags. All assets are captured within GIS and assigned a condition level, which is used to identify and prioritize maintenance measures of the assets, which in turn improves system reliability. There are three maintenance condition levels. They are prioritized based on probable impact on safety or reliability, taking into account several factors. These factors include facility or equipment type and condition, loading, location, accessibility, and direct or potential impact on safety or reliability. The three conditions and their priority levels are:

- **Condition Level "1"**: Maintenance required. Repair or replace within 90 days. If there is an imminent safety or reliability problem, including equipment within the FTZs, the inspector should contact Electric Operations for confirmation with field personnel and to identify and schedule immediate mitigation procedures.
- **Condition Level "2"**: Maintenance needed but deferrable to next scheduled inspection, no immediate safety or reliability concern.
- **Condition Level "3"**: Minor aging, fully serviceable, no safety or reliability concern. Appropriate for next scheduled inspection.

Those maintenance items that pose the greatest public safety or system reliability risks will either: (a) be repaired immediately or (b) if the repair proves too complex to complete immediately or requires materials that are unavailable, a temporary repair will be made to address the risks, and the item will be reprioritized for repairs to be completed at a later date. For infrastructure located within the FTZs, equipment identified as needing maintenance during an inspection cycle will be prioritized for immediate mitigation procedures if there is an imminent safety or reliability problem.

The inspection cycle for subsurface and pad-mounted equipment began in 2021 and was completed in December 2022. The next inspection cycle of overhead facilities will begin during the second half of 2023 and will be completed over a 2-year period for all 17,000+ wood poles, including prioritizing those located in FTZs.

C. Undergrounding Power Lines

APU is actively engaged in undergrounding circuits to mitigate wildfire threat. To date, 98% of the 130.42 circuit miles of APU-owned power lines in the FTZs are currently underground, which significantly reduces the overall risk of wildfire to the community. The remaining overhead APU-owned power lines in the FTZs are planned to be undergrounded by late 2025. The undergrounding of overhead lines and the operational strategies of the APU system eliminates the need for APU to initiate a planned power shutoff for wildfire mitigation in the service territory.

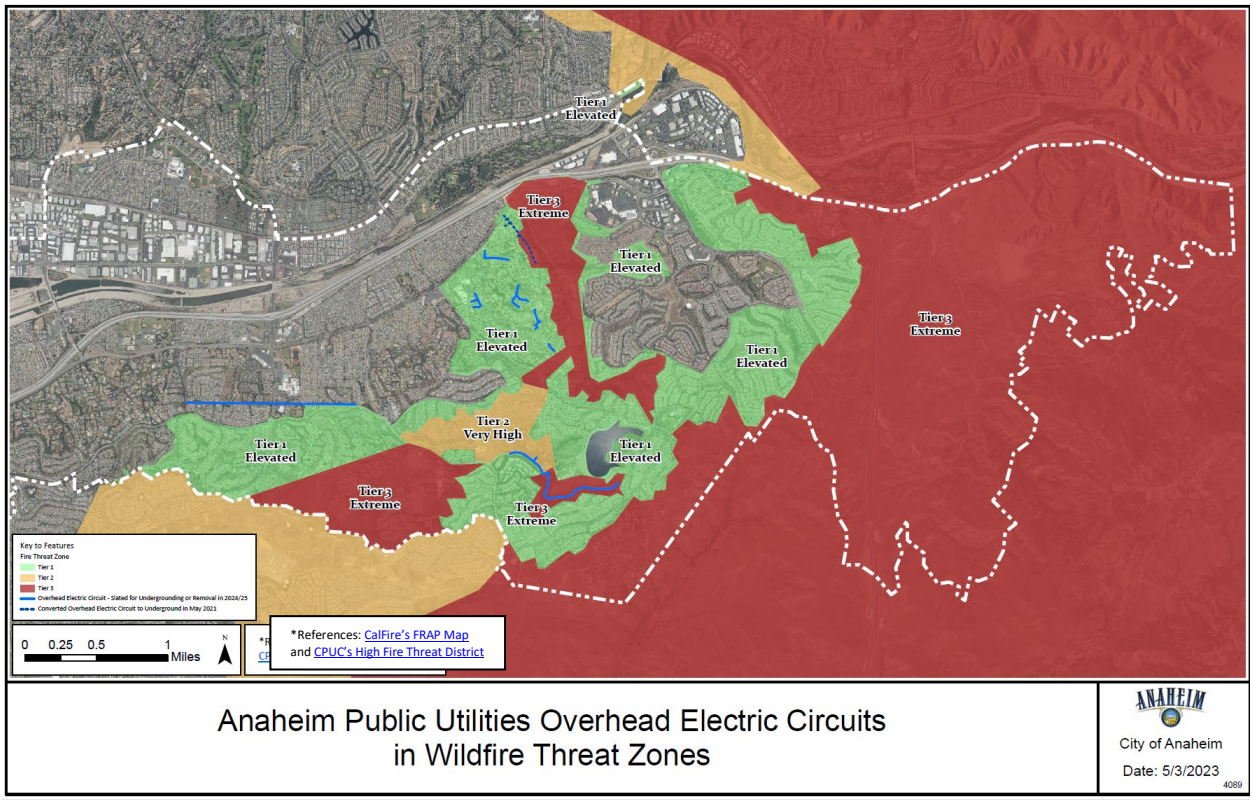
In 2019, APU assets included a 2,000-foot-long overhead line that traversed through a residential area adjacent to Deer Canyon, a Tier 3 FTZ. The pole-line was along a narrow, private roadway that that made it difficult for emergency vehicles to access. APU and various telecommunication companies had overhead facilities co-located on utility poles. APU evaluated the use of insulated conductors for this segment; however, it required replacing poles, additional guying support and easements and thus, decided undergrounding the line was more prudent. On July 30, 2019, the City Council approved APU's Underground Conversion Program Five-Year Plan, which included the undergrounding of this overhead line. Underground design began in 2019 and construction was completed in May 2021 prior to the 2021 fire season. APU works with all telecommunication companies who underground their lines at their cost with the exception AT&T, citing that this roadway did not meet the definition of an eligible project as currently defined in its Rule 32A. APU continues to implement future underground projects and coordinate with telecom providers to include joint use trenching to improve accessibility for emergency vehicles and recommends that the state obligate all telecommunication companies to modify their regulatory authority to underground in FTZs. This project also eliminated the need to subject this segment and the customers it serves to a planned power shutoff for wildfire mitigation purposes.

Existing APU assets within Tier 3 include one (1) 12 kV overhead segment totaling approximately 0.88 miles that is de-energized under normal operating conditions, as this portion of the line does not serve customers. The line is used only as a tie-point between two circuits for redundancy and is patrolled and maintained as if it is energized. The line traverses through a nature park and has varying elevations of terrain that would be disruptive to the natural setting if underground excavation and equipment were installed along the existing overhead route. To reduce wildfire risk, the line was hardened in 2019 with twenty-seven (27) ductile iron poles with larger fiberglass crossarms to replace the existing wood poles to reduce the near-term threat of wildfire risk. There is a protocol for visual inspection of this line prior to re-energization, and to use the line for reliability purposes including emergency power restoration when environmental conditions warrant. To preserve the natural habitat of the woodpecker birds in this area, some wood poles were left standing as perches with all electric conductors and equipment removed.

Existing APU assets within Tier 1 and Tier 2 FTZs include seven (7) segments of 12 kV overhead line, totaling approximately 1.75 miles. APU partnered with AF&R to apply for grant funding to help offset the cost and accelerate the undergrounding of the existing APU 12 kV overhead lines within all FTZs, including the removal of the 0.88 mile previously-hardened overhead line in Tier 3. Figure 14 shows the remaining APU overhead lines identified for undergrounding or removal as a part of the program. In February 2021, APU received approval for $1.16 million of Hazard Mitigation Grant Program (HMGP) funds from the Federal Emergency Management Agency (FEMA).

The project's completed comprehensive design was submitted to FEMA in July of 2023, for reviews that may take up to 12 months. APU has since responded to FEMA's follow-up questions on the project's construction, including implementation of FEMA's Programmatic Biological Opinion under the U.S. Fish and Wildlife Service. Construction is currently planned to start in late 2024 for completion by mid-2026. In addition to removing the overhead wires, the underground conversion will eliminate 31 overhead transformers, 2 capacitors and 11 switches and devices to isolate failed electrical equipment or wires.

Figure 14: APU OH Circuits in FTZs



To incorporate further wildfire risk reduction into APU's completed and planned undergrounding work in the FTZs, FR3 transformers have been integrated into underground projects. APU has elected to replace overhead transformers with new FR3 subsurface transformers due to the fluid possessing a higher heat tolerance to withstand greater temperatures before burning when compared to current standard mineral-oil. In the past three (3) years, twelve (12) overhead transformers have been replaced with eight (8) subsurface FR3 transformers, with

the remaining thirty-one (31) transformers in the FTZs to be replaced by 2026 by undergrounding.

D. Overhead Construction Practices

While APU anticipates that the remaining 2.63 miles of overhead distribution assets in the FTZs will be removed or replaced with underground facilities by 2025, current overhead design and equipment standards will remain in place until all the undergrounding work is complete. If equipment is identified as potential for imminent failure in Tier 2 or Tier 3 FTZs, equipment may be replaced prior to undergrounding on an as-needed basis. All newly installed equipment will be from the CAL FIRE non-exempt equipment list. These standards are in place to reduce the risk of possible wildfire ignition from foreign objects or environmental forces acting upon the remaining overhead infrastructure.

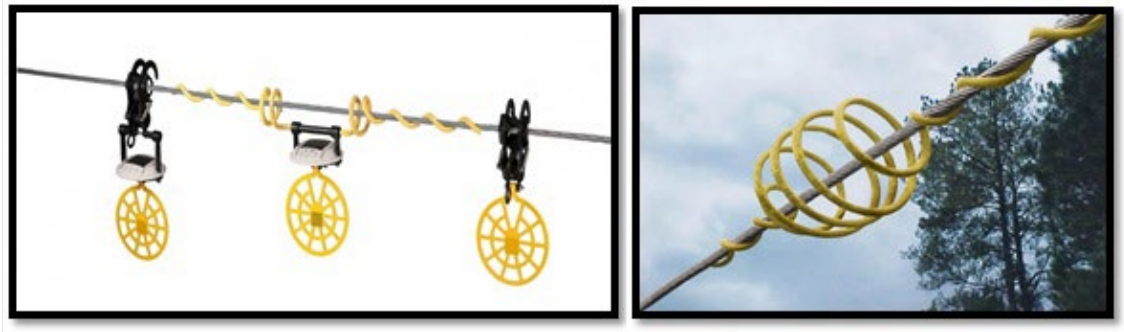
Lightning arresters are installed on poles with overhead to underground transitions and at customer terminations. When lightning strikes a conductor, there is a high voltage spike along the conductor and the arresters limit the potential for a flashover near a grounded pole. During normal conditions, animals may perch on the cross-arm or the bracket the arrester is mounted to and have been observed to store a food source in the opening of the arrester where the energized high voltage conductor enters. These arresters have been replaced with a concealed version eliminating the entry point to an energized part as shown in Figure 15. In addition, the grounded bracket supporting the arrester is also wrapped to further the distance between the conductor and grounded equipment.

Figure 15: (a) Concealed Lightning Arrester (b) Ductile Iron Pole (c) Comparison of Lightning Arrester Models

Non-expulsion fuses or current-limiting fuses incorporate a self-contained design that eliminates potential expulsive material associated with expulsion fuse operation, making them suitable for use in areas where a high-fire hazard exists. APU has replaced twelve (12) fuses with non-expulsion type fuses in the FTZs in order to minimize the risk of ignition from an electrical fault and will continue its fuse replacement if undergrounding the remaining overhead line is delayed.

Animals can come into contact with energized overhead power lines, fall to the ground, and ignite brush beneath the power lines or at the base of poles. APU has installed avian protection devices on the conductors to deter bird collisions along their flight path (see Figure 16 below). These devices work in two ways, one that allows the bird to "bounce" away from the conductor rather than becoming entangled and/or making phase to phase contact with high voltage power lines. The other method utilizes a device hung on the conductor itself with a flashing light to alert birds during their night flights that an obstruction is ahead. APU has installed avian protection devices on two (2) powerline segments in the vicinity of groundwater charging lakes frequented by migratory birds and will continue to install the devices where bird strikes and bird strike risks are detected.

Figure 16: (a) Raptor Clamp with LED Light (b) Swan Flight Diverter



E. Pole Loading and Wire Spacing

APU is primarily the owner of the power poles throughout Anaheim and is a participant in the Southern California Joint Pole Committee that allows members to mutually allocate space on the pole among agencies to attach equipment to provide service, including electric, telecommunications, and cable companies. APU allows for a total maximum weight attached onto the pole using standard guidelines established in GO 95, Section IV. Wind parameters for calculating pole loading were increased from 8 lbs. to 12 lbs., exceeding the GO 95 standard, and has been assessed for all poles within or adjacent to the FTZ.

To establish a measured peak wind gust, APU utilizes historic data collected from the weather stations at Linda Vista Reservoir, Oak Canyon and Fairmont Substation located closer to the Tier 3 FTZ and near the applicable overhead electric infrastructure. APU construction standards for overhead infrastructure including poles, conductors, switches, connectors, and grounding in the Tier 3 FTZ have been modified to incorporate design and construction to sustain the highest measured 3-second wind gust. For example, 27 wood poles have been replaced with ductile iron poles in and through the Oak Canyon Nature Preserve, and pole loading and clearance between lines have been improved in this location. The pole line within the Tier 3 FTZ that traverses the Oak Canyon Nature Preserve does not have telecommunication attachments and does not serve customers. These poles were replaced with ductile iron poles able to withstand even higher wind parameters.

APU substituted standard 8' wood crossarms with 10' fiberglass crossarms on all new ductile iron pole installations to increase spacing between wires for energized overhead lines located in or adjacent to the Tier 3 FTZ. The increased clearance reduces the potential for wires to contact each other during high wind conditions.

SECTION 9 - Operational Strategies to Reduce Risk of Wildfire Ignition

Construction methods for fire-hardening infrastructure, proactive equipment replacements, system inspections, and preventative maintenance are essential components of a resilient electric distribution system, but there are additional strategies to mitigate the risk of operating an electric system within areas where high fire threat exists. As forecasted ambient temperatures rise, humidity levels drop and/or Santa Ana wind conditions are prevalent, these operational strategies will take effect to further reduce the potential for wildfires within the FTZs.

A. System Patrols

A patrol is a visual inspection of applicable utility equipment and structures that is designed to identify obvious structural problems and hazards. System patrols occur on an annual basis to ensure that immediate issues are detected and addressed as quickly as possible. Patrols differ from detailed inspections which are performed for more of a diagnostic and proactive evaluation of equipment conditions.

During forecasted elevated ambient temperatures or RFW and Extreme SAWTI events, utility staff is dispatched to patrol the overhead infrastructure in the FTZs as a precautionary measure or utilize AF&R Community Emergency Response Teams (CERTS) already out on patrols for multiple purposes to provide visibility on electric infrastructure. For circuits in the FTZs that experience a planned or unplanned outage during a RFW and/or Extreme SAWTI event, the length of the circuit must be patrolled prior to re-energizing to ensure the line and supporting structures are intact, and vegetation is not in contact with the lines.

System-wide annual patrols of applicable utility equipment and structures in urban areas are conducted by APU. The entire system is patrolled annually by electric troubleshooters to identify where wood poles, cross arms, or other equipment are in need of repair or replacement, and equipment or lines in need of clearance from vegetation.

B. Circuit Reclosers

Microprocessor-based protective relays are used within substations to detect faults on the electric lines and signal to the substation circuit breaker to open, disrupting power on a circuit before damage occurs to major equipment. Once the circuit breaker has opened and disrupted power, the Supervisory Control And Data Acquisition controlled protective relay is programmed to signal the circuit breaker to “reclose and test”, before re-energizing the circuit. If the fault is cleared, or if it was momentary when, for example, a broken tree branch falls and clears the lines, the circuit is successfully re-energized, and power is restored to the affected area. If the fault is still present, the protective relay will detect it again and signal the circuit breaker to open and the reclose function is automatically disabled. The circuit breaker will remain open with power disrupted until crews make repairs and return the system to normal condition. The reclose and test method allows for a shorter outage duration and less impact to service when the fault is momentary. During extreme fire weather conditions when the area is in RFW and/or an Extreme SAWTI event is initiated, APU operators will disable the automatic reclosing capability of the

protective relays for lines located within the FTZs as a precautionary measure, consistent with industry practices in California.

Four overhead distribution circuits in FTZs have been identified as subject to disabling the reclosing function during these elevated fire and weather conditions. In addition, if these identified circuits should experience a fault and relay, they will not be re-energized until a visual inspection has been performed. The recloser operations will be reevaluated in 2026 when the remaining overhead circuits are converted to underground.

C. Communication Network

APU operates and maintains critical software applications on computer servers with higher capacity and resiliency for remote operation and protection systems like circuit reclosers. The communication network used to support these systems is an independent fiber-optic network owned and maintained by APU. The fiber-optic system is a point-to-point network with redundancy for added flexibility to re-route the communication path in the event of damage, significantly increasing the reliability for remote communication critical to the automated protection systems. The fiber system is underground in the Anaheim FTZ.

APU is working with wireless carriers to install small cellular sites on its streetlight pole tops throughout Anaheim, including FTZs. The cell sites will improve cellular service coverage and support APU and customer communication during RFW and other emergency events. There are currently ten (10) active small cell sites serving the customers in FTZs, and fourteen (14) additional planned within FTZs.

D. Power Shutoffs

APU is actively engaged in undergrounding circuits to mitigate wildfire threat. 98% of the 130.42 circuit miles of APU-owned power lines in the FTZs are currently underground, which significantly reduces the overall risk of wildfire caused by APU equipment. The underground conversion of overhead lines and APU operational practices eliminates the need for APU to initiate a planned power shutoff for wildfire mitigation in their service territory. APU still maintains protocols to initiate immediate power shutoffs in FTZs.

Operational and communication protocols for immediate power shutoffs impacting customers are documented in APU's wildfire mitigation response procedures. Customers affected by shutoffs will be contacted in person and/or by phone, text, or electronic mail by APU staff. APU offers portable back-up generators and batteries to residents and small commercial customers in situations when power is expected to be unavailable over eight (8) hours or customers who need additional equipment for medical life-support devices. Additionally, APU has established resiliency rebate programs for Uninterruptible Power Supplies (UPS) and portable battery-based generators to qualifying residents who may need assistance with medical or other essential devices.

Figure 17: APU Emergency Generator

Coordination between APU and AF&R occurs on a routine basis for structure fires whether or not there is an elevated wildfire risk. Proper precautions are taken to ensure the safety of the public, AF&R fire crews, and utility personnel when fighting any fire where structures are at risk. A Citywide safety committee includes relevant departments including City Safety, AF&R, Anaheim Police, Public Works, and APU to collaborate on safety matters on a quarterly basis. In situations where AF&R or other public safety first-responders initiate an evacuation of an area, APU will coordinate with the City Public Information Office to keep the media and general public informed if power has been de-energized. Operational and communication protocols are also in place to restore power after an outage.

SCE has 500 kV high voltage transmission lines passing through the East Anaheim FTZ. APU customers are not impacted by an SCE Public Safety Power Shutoff (PSPS); however, Anaheim is reliant on regional transmission service via SCE. APU and SCE meet annually to review and discuss SCE operation and communications in the event SCE lines are de-energized and power is re-routed through SCE redundant transmission paths. These redundant paths do not traverse through a FTZ therefore are deemed a very low risk of losing transmission service for Anaheim.

E. Summary of Operational Strategies

Table 8 is a summary of operational strategies to be implemented during elevated weather conditions.

Table 8: Operational Strategies

Operating Strategies	Red Flag Warning (RFW)	Santa Ana Wildfire Threat Index (SAWTI) Extreme
Monitor Warnings	X	X
Patrols	X	X
Disable Reclosers	X	X
De-Energize Tier 3 FTZ Overhead Line		X

SECTION 10 - Community Support in Emergencies

A. Community Outreach

Educating the community on what to expect during elevated fire weather conditions, and the subsequent response to those conditions that could impact the residents and businesses in Anaheim is a priority. Anaheim has held several community outreach events to inform residents of future plans to underground power lines within FTZs. As the construction phase for additional undergrounding in the FTZs approaches in 2024-2025, on-site community outreach will be conducted to inform residents of the impacts and schedules of the project.

During two community meetings in April and October 2022 in East Anaheim, APU staff responded to wildfire-related questions including maintaining sufficient water for fire-fighting helicopters taking water from an open water reservoir, SCE's wildfire mitigation role regarding their high-voltage transmission towers and lines traversing FTZs in Anaheim, and APU-sponsored rebate programs on attic insulation and vents to harden their homes against wildfire threats.

An additional wildfire safety community meeting is scheduled for May 18, 2024, sponsored by the Anaheim Fire & Rescue Department. APU will participate and provide a presentation on its wildfire mitigation program.

Figure 18: APU Staff During 2023 Community Resource Meeting

A major cause of power outages utility-wide are the result of metallic balloons contacting electrical lines when released. Senate Bill 1990 (1990) and Assembly Bill 2450 (2018) passed mandates to weigh down the metallic balloon and labeling of the supply chain; however, metallic balloon contact with power lines continues to be a potential wildfire risk. APU educates customers through social media, public service announcements, and promotes proper disposal of metallic balloons to reduce wildfire risk. As an example, a contest was held with high school students who first were educated on the impacts of metallic balloons causing power outages and then prepared creative videos to promote safety and proper disposal of balloons; those videos were then shared on APU's social media sites.

Rebate Programs

In 2020, APU established a fire-safety program encouraging customers to take advantage of rebates on fire-resistant measures, planting approved fire-resistant shade trees, and following AF&R recommendations to improve safety in wildfire zones by clearing brush and maintaining clearances. The fire-resistant measures include rebates up to $750 on fire-resistant attic insulation that reduces the risk of fires starting in the attic while at the same time decreases the energy demands of heating and cooling systems. To date, ninety-seven (97) APU customers have received over $60,000 in rebates to install 172,000 square feet of fire-resistant attic insulation. APU also offers a $250 rebate for fire-resistant vents designed to block embers and fire from entering the home through the attic during extreme situations such as wildfires or local vegetation fire with 53 vents installed, so far.

The TreePower program informs residents of the appropriate fire-resistant trees to plant at safe distances from combustible structures in FTZs. APU provides up to six (6) trees per resident, which can be selected from the APU Tree Selection catalogue. The program is intended to reduce the need for power line clearance tree trimming and eliminate the opportunity for a vertical "fire-ladder" near a home or other combustible structure. To date, 392 fire-resistive trees have been distributed to 259 participants.

Information on City Website and Social Media

Other customer outreach includes the use of social media and APU's webpages listed below which are dedicated to wildfire safety and awareness:

- APU Facebook updates on potential for wildfires: https://www.facebook.com/page/187233877728/search/?q=wildfire
- APU Workshop Protect Your Home from Wildfire Damage
- AF&R Wildfire Workshops (Wildfire tips every Wednesday on AF&R's Facebook page; 10/23/21 & 3/5/22: Emergency Preparedness Symposium; and 3/31/22: Disaster Preparedness Program (8-hour workshop that includes Wildfire education – 23 residents received certificates.)
- AF&R's Brush Clearance and other programs: http://anaheim.net/5629/Preparing-for-Wildfire
- APU Wildfire Mitigation Plans Webpage: http://www.anaheim.net/5487/Wildfire-Mitigation-Plan
- APU's Wildfire Safety Webpage: http://www.anaheim.net/5418/Fire-Safety

The City's Public Information Office posts notifications on Anaheim Hills Buzz and NextDoor, two social media platforms commonly used by the area residents, of impending plans to install new fiber optic lines and wildfire cameras that overlook the Oak Canyon (in 2022), and more recently overlooking the wildlands at the nearby Weir and Gypsum Canyons (in 2023). Additionally, project construction mailers are sent to approximately 1,300 area residents showing project scope, time and "what to expect" information.

B. Emergency Response

APU wildfire mitigation response procedures outline the protocols to ensure appropriate operational procedures are implemented during RFW and/or SAWTI Extreme conditions, identified in Section 9, and appropriate procedures are in place for notifying all stakeholders impacted when de-energizing and re-energizing electrical lines including customers, the APU's Public Information Officer (PIO), AF&R Emergency Management and Preparedness, Anaheim Police Dispatch Center, APU Water Division and Customer Service Management, and external agencies associated with APU operational support. The APU System Operations Center acts as a hub for system operations and emergency response during RFW events, wildfires, and other emergencies and provides 24/7 customer support when the Customer Service Center is outside of working hours.

One of the benefits of having a municipally owned electric and water utility is the close coordination with Anaheim's first responders, working collaboratively as emergencies such as wildfires arise. In case of emergencies including unplanned outages, APU has a supporting role with the AF&R in emergency protocols for public support services as delineated in the City of Anaheim Emergency Operations Plan. These services include care, shelter-in-place, animal control, disability assistance, vehicle access, and functional needs. The preparations and response for an emergency power shut-off are included with those used for major events such as flooding and earthquakes. APU also adds a standby crew during non-working hours to improve response time during emergency events, including a fully operational construction crew and an additional troubleshooter. APU will follow the emergency protocols outlined in the City of Anaheim Emergency Operations Plan, where the City adheres to the policy summarized below. In addition, considerations for special needs populations are built into the responsibilities of each member of the Emergency Operations Center organization and are also addressed in supporting procedures and checklists:

- Customers with access and functional needs will be accommodated for access to services or facilities provided by Anaheim.
- Anaheim will work to accommodate special needs populations and those with disabilities to address their circumstances and needs.
- During emergency situations, Anaheim will make reasonable modifications to policies, practices, and procedures to assist residents with disabilities.
- Priority will be given to house special needs populations and those with disabilities to keep families, friends, and/or neighbors in close proximity to each other when in mass care emergency shelters.
- Eligibility for mass care shelters will not be dependent on a personal care attendant.
- During preparedness and mitigation activities, Anaheim will conduct outreach activities to residents with special needs to ensure they are prepared in times of crisis.

Outlined in the City of Anaheim Emergency Response Plan - Public Notification and Alerts, methods of warning the public of specific emergency conditions are described below. These systems may also be primary means of how state and local governments become aware of emergency information. Public communications such as emergency information, warnings, and actions for an event will be broadcasted to the public by any one of the following methods:

- Emergency Alert System (EAS)
- Wireless Emergency Alert (WEA)
- Integrated Public Alert and Warning System (IPAWS)
- Route alerting - Detour and evacuation routes posted by AF&R
- AlertOC – Mass notification via phone or text message initiated by Orange County
- Anaheim Alert – Mass notification via phone or text message initiated by the City of Anaheim
- Social Media
- Media-releases – through the City PIO
- Telephone emergency hotline – established during Canyon Fire 2.

APU maintains a Public Utilities Department - Emergency Response Plan (ERP), in accordance with California Government Code, Article 9, Section 8607, to ensure a safe, timely, effective, and well-organized response to major disruptions of services provided by APU including Electric, Water, Customer, and Finance services. The ERP incorporates knowledge gained from emergency situations and includes industry best practices developed as a result of major regional storms and outages affecting other organizations over the last several years. Also included is mutual aid and other information obtained from the California Utilities Emergency Association and the American Public Power Association, as well as standards contained in the CPUC's GO166-Standards for Operation, Reliability, and Safety During Emergencies and Disasters, which APU has utilized as a guideline for emergency planning.

C. Community Support

When needed, a Mobile Neighborhood Utility Center will be established in close proximity to areas impacted by major water or electric incidents to provide timely and meaningful system status to customers as well as to provide real-time customer feedback to utility staff.

Figure 19: Mobile Neighborhood Utility Center

The Mobile Neighborhood Utility Center is deployed to specific service areas for which the estimated restoration time is anticipated to be more than 24 hours. The precipitating event may be equipment failure, earthquakes, floods, storms, fire, or any combination of these events. It may also be coincident with a local or state-wide emergency not directly associated with APU, but which may impact Anaheim's water and energy resources. Activation may also be preemptive.

The Mobile Neighborhood Utility Center(s) will be located at strategic public gathering areas based upon the type of emergency event and may be relocated or closed as conditions and priorities change.

The priorities of the Mobile Neighborhood Utility Center are to:

1. Gather electric and/or water system information and intelligence relative to an incident or outage.
2. Provide timely information to the APU and City Emergency Operations Center - Utility Branch.
3. Provide restoration timelines to the public in coordination with APU and City PIO, and help to reduce call volume to the Call Center by dealing directly with the public.
4. Provide personalized attention to members of the public who may need special assistance that is not of an emergency nature.
5. Maintain system and resource status awareness.
6. Provide mobile back-up power generation to designated Community Centers.

The Mobile Neighborhood Utility Center is facilitated by one or more Mobile Neighborhood Utility Liaisons (Liaisons). The Liaison assignment is typically filled by members of APU staff that are not performing duties respective to emergency operations centers or in direct support of water or electric system restoration. The Liaisons are responsible for collecting, assessing,

evaluating, and disseminating information pertaining to the incident. They directly interface with the public throughout the incident and continue to maintain contact with the public until substantial recovery is achieved.

D. Post-Event Customer Support

Post-event customer support and protections are in place to facilitate recovery from the damages incurred and provide multiple options for billing adjustments. Anaheim City Council approved a rule modification that, upon declared emergencies, APU may waive certain charges or portions related to a) Customer service charges, b) Temporary Service, c) service connection plan checks, design/engineering, and inspection, and/or d) related administrative charges related to both electric and water services. Such fees were waived during the Canyon Fire 2 for customers with damaged properties.

The associated fees for the abandonment of existing service connections, installation of new service connections and meters, and inspection of new backflow prevention assemblies are considered Service Connection Fees. Depending on the extent of damages and new construction at each property, Service Connection Fees will vary. For minor service improvements, a Service Connection Fee would not be applicable; however, for a structure requiring a complete rebuild and a fire sprinkler system, Service Connection Fees could be significant. Waived charges apply to the existing property owner for one year from the date the emergency or local emergency is proclaimed or declared, unless the Anaheim City Council declares otherwise.

APU also assists customers with damaged homes who seek to keep their landscaping alive during the rebuilding process. Irrigation controllers were provided, at no charge, during the Canyon Fire 2 upon confirmation that water service can be safely restored, allowing customers to avoid having to replace their existing landscaping that was not damaged by the fire.

SECTION 11 - Workforce Training

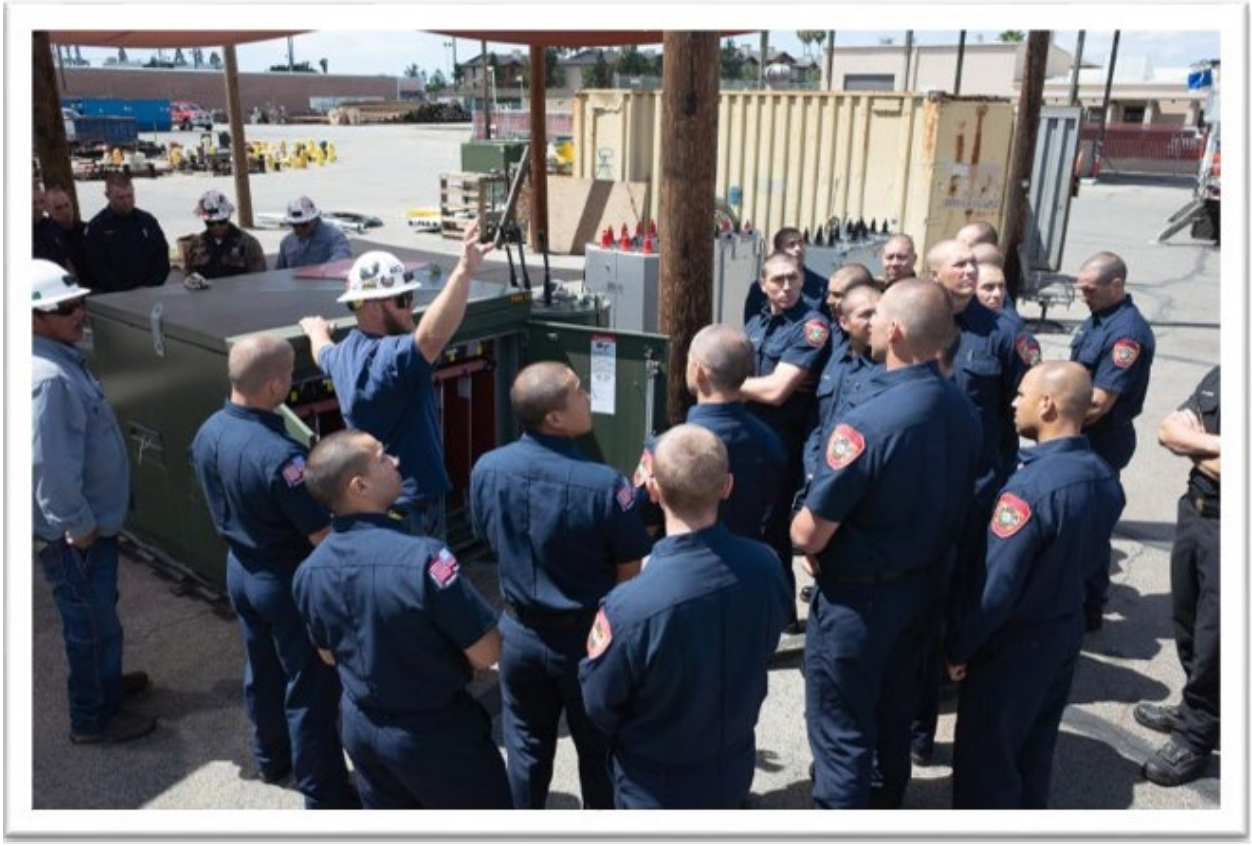
Emergency Response training is conducted annually to prepare for multiple types of natural disasters that require activation of the City Emergency Operations Center (EOC) and the APU Electric Department Operations Center (DOC). Specific wildfire emergency training scenarios are conducted annually, either as part of the larger Department-wide training or through table-top exercises with key personnel responsible for electric operations.

Training for operation of the wildfire cameras by the AF&R Dispatchers is conducted using a train-the-trainer method. In July 2019, representatives from UCSD-Scripps and SCE, along with supervisory personnel from AF&R conducted fire camera training. The wildfire cameras operations transitioned in 2022 from the AlertWildfire.org to a new more user-friendly platform under AlertCalifornia.org. As such, new training materials for AlertCalifornia.org were provided as a refresher and for new personnel in the division.

As previously mentioned in Section 9(A) - System Patrols, the AF&R CERTS are utilized in the field during RFW, SAWTI Extreme, and wildfire conditions to provide additional visibility of electrical infrastructure and report back to APU System Operations. APU conducts an annual training with the AF&R CERTS as part of a larger AF&R safety training program to review relevant electrical infrastructure including the pole tag numbers, switches, conductors and connections, transformers, and other equipment. This training helps AF&R identify and report equipment anomalies to APU operators to pinpoint the location of the anomaly and help APU operators make appropriate operational decisions. The training also reviews hazards associated with energized electrical equipment and fire suppression methods that cannot be used near the equipment.

Additional training includes interactions within city departments. One example includes APU electric crews providing training on high voltage electrical equipment to fire cadets. The training was conducted with surface-mounted equipment that are installed within the FTZs. Additional training includes fire personnel collaborating with APU water crews on confined space rescues in water storage facilities located within FTZs. Since water pressure is critical for fire mitigation, collaboration and joint training provided the opportunity to improve coordination and ensure employees are familiar with each other's roles and responsibilities.

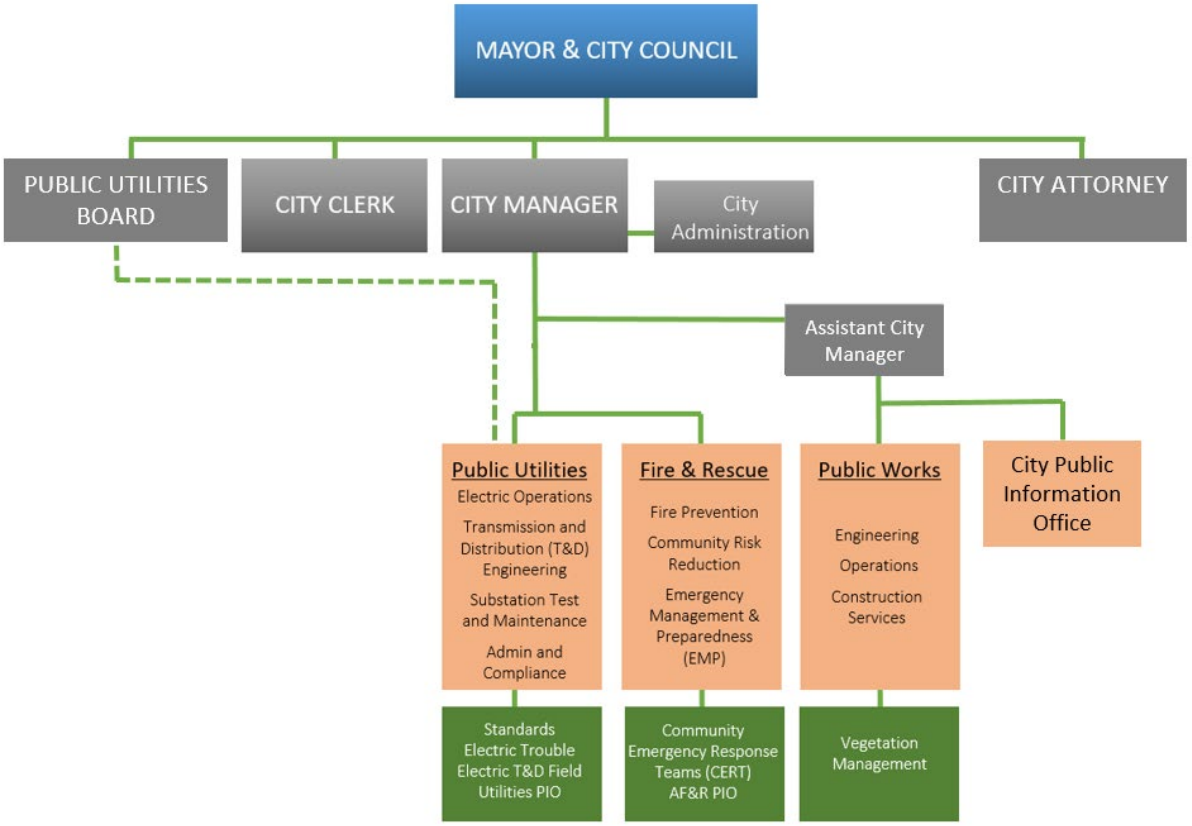
Figure 20: APU Electrical Safety Training for Fire Cadets



SECTION 12 - Organization and Assignment Responsibilities

This section describes the roles and responsibilities required to accomplish the objectives of this WMP. Various stakeholders play a role in preventative and operational mitigation strategies, emergency response, and communications. An organizational chart in Figure 20 below gives context to the organizational structure of the City of Anaheim and from there, specific groups responsible for implementing the measures and programs within the WMP.

Figure 21: City of Anaheim Organizational Structure



The following Table 9 identifies the roles and responsibilities of City of Anaheim stakeholders.

Table 9: Roles and Responsibilities for Implementation of the WMP

Action	Organization
Advisory Warning Watch and Notification	AF&R EMP/APU Operations
Fire Threat Zone area assessment	AF&R Fire Prevention/APU Operations
Fire Monitoring Cameras and Weather Stations	APU Operations/AF&R Fire Prevention
On-Site Visual Inspections during RFW and SAWTI Extreme events	APU Electric Trouble/AF&R CERTS
Disabled Reclosers Procedure	APU Operations
Infrastructure Integrity Assessment	APU Electric Trouble/T&D Engineering
Construction Standards	APU T&D Engineering

Action	Organization
Vegetation Management	APU Electric T&D Field/Public Works
Equipment Evaluation and Replacement	APU Standards/Electric Operations
Distribution System Inspection	APU Standards/T&D Engineering
Substation Inspection/Maintenance	APU Substation Test and Maintenance
Reporting	APU Administration and Compliance
WMP Review and Approval	Public Utilities Board/City Council
Budgetary approval for WMP mitigation	Public Utilities Board/City Council

SECTION 13 - Metrics, Monitoring and Reporting

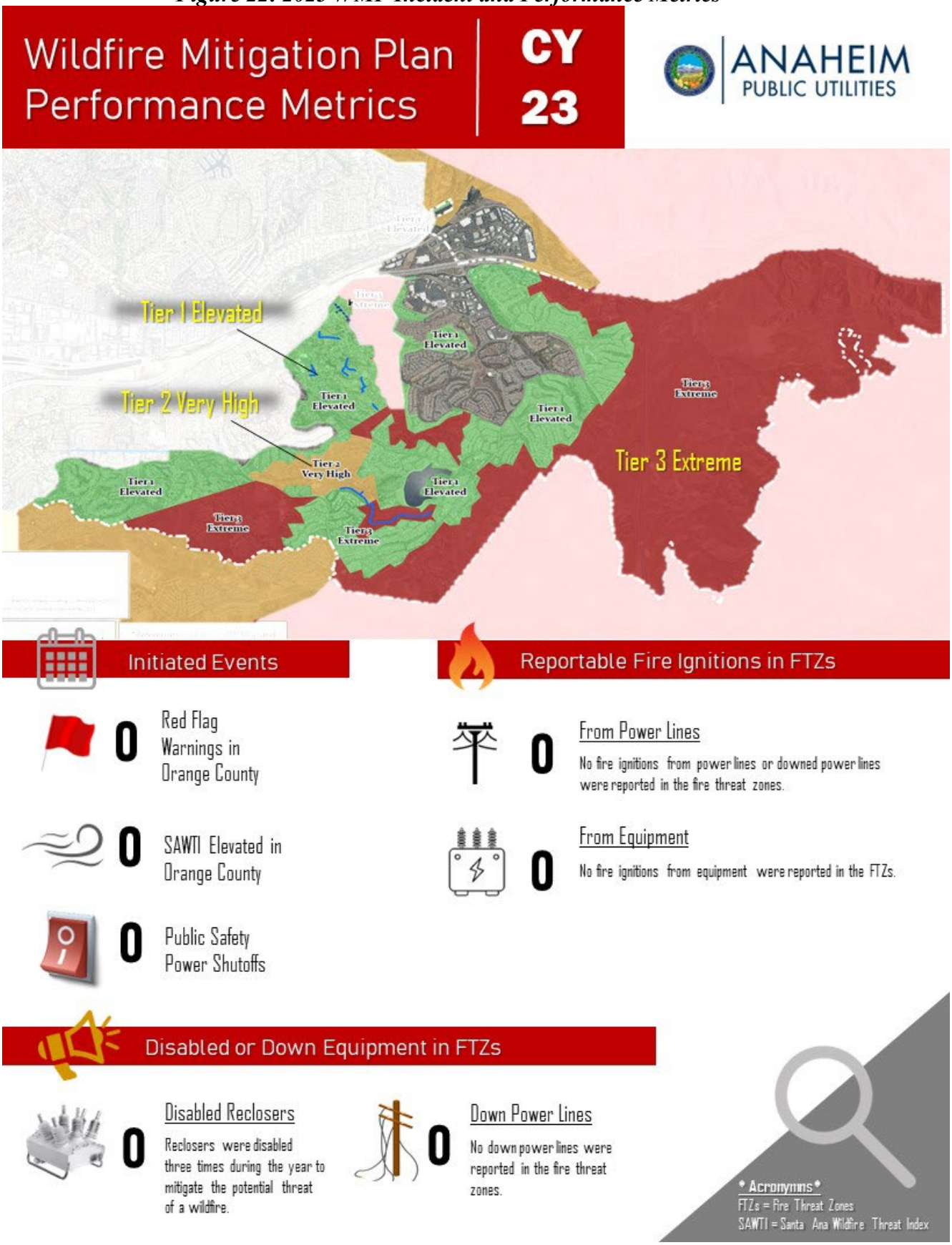
Metrics are used to evaluate the WMP's performance consistent with GO 95 and GO 165 requirements, and utilizing the guidelines suggested in SBs 901 and 1028. There are two categories of metrics: 1) specific metrics of fire incidents and 2) the WMP's performance metrics. As industry risk metric standards continue to develop, APU will identify additional metrics to measure the reduction of wildfire risk in future WMPs. Incident metrics include RFW and SAWTI Extreme initiated in the Orange County area, reclosers functions disabled in the FTZ, planned power shut-off for wildfire mitigations, and reportable ignitions in a FTZ associated with electric overhead conductors. These metrics are used to track progression and to measure the effectiveness of these preventative and operational mitigation strategies to further strengthen fire preparedness and safety.

Other scenarios exist where power lines have the potential to cause fire ignition, for example a vehicle hitting a power pole or power lines in contact with each other during a high wind storm. A reportable ignition associated with electric overhead power lines in APU's Tier 2 and Tier 3 FTZ is the number of power lines involved in fire incidents annually that occurred within APU's Tier 2 or 3 FTZ. Generally, a reportable ignition includes all of the following: a) Ignition is associated with APU's power lines, b) something other than APU's facilities burned, and c) the resulting fire traveled more than one meter from the ignition point.

Performance metrics tracking progress in preventative strategies and programs include a target goal to establish the benchmark comparison to actual completion. Sample performance metrics include vegetation clearance, inspections completed, and training performed which are used to inform the performance of each preventive strategy and program.

Performance metrics were first introduced within the 2018 WMP and at that time relatively limited data was available to form comparisons. New metrics have been included starting with the 2020 WMP where there may not have been a metric input applicable in the 2018 year. The following Figure 21 is a summary of the incident and performance metrics associated with the 2023 WMP.

Figure 22: 2023 WMP Incident and Performance Metrics



Wildfire Mitigation Plan Performance Metrics | CY 23

ANAHEIM PUBLIC UTILITIES

6 Weather Monitoring Station in FTZs

weather stations were installed in FTZs with temp, wind, and humidity level data accessible to APU Operations and AFGR Dispatch. APU's goal is to install 4 more in the next two years for a total of 10 stations.

14 Fire Cameras Installed in FTZs

In 2023, APU installed 4 additional robust cameras with near-infrared capability, view and control access, and linked to AlertCA.live and networked to AFGR Dispatch and APU Operations.

Asset Replacements

27 Wood to Ductile Iron Poles

APU met its annual goal of replacing 27 wood poles in the Tier 3 FTZ with fire-resilient, ductile iron poles.

12 Concealed Lighting Arresters

non-enclosed lighting arrestors in the FTZs were replaced during 2020 and 2021 with fully enclosed units to prevent animal intrusion

12 Non-Expulsion Fuse Disconnects

To prevent potential hot shards from fuse operation to start wildfires, 6 fused disconnects within Tier 2 and 3 FTZs were replaced with self-contained fuses in 2020, with another 6 electronic fuses installed in 2021.

8 Fire-resistant Transformers

Transformers with FR3 fire-resistant oil were installed in the FTZs in 2021 to minimize equipment-induced wildfires.

Training

- Fire Camera View & Operations

  Training was held for AFGR Dispatch Center staff and APU Operators on accessing the fire monitoring cameras from the emergency dispatch centers.

- De-energize/Restore Procedures

  Training was provided on triggers to initiate de-energization of circuits within the FTZs and executing the communications plan contained in SO 2529.*

- Disabling Reclosers

  Training was conducted on triggers to initiate disabling of reclosing operations on circuits within the FTZs and executing the communications plan in SO 2529.*

- AFGR Electrical Safety

  Training was conducted on electrical equipment safety to assist AFGR CERTS on how to identify electrical infrastructure anomalies and report to APU Operations.

% of Power Lines Underground in FTZs

98% **APU's goal is to underground 100% of power lines and telecommunication lines in or adjacent to a FTZ.**

Approximately 0.88 circuit miles of overhead distribution power lines are in Tier 3 FTZ traversing through residential areas with 100% of the lines de-energized under normal conditions.

Undergrounding Projects

In May 2021, APU completed the undergrounding of approximately 0.37 circuit miles of overhead power lines located in a FTZ along Eucalyptus Drive south of Santa Ana Canyon Road.

Hazard Mitigation Grant

FEMA awarded a $1.1M Phase I Hazard Mitigation Grant to support the undergrounding of seven overhead segments adjacent to FTZ areas. Phase 2 grant award will be considered by FEMA for construction in 2024/25.

*** Acronyms ***

FTZs = Fire Threat Zones
APU = Anaheim Public Utilities
AFGR = Anaheim Fire & Rescue

* SO 2529 = System Order 2529 represents APU's policies and procedures to mitigate wildfire risk from electrical sources.

Wildfire Mitigation Plan Performance Metrics | CY 23

ANAHEIM PUBLIC UTILITIES

100%

% of Tier 3 FTZ Power Lines Cleared of Vegetation

All power lines within the FTZs were cleared of vegetation prior to the onset of fire season, meeting APU's annual goal, and reducing the risk of fire ignition and propagation from electric infrastructure.

Utilizing Goats for Fire Prevention

Anaheim Fire & Rescue employs herds of goats to eat dry bush and invasive plants – especially in difficult topographical areas with steep hills and valleys. Invasive (or alien) plants are considered dangerous because they tend to catch on fire more easily than native-born plants from the area.

Inspections & Patrols

All Overhead Distribution Lines

All overhead distribution lines were patrolled within the compliance period set in GO 95/165 *, meeting the annual goal for this metric.

All Underground Distribution Lines

Detailed line inspections were completed on all overhead and underground lines within the compliance period set in GO 95/165 *, meeting the annual goal.

Substation & Yard Equipment

Monthly visual inspections of all substation and yard equipment were completed, meeting or exceeding GO 174* standards.

Sampling & Testing

Strength of Wood Poles

Testing of wood poles in the fire threat zones were completed in 2018, in accordance with GO 95/165* standards to measure the integrity of the wood pole and its outer layer. The next cycle is scheduled for 2024/2025

Contaminants within Insulating Oil

Oil from all substation equipment residing in the fire threat zones were sampled for contaminants, as such contaminants could lead to premature equipment failure.

GO 95 = General Order 95 are rules established by the California Public Utilities Commission (CPUC) for overhead line design, construction, and maintenance; such rules are intended for adequate service and safety for those engaged in construction, maintenance, operation, or use of such overhead lines.

GO 165 = General Order 165 are requirements established by the California Public Utilities Commission (CPUC) for electric distribution and transmission facility inspections to ensure safe and high-quality electrical service..

GO 174 = General Order 174 are uniform requirements from the State of California on substation inspection programs, intended to promote safety and service adequacy.

Metrics added or updated starting with the 2020 WMP were the result of actual events that occurred and therefore informed this 2024 WMP. Tracking these metrics will provide insight into the effectiveness of APU wildfire mitigation measures and assist in formulating enhanced measures in future WMPs if warranted. A summary of the metrics tracked from the previous 3-year cycle of WMPs included in this comprehensive analysis.

Table 10: Summary of Performance Metrics

Metric	2021 WMP	2022 WMP	2023 WMP	2024 WMP
ANNUAL NUMBER OF EVENTS				
Red Flag Warning	7	4	1	0
SAWTI Elevated in Orange County	0	3	3	0
Planned Outages for Wildfire Mitigation	0	N/A	N/A	N/A
Reportable Fire Ignitions in FTZs from Power Lines	0	0	0	0
Reportable Fire Ignitions in FTZs from Equipment	0	0	0	0
Disabled Recloser Events	7	4	1	0
Downed Power Lines	0	0	0	0
CUMMULATIVE ASSETS INSTALLED FROM 2020-2022				
% of Power Lines Underground in FTZs	98%	98%	98%	98%
Weather Monitoring Stations in FTZs	4	5	5	6
Fire Cameras Installed in FTZ	8	8	10	14
Asset Replacements for Wood to Ductile Iron Poles	27	27	27	27
Asset Replacements for Concealed Lighting Arresters	6	12	12	12
Asset Replacements for Non-Expulsion Fuse Disconnects	6	12	12	12
Asset Replacements for FR3 Transformers	N/A	N/A	8	0
TRAINING, INSPECTION AND TESTING PERFORMED ANNUALLY				
Fire Camera View & Operations Training	Complete	Complete	Complete	Complete
De-Energize/Restore Procedures Training	Complete	Complete	Complete	Complete
Disabling Recloser Training	Complete	Complete	Complete	Complete
AF&R Electrical Safety			Complete	Complete
% of Tier 3 FTZ Power Lines Cleared of Vegetation	100%	100%	100%	100%
Inspections & Patrols for All Overhead Distribution Lines	Complete	Complete	Complete	Complete
Inspections & Patrols for All Underground Distribution Lines	Complete	Complete	Complete	Complete
Inspections & Patrols for Substation & Yard Equipment	Complete	Complete	Complete	Complete
Sampling & Testing for Strength of Wood Poles	Complete	Complete	Complete	Complete
Substation Sampling & Testing for Contaminates in Insulating Oil	Complete	Complete	Complete	Complete

The metrics and the wildfire mitigation improvements they represent are a result of substantial investments by APU for completed and planned projects and programs in various areas including engineered upgrades, maintenance and operations improvements, and public education and benefits programs. These investments are listed under Table 11, below.

Table 11: APU's Wildfire Mitigation Investments

APU's Wildfire Mitigation Investments						
Completed				Planned		
Item	**Project Description**	**Scope**	**Cost ($000)**	**Scope**	**Year**	**Cost ($000)**
1	Wildfire Undergrounding - (all FTZ areas)	Placed 2000' of overhead high voltage and communication lines underground on Eucalyptus Drive.	$2,600	Underground conversion or removal of 2.63 miles of overhead and communication lines across 7 segments.	2024-2026	$20,000
2	Transformer Replacements in FTZS	Replaced 12 overhead with 8 underground fire-resistant FR3 transformers.	$250	Replace 31 overhead with FR3 oil transformers	2024-2026	$1000
3	Wildfire Camera Installation	Installed 4 new wildfire camera sites overlooking the wildlands at Gypsum and Weir Canyons, integrated with the AlertCalifornia camera system.	$700	Install 4 additional cameras at two sites to overlook the Weir and Gypsum Canyon wildlands.		
4	AF&R Vegetation Management in FTZ's	Goat herding contractor costs.	$198	Goat herding contractor costs	On-going	$198
5	Residential Structure hardening - Attic and Vents	APU provided rebates for 172,000 sq ft of fire-resistant attic insulation installed by 97 customers. Rebates are also available for customers taking advantage of Fire-Resistant fireplace vents with 53 installed to date.	$60	Continue with rebates for fire-resistant attic insulation and fireplace vents	On-going	$30
6	Residential Structure Hardening – Building Code Upgrades	Plans for new construction in fire-prone areas to comply with Building Code Chapter 7A - Materials and Construction Methods for Exterior Wildfire Exposure.	N/A	Continued reviews for compliance with Building Code Chapter 7A	On-going	N/A
7	Tree trimming in FTZs	Powerline Clearing of approximately 840 trees per year.	$100	Continued until all overhead lines are undergrounded in FTZs by 2025	2023-2025	$100
8	Avian Protection pilot	Install avian protection devices on two powerline segments in vicinity of groundwater charging lakes frequented by migratory birds.	$80	Additional installations will be considered if bird strike risk is identified	N/A	$0

APU's Wildfire Mitigation Investments						
Completed				Planned		
Item	Project Description	Scope	Cost ($000)	Scope	Year	Cost ($000)
9	Equipment upgrades (sealed surge arresters, non-expulsive and electronic self-contained fuses)	In FTZs, installed 6 each self-contained electronic and non-expulsive fuses that prevent hard shards from fuse activation to fall on dry grass below, and 12 new lightning arresters with sealed caps to avoid critter contact.	$100	Sealed Lightning arresters will be installed on an as-needed basis	On-going	$15
10	Reduce animal-caused outages at open air substations	Install bushing covers for High Voltage Circuit Breakers	$45	Other two substations serving customers in fire threat zones are in fully-enclosed structures, not subject to animal-induced outages.	Complete	$0
11	Wildfire-resistant plants	APU's TreePower program includes wildfire resistant plant species: https://www.anaheim.net/763/Residential-TreePower. 392 wildfire-resistant trees distributed to 259 participants.	$50	Continued wildfire-resistant plants	On-going	$50
12	Mylar Balloon Safety	Mylar balloons educational video posted on City website and YouTube: https://www.anaheim.net/4752/Mylar-Balloons.	$5	Continued Mylar Balloons educational program	On-going	$5
13	Backup generators for customers	Purchased two (2) 70kVA trailer-mounted emergency generator to restore power and contract for additional rented emergency generators.	$75 ea. $150 Total	Continue trailer mounted emergency generators contract	2023-2024	$4 annual maint. cost
14	Ductile iron poles/fiberglass crossarms in Oak / Walnut Canyon area	Replaced 36 deteriorated wood poles in HFTZ with ductile iron poles. Topped wood poles left to support natural habitat for birds.	$1,000	Future undergrounding eliminates need for additional ductile iron poles in fire threat zones.		$0
		Total	**$5,338**			**$21,402**

SECTION 14 - Monitor and Auditing the Plan

APU reviews its WMP and updates performance metrics annually to align with Anaheim's planning and budgeting process. Its WMP is presented to the Anaheim Public Utilities Board (PUB) annually on or before July 1st of each year, and upon final approval, APU submits its WMP to the California Wildfire Safety Advisory Board (WSAB). The WSAB reviews and provides comments and advisory opinions regarding the content and sufficiency of the APU WMP, for APU to consider for updates to its future WMPs.

In addition to annual updates to the WMP, a comprehensive review of APU's WMP is performed every three (3) years to review metrics, garner feedback, and ensure that the wildfire mitigation plan adequately addresses them, and provide an assessment of the WMP programs combined with analysis of performance metrics to develop changes to design, construction, or maintenance standards and practices to inform activities for future wildfire mitigation plans.

This three-year-cycle comprehensive assessment and update to APU's WMP will be reviewed by a Qualified Independent Evaluator (QIE), as required by PUB Section 8387. The QIE will assess and audit the comprehensiveness of APU's WMP prior to consideration for recommendation by the Anaheim PUB for consideration and approval by the Anaheim City Council. The WMP is posted on the APU website for public review and comment, and is added as an agenda item to the PUB meeting annually so it is available for public comment.

In March 2020, Guidehouse, Inc. was retained by APU to perform the initial independent audit following a competitive solicitation that followed Anaheim's Council Policy 4.1 – Selection of Professional Consultants. The APU WMPs and the QIE results are posted to the APU website for public view at http://www.anaheim.net/5487/Wildfire-Mitigation-Plan. The focus of the first QIE review of the APU 2020 WMP was to ascertain whether the WMP meets the statutory requirements, which included an audit of all documentation that support the claims made by APU in the WMP. The QIE determined the 2020 WMP and all supporting documentation was comprehensive. Going forward, APU will select a QIE with expertise in industry-wide strategies to evaluate and develop recommendations for increased grid resiliency and options for reducing impacts of wildfires on utility customers.

In 2023, APU retained NV5, Inc. to assist with the comprehensive update of the 2023 WMP and GridSME, as the QIE, to perform the independent evaluation of the 2023 WMP. The GridSME report, available on APU's public webpage https://www.anaheim.net/5487/Wildfire-Mitigation-Plan, concluded that the WMP is comprehensive and meets the requirements of the Public Utilities Code Section 8387. The next comprehensive update and independent evaluation will be for APU's 2026 WMP.

- ### A. QA / QC

This section was added to the 2024 WMP, as recommended under the WSAB 2024 Advisory Guidelines. APU's WMP Quality Assurance / Control (QA / QC) process is intended to ensure that administrative controls and reviews are in place for the preparation and implementation of the WMP goals to minimize the risk of APU assets being an origin or contributing source of a wildfire. The QA aspects include those listed under Sections 2 and 3 to identify and assess risks,

Section 12 on APU organization and assignment responsibilities, and Sections 13 and 14 on metrics, monitoring, reporting, and auditing.

The QC process consists of the controls in place to deliver quality projects and processes that reduce wildfire risks and improve situational awareness. APU's QC team consist of the:

- Engineering team – Prepares design packages that undergo multiple reviews for consistency with design objectives, and manages the project through construction and project closure.
- Contractors – Prequalified to ensure they possess the skillsets and resources to deliver quality projects. Contractors have internal QA / QC teams that check for quality and track progress.
- Utility Inspectors – Perform independent filed inspections as construction is in progress and provide regular reports to the APU project managers.
- APU Management – Track project deliverables for consistency with the contractor invoices for consistency and completeness.
- Anaheim Public Works Inspectors – Confirm construction along public streets is in accordance with safety and permit requirements.
- To independently confirm that these wildfire mitigation measures are implemented as described, consultant scope for future WMP comprehensive updates and independent evaluation will include sample verification of the measures.

Collectively, these administrative and project controls have produced timely and quality improvements towards the goal of minimizing the risk of APU assets being an origin or contributing source of a wildfire.

SECTION 15 – Revision Log for 2024 WMP

The revision log section was added as part of this 2024 WMP to implement one of the WSAB 2024 Advisory Guidelines. The revision log is intended to capture major annual changes to WMPs. When compared to APU's 2023 WMP, the 2024 WMP includes the following:

a) Added new sections on QA/QC and Revision Log to incorporate the WSAB 2024 Advisory Guidelines
b) Updated status of wildfire mitigation projects, including undergrounding plans
c) Updated status of situational awareness projects, including new wildfire cameras and weather stations monitoring wildfire threat zones
d) Updated Summary of Performance Metrics for 2023