

May 31, 2023

12255.05

**Mr. Hien Vuong**Assistant General Manager-Electrical Operations  
Azusa Light and Water  
City of Azusa  
729 N. Azusa Avenue  
Azusa, California 91702**Subject: Independent Evaluator's Report of the Azusa Light and Water's 2023 Wildfire Mitigation Plan**

Dear Hien Vuong:

Thank you for the opportunity to review the Azusa Light and Water 2023 Wildfire Mitigation Plan. Dudek is aware that publicly owned utilities like yours strive to operate in a safe and efficient manner, and we are pleased to be able to support Azusa in this effort. Below is our independent evaluation of your Wildfire Mitigation Plan.

## 1 Introduction

Azusa Light and Water (ALW) contracted with Dudek to engage in an independent evaluation of its 2023 Wildfire Mitigation Plan (WMP). This independent evaluation report describes the technical review and evaluation of the WMP prepared by ALW. The WMP requirements are codified in California Public Utilities Code (PUC) Section 8387(b)(2) for local, publicly owned electric utilities (POUs). PUC Section 8387(c) requires that an independent evaluator review and assess the comprehensiveness of a POU's WMP and issue a summary report. The year 2023 is important for POUs because they are required by PUC Section 8387(b)(1) to comprehensively revise their WMPs "at least once every three years.". The ALW's last Independent Evaluator's report was prepared for the review of their 2020 WMP.

Dudek conducted a review of ALW's 2023 WMP from February 27 to May 5, 2023. The focus of the evaluation was to determine the comprehensiveness of the WMP and ensure it included all elements required under PUC Section 8387(b)(2) (listed in Attachment A).

In addition to evaluating the elements required by the PUC, Dudek reviewed the Wildfire Safety Advisory Board's (WSAB's) specific guidance for the ALW published in their Guidance Advisory Opinion for the 2023 Wildfire Mitigation Plans of Electric Publicly Owned Utilities and Rural Electrical Cooperatives (WSAB 2022).

This Independent Evaluator's Report contains the following elements: (1) an overview of the ALW, (2) a review of the statutory requirements in PUC Section 8387(b)(2) for local POUs, (3) a review of the specific recommendations published by WSAB for ALW's 2022 WMP, (4) ALW's 2022 wildfire mitigation and prevention accomplishments, (5) an overview of the metrics used in the ALW WMP, and (6) a comparison of wildfire risk reduction strategies used by ALW to those used by similar utilities and municipal utility industry standards.

## 2 An Overview of Azusa Light and Water

ALW is a municipal utility provider that provides electric service to customers within the city limits of Azusa (City), California. ALW's service territory covers 9.3 square miles of the San Gabriel Valley. The northernmost portions of the City (north of the Metro train line) extend into the foothills of the San Gabriel Mountains. The west side of the City is defined by San Gabriel Canyon, the large drainage that contains the San Gabriel River and extends northeast into the core of the San Gabriel Mountains. Generally, ALW's service territory has a south-facing aspect with gentle slopes that becoming increasingly steep moving from south to north. The northern most portions of ALW's service territory extends into the mountains and ridgelines that define the southernmost peaks of the San Gabriel Mountains, but these mountainous areas are undeveloped, and ALW has no infrastructure outside of a single development in San Gabriel Canyon. ALW's asset portfolio consists entirely of distribution lines and distribution equipment. ALW's lines and equipment in the northern third of its service territory (north of Sierra Madre Boulevard) are entirely underground. The remainder of the service territory is a combination of aboveground and belowground wires and equipment. The High Fire Threat District begins north of Sierra Madre Boulevard throughout most of ALW's service territory so that the transition to underground wires and equipment occurs outside of the High Fire Threat District and in developed, urban areas. Southern California Edison has a transmission line that runs along the west side of the service territory.

Including all facilities, equipment, and service lines, 2% of ALW's service territory lies within a CPUC High Fire Threat Tier 2 area and 0% lies within a CPUC High Fire Threat Tier 3 area. As stated above, ALW's service territory is contained within Azusa city limits. South of Sierra Madre Boulevard the City is fully urbanized, and there is insufficient vegetation to sustain the growth of a wildfire. North of Sierra Madre Boulevard, development, mainly residential neighborhoods, is interspersed with open space or undeveloped hillsides until the northern most portions of the City where development ends. Approximately 50% of ALW's service territory is classified as Wildland Urban Interface (WUI) (Radeloff, V.C. 2020), beginning approximately at Foothill Boulevard and extending north to the city limits.

ALW's service territory experiences a fire season that lasts from April to November during a typical year. Early fall, from September to October, is considered the most critical period due to the combination of Santa Ana winds and low fuel moistures. ALW's service territory has experienced repeated wildfires since the California Department of Forestry and Fire Protection (CAL FIRE) began recording data on fire perimeters, with more than 20 wildfires occurring within the city limits since 1918 (CAL FIRE 2022). The northern portion of ALW's service territory, north of Sierra Madre Boulevard, has experienced larger and more frequent fires than the remainder of the City.

### 3 Statutory Requirements for Wildfire Mitigation Plans

PUC Section 8387(b)(2) lists the statutory requirements for WMPs. These are the specific elements that the independent evaluator must review to make its determination for a report. The specific elements that must be addressed in the ALW WMP are included in Attachment A and are summarized here for reference.

- Staff responsibilities
- General objectives
- Wildfire risk reduction program descriptions
- The metrics used to evaluate WMP performance.
- How the application of previously identified metrics has informed the WMP
- Protocols for reclosers, de-energization, and public safety power shut-off
- Procedures for community notification and outreach
- Vegetation management plans
- Electrical equipment and infrastructure inspection plans
- Description of wildfire risks and drivers for those risks throughout the service territory, including design, construction, operation, and maintenance of equipment and facilities, and topographic and climatological risk factors
- Identification of any geographic area in the service territory that is a higher wildfire threat than is identified in a commission fire threat map
- Identification of enterprise-wide safety risk and wildfire-related risks
- How the service will be restored after a wildfire
- The processes and procedures used to monitor and audit the implementation of the WMP and identify any deficiencies, and the effectiveness of electrical line and equipment inspections

### 4 Public Utility Code Requirements

Dudek found that the ALW WMP meets the statutory requirements of comprehensiveness per PUC Section 8387. The review of the WMP's elements is summarized relative to the application of the WMP. Dudek's assessment is in **bold text** beneath the description of the requirement. The table in Attachment A lists each PUC-required element for the ALW WMP and provides Dudek's initial and final assessments of the comprehensiveness of that element.

#### Minimizing Wildfire Risks

PUC Section 8387(a) requires the following: "Each local publicly owned electric utility and electrical cooperative shall construct, maintain, and operate its electrical lines and equipment in a manner that will minimize the risk of wildfire posed by those electrical lines and equipment."

**The ALW WMP comprehensively describes the safety-related measures that the ALW follows to reduce its risk of causing wildfires. Dudek has determined that ALW complies with this requirement through the design of its system, its operations, and the implementation of wildfire risk reduction and wildfire response strategies. The WMP has an**

**emphasis on ALW's commitment to undergrounding its assets in the High Fire Threat District and that program's effectiveness at reducing wildfire ignition risks.**

## **Evaluation of WMP Elements**

Below is a summary of the WMP elements as required by PUC Section 8387, including restating sections of the WMP where applicable.

8387(b)(2)(A): Responsibilities of Persons Responsible for Executing the Plan.

**Chapter 7 of the ALW WMP comprehensively describes staff responsibilities and functions in the implementation of the WMP.**

8387(b)(2)(B): Objectives of the Wildfire Mitigation Plan

**Chapter 2, Section B, of the ALW WMP describes the WMP's three objectives. The objectives are brief but aptly describe the objectives of the ALW WMP.**

8387(b)(2)(C): Prevention Strategies and Programs

**Chapter 5 in the ALW WMP describes ALW's wildfire prevention strategies. It is comprehensive and emphasizes that undergrounding all equipment in the High Fire Threat District is ALW's primary strategy.**

8387(b)(2)(D): Metrics and Assumptions for Measuring WMP Performance

**Chapter 7, Section A, of the ALW WMP contains a description of the metrics used by the WMP.**

8387(b)(2)(E): Impact of Previous Metrics on WMP

**Chapter 7, Section B, of the ALW WMP contains a description of the impacts that the metrics used in the previous of the WMP have had on the current WMP.**

8387(b)(2)(F): Reclosing Protocols

**Chapter 5, Section C of the ALW WMP states that there are no automatic recloser schemes on the two circuits in the High Fire Threat District.**

8387(b)(2)(G): De-energization Notification Procedures

**Chapter 6 in the ALW WMP comprehensively describes ALW's notification process and the means by which ALW must notify customers (e.g., email to first responders, ALW website).**

8387(b)(2)(H): Vegetation Management

**Chapter 6, Section 6.4 of the ALW WMP contains a comprehensive description of the ALW vegetation management program. Since the utility has undergrounded their equipment in the High Fire Threat District, the ALW's vegetation management program is limited to urban areas of the City where there are aboveground wires.**

8387(b)(2)(I): Inspections

**Chapter 6, Section 6.5 of the ALW WMP comprehensively describes ALW's inspection program, including the type and frequency of inspections.**

8387(b)(2)(J)(i): Risks and Risk Drivers Associated with Design and Construction Standards

**Chapter 4, Sections A and B of the ALW WMP describe some risk drivers related to design, construction, operation, and maintenance.**

8387(b)(2)(J)(ii): Risks and Risk Drivers Associated with Topographic and Climatological Risk Factors

**Chapter 4, Sections C through E in the ALW WMP provide a comprehensive description of the geographic and climatological factors present across the ALW service territory.**

8387(b)(2)(K): Geographical Area of Higher Wildfire Threat

**Chapter 3 in the ALW WMP states that ALW has examined the High Fire Threat District maps for the ALW and sees no areas where it needs to be expanded.**

8387(b)(2)(L): Enterprise-wide Safety Risks

**The beginning of Chapter 4 of the ALW WMP includes the statement, "Azusa employed a methodology for identifying and presenting enterprise-wide safety risk and wildfire-related risk in the development of this WMP, including consultation with local fire authorities and incorporation of industry best practices to identify the following wildfire risks and mitigation strategies." The ALW does not have an independent enterprise risk identification and presentation protocol; instead, ALW uses the risk assessment process described in the City's Local Hazard Mitigation Plan.**

8387(b)(2)(M): Restoration of Service

**Chapter 6, Section B of the ALW WMP includes the statement, "In the event of a PSPS [Public Safety Power Shutoff] requiring Azusa to interrupt service to its customers, all power shall be promptly restored following the PSPS."**

8387(b)(2)(N)(i): Monitoring and Auditing WMP Implementation, 8387(b)(2)(N)(ii): Identifying and Correcting WMP Deficiencies, and 8387(b)(2)(N)(iii): Monitoring and Auditing the Effectiveness of Inspections

**Chapter 7, Sections C and D of the ALW WMP provide a description of the ALW's program for monitoring and auditing the WMP, and for identifying deficiencies in the WMP. The WMP organizes the ALW's actions for reviewing their WMP, identifying deficiencies, and applying corrective actions based on the personnel responsible for the different elements of the WMP.**

## 5 Wildfire Safety Advisory Board Guidance Advisory Opinions

In November 2022, WSAB published a report with a description of general recommendations for improving the WMPs for POUs and rural electrical cooperatives. At the end of the report, WSAB provided specific recommendations for each utility that submitted a WMP for review. Dudek reviewed WSAB's report, and the section below contains a summary of each recommendation WSAB had for the ALW's 2022 WMP and whether the 2023 WMP has addressed the WSAB's recommendations (WSAB 2022). The materials published by the WSAB and the recommendations within are for guidance only and are not statutory requirements.

WSAB did not have any recommendations, revisions, or corrections for the ALW WMP in the most recent guidance document.

## 6 Azusa Light and Water 2022 Progress in Implementing Wildfire Mitigation Plan Wildfire Prevention Strategies

This section describes the ALW's accomplishments in 2022 for the wildfire prevention program and strategies described in the WMP.

### Vegetation Management<sup>1</sup>

- Vegetation Management Completed (in circuit miles): 108
- Vegetation/Line Clearance Completed (in circuit miles): 108

### Inspections

- Equipment inspections performed (in circuit miles) including underground equipment inspections: 148

### System Hardening

- Pole replacement program accomplishments: All poles inspected in 2021; 48 were red tagged in the 2021, and ALW replaced 18 of the red tagged poles in 2022
- Fuse replacement program accomplishments: 26 fuses were replaced with non-expulsive type holders in the High Fire Threat District.
- Covered conductors installed: Two spans of wire were replaced next to the Tier 2 High Fire Threat District.
- Animal deterrents installed: Covered conductors were installed for lead wire to equipment, and insulators covers were installed.

## 7 Wildfire Mitigation Plan Metric Overview

Metrics help POUs determine if their wildfire prevention strategies are effective for reducing the risk of a wildfire ignited by their electrical equipment.

ALW has adopted three metrics and used them since the creation of the first WMP in 2020. These metrics are number of wildfires ignited by Azusa equipment, number of local fires ignited by Azusa equipment, and number of fuse or relay operations. ALW records fire ignition metric data on an event basis. ALW records fuse or relay

---

<sup>1</sup> ALW performs minimal vegetation management work in the High Fire Threat Districts since their equipment and wires are underground in these areas.

operations metric data on monthly outage reports. For each event, ALW records the date and time of the event and a description of the cause of the event (if known).

Table 1 provides the data recorded from 2020 to 2022 using the three metrics.

Table 1. Metric Event Records in 2020-2022

Metric	Outside of the HFTD	Within the HFTD
Fire Ignitions	0	0
Wildfire Ignitions	0	0
Fuse or Relay Operations	96	0

**Note:** HFTD = High Fire Threat District.

These three metrics with the supplemental data regarding date, time, and location of the event for fire ignitions, plus cause of the event for fuse or relay operation, are useful for informing the ALW about the effectiveness of their wildfire prevention strategies. Undergrounding their equipment and locating the aboveground portions of this system in developed areas has reduced the risk of ALW's electrical equipment igniting a wildfire by removing the common elements of electrical equipment ignited fires, namely overhead wires, vegetation adjacent to the wires, and a receptive fuel bed on the surface. Since performance metrics, such as vegetation management or tree trimming, or outcome metrics that are a precursor to a wildfire ignition, such as wire down events, don't apply to the ALW, outcome metrics such as new fire ignitions and fuse or relay operations are effective metrics for measuring WMP performance.

This independent evaluator's report finds these three metrics to be acceptable; it would be useful to collect new fire ignition data from other electrical utilities for a comparison in future versions of the WMP.

## 8 Comparison of Industry Standards and Similar Utility Wildfire Prevention Strategies

As part of this review of the ALW 2023 WMP, Dudek compared the wildfire prevention strategies described in the WMP to the strategies being implemented by POUs and accepted electrical industry practices for reducing wildfire risk. ALW's service territory has the most in common with the adjacent cities of Glendora and Irwindale; however, its immediate neighbors are served by Southern California Edison. For this Independent Evaluator's Report, Palo Alto Utility (CPAU) and the Moreno Valley Utility (MVU) were selected for comparison to ALW's wildfire prevention strategies. ALW, CPAU, and MVU are similar in terms of owned assets and the layout of their service territories with an urban core and a sparsely developed foothill or mountainous areas at the edge of their service territories. Additionally, all three utilities use undergrounding as their principal means to reduce wildfire risk in their High Fire Threat Districts. However, CPAU differs from ALW and MVU in that CPAU is in the process of undergrounding the portions of its system in the High Fire Threat District whereas ALW and MVU have already completed this effort.

### 8.1 Vegetation Management

ALW, CPAU, and MVU implement vegetation management programs that meet General Order 95 requirements, including tree trimming and surface vegetation management. Because they have no overhead lines or equipment



in their High Fire Threat Districts, ALW and MVU perform very little surface vegetation management work, and most of their line clearance tree trimming work is performed in the developed urban areas and away from portions of their territories with sufficient vegetation to sustain a wildfire.

## 8.2 System Hardening

### Undergrounding

ALW, CPAU, and MVU use undergrounding as their primary strategy for reducing the risk of wildfire being ignited by their equipment and their systems being damaged by a wildfire. ALW and MVU have 100% undergrounded their distribution system in their High Fire Threat Districts. CPAU is in the process of transitioning to underground circuits in their High Fire Threat District.

### Equipment Maintenance and Upgrades

ALW and CPAU have ongoing equipment upgrade programs that are designed to reduce the risk of outage, equipment failure, and new wildfire ignitions. These include:

- Installing animal deterrents such as raptor framing and squirrel guards
- Installing covered conductors
- Replacing explosive fuses with non-explosive fuses

CPAU performs these upgrades on the portions of their system not identified for undergrounding, and ALW performs these upgrades on equipment outside the High Fire Threat District. The MVU does not have an equipment upgrade program focused on wildfire risk reduction because their entire distribution system is underground.

### System Design

ALW has construction standards designed to reduce the risk of fire ignited by the failure of their electrical equipment, which include the requirement of undergrounding of all new electrical equipment in the High Fire Threat District. In addition, ALW requires that the aboveground portions (e.g., transformers) of an underground electrical circuit be installed in developed areas along roads so in the event of an equipment failure that leads to a fire, there will be no flammable vegetation around the equipment box.

### Recloser Policy

ALW, CPAU, and MVU do not utilize automatic reclosing schemes on circuits in their High Fire Threat Districts. ALW and CPAU are set to manual re-energization, and in the event of an outage, both utilities do not re-energize until they have inspected their equipment.

## 8.3 Situational Awareness

### Patrols and Visual Inspections

All three utilities have electrical equipment and facilities that meet California Public Utilities Commission requirements including the annual visual inspection of their overhead circuits and the routine inspection of underground circuits.

## 9 Conclusion

ALW has prepared a comprehensive WMP for 2023. The WMP meets all statutory requirements described in PUC Section 8387(b)(2) for a POU. In their most recent guidance document, WSAB had no recommended revisions or additions for the ALW WMP. The ALW WMP describes a wildfire mitigation program that accurately assesses the risks and risk drivers present in their service territory and is successful at demonstrating that the ALW's primary wildfire prevention program of undergrounding wires is an effective strategy for reducing the risk of a wildfire ignition from its electrical equipment.

Based on the information available in the WMP and information collected in the preparation of this report, ALW is aware of the wildfire risk present in its service territory and the surrounding foothills of the San Gabriel Mountains. ALW has been proactive in reducing the risk that its equipment and facilities will start a wildfire by requiring the undergrounding of its electrical equipment.

Sincerely,



---

Jeremy Cawn  
Fire Protection Planner

## 10      References

Carlson, A.R., Helmers, D.P., Hawbaker, T.J., Mockrin, M.H., and Radeloff, V.C., 2020, Wildland-urban interface maps for the conterminous U.S. based on 125 million building locations: U.S. Geological Survey data release, <https://doi.org/10.5066/P94BT6Q7>.

CAL FIRE (California Department of Forestry and Fire Protection). 2022. Fire Perimeters through 2021. Fire and Resource Assessment Program. October 1, 2022. <https://frap.fire.ca.gov/mapping/gis-data/>.

WSAB (California Wildfire Safety Advisory Board). 2022. *Guidance Advisory Opinion for the 2023 Wildfire Mitigation Plans of Electric Publicly Owned Utilities and Rural Electric Cooperative*. Office of Energy Infrastructure Safety. Adopted November 16, 2022. Accessed May 31, 2023. <https://energysafety.ca.gov/wp-content/uploads/wsab-wmp-pou-guidance-advisory-opinion-adopted.pdf>.

# Attachment A

## Azusa Light and Water 2023 WMP Review Summary Tables

Table 1. PUC 8387 Requirements

Public Utility Code 8387(b)(2) Section	Description of Required Element	Initial Review Comment	Final Review Comment
A	Staff Responsibilities	Good.	Good.
B	General Objectives	The text in PUC 8387 and the WSAB's guidance documents don't provide specific direction for what a POU's objectives should be. The objectives can be revised to show to how the WMP reduces the POU's risk of wildfire caused by its electrical equipment. I recommend updating/revising the WMP objectives: objective (1) identify Azusa's electric distribution facilities located within the High Fire Threat District and immediately adjacent to the High Fire Threat District, (2) minimizing the source of ignitions from ALW electrical equipment, (3) resiliency of the electrical grid.	Updated. Objectives section revised to described three objectives. Updated objectives are more relevant to wildfire mitigation plan.
C	Program Descriptions	Good. Undergrounding is the ALWs primary wildfire prevention strategy.	Good.
D	Evaluation Metrics	Good. Move into its own section with PUC 8387 (b)(2)(E). I recommend explaining how the local fires ignited by Azusa equipment differs from the wildfires ignited by Azusa equipment metric.	Updated. Moved into its own section

TO: HIEN VUONG

SUBJECT: INDEPENDENT EVALUATOR'S REPORT OF AZUSA LIGHT AND WATER 2023 WILDFIRE MITIGATION PLAN

---

E	Lessons learned, metrics application	Needs more information. Include metric data collected since 2019 and describe why this indicates these metrics are useful for informing on the effectiveness of the plan.	Updated. Added a short description of the impacts that the metrics have on the WMP and ALW's wildfire prevention programs.
F	Protocols for reclosers, de-energization, and PSPS mitigation	Good. ALW does not set circuits for automatic reclosing schemes in the High Fire Threat District.	Good. ALW does not set circuits for automatic reclosing schemes in the High Fire Threat District.
G	Community Notification	Good.	Good.
H	Vegetation Management	Good.	Good.
I	Infrastructure Inspections	Good. Include description of infrared inspections of equipment, aboveground transformers in High Fire Threat Fire District.	Good.
J(i)	Grid Design, construction, and operation risks	Good. Describe if there is any aboveground electrical equipment or overhead wires next to the High Fire Threat District that is in location where there is sufficient vegetation to sustain a fire.	Good.

TO: HIEN VUONG

SUBJECT: INDEPENDENT EVALUATOR'S REPORT OF AZUSA LIGHT AND WATER 2023 WILDFIRE MITIGATION PLAN

---

J(ii)	Vegetation, topographic, and climate risks	Good. Describe weather-related risk-drivers for the Azusa area, i.e., Santa Ana winds, Red Flag Conditions for long periods of high temps/low humidities.	Good.
K	Identification and expansion of higher wildfire threat areas	Good.	Good.
L	Identify enterprise-wide risk	Needs more information. Describe ALW's process for identifying enterprise-wide risk.	Updated. ALW does not use its own risk assessment system. It uses the risk assessment process described in the City's Local Hazard Mitigation Plan.
M	Restoration of Service	Needs more information. Describe ALW's process for restoring power after PSPS or after an outage if the procedure is the same.	Updated. Describes the ALW's process for restoration of service.
N(i)	Monitoring and auditing of WMPs	Good. Include the annual WMP audit report (CPUC system-wide audit), describe the nature of the audit and the results.	Good. Audit results included. Based on conversations with ALW staff, ALW addressed all of the items identified in the CPUC audit.

N(ii)	Identifying and correcting deficiencies	Good.	Good.
N(iii)	Monitoring asset inspections	Needs more information. Add a description of how the ALW monitors and audits inspections, e.g., ride-a-longs, quality control inspections/re-inspections, etc.	Needs more information. Add a description of how ALW monitors and audits inspections, e.g., ride-a-longs, quality control inspections/re-inspections, etc.

Table 2. ALW-Specific WSAB Recommendations

WSAB 2023 POU WMP Guidance Advisory Opinion	Description of the WSAB Recommendation	Initial Review Comment	Final Review Comment
None	None	The WSAB had no recommendations, revisions, or corrections for the ALW WMP in their most recent guidance document.	The WSAB had no recommendations, revisions, or corrections for the ALW WMP in their most recent guidance document.

Table 3. ALW WMP Comments

Location	Page	Initial Review Comment	Final Review Comment
Exhibit C	19	No Comments	Text on the map legend was translated to gibberish.