EXHIBIT 1

City of Glendale
Glendale Water & Power

Wildfire Mitigation Plan

Updated June 2023

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1. Document Information

Effective Date	June 06, 2023
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2. Change Management

Version	*Description of Change*	*Date*
0	Initial version	01/15/2019
0.1	Includes Dan Scorza comments; language from Water, GPD, ISD; addition of Committee; add Draft watermark; add Executive Summary	02/20/2019
0.2	Incorporate feedback from March 27, 2019 review meeting, April 25, 2019 meeting with Jeremy Cawn, emailed feedback from Committee, Gordon Arnold updates for ISD	05/30/2019 07/03/2019 10/02/2019 10/18/2019
0.3	Incorporate feedback from Navigant, Atineh (public outreach)	11/05/2019
0.4	Updates for VMP, incorporate feedback from Navigant	11/20/2019
1.0	Updates to add Navigant report and minor changes per Navigant; accept all changes and finalize report	11/27/2019
Updated 2021	Updates to pages 4,16,17, 20,26, 30, 31and 40	02/17/2021
Updated 2022	Added new sections with general information about GWP and basic statistics on pgs. 3 through 7. Updated pages. 9, 17, 20, 28	06/09/2022
Updated 2023	Comprehensive updates made to the document. Updates to table of contents & pages 3,4,5,6,7,16,17,18,20,21,22,23,24,25 26,30, 32,34,35,38,40,46,52,53	04/12/2023

3. Utility Overview and Context

Glendale Water & Power	[POU]	
GWP Service Territory Size	[30.58] square miles	
Owned Assets	☑Transmission ☑Distribution ☑Generation	
Number of Customers Served	[89712] customer accounts	
Population Within Service Territory	[199357] people	
Customer Class Makeup	*Number of Accounts*	*Share of Total Load (MWh)*
	[85.19] % Residential; [0.02] % Government; [0] % Agricultural; [14.57] % Small/Medium Business; [0.22] % Commercial/Industrial	[37.95] % Residential; [0.93] % Government; [0] % Agricultural; [31.30] % Small/Medium Business; [29.82]% Commercial/Industrial
GWP Service Territory Location/Topography[1]	[0] % Agriculture [1.49] % Barren/Other [0] % Conifer Forest [0] % Conifer Woodland [0.03] % Desert [0.14] % Hardwood Forest [2.98] % Hardwood Woodland [0.86] % Herbaceous [35.95] % Shrub [58.29] % Urban [0.26]% Water	
GWP Service Territory Wildland Urban Interface	[40.81] % Wildland Urban Interface;[2] [7.76] % Wildland Urban Intermix;	
Percent of Service Territory in CPUC High Fire	Tier 2: [48.09] % Tier 3: [13.60]%	

[1] This data is based on the California Department of Forestry and Fire Protection, California Multi-Source Vegetation Layer Map, depicting WHR13 Types (Wildlife Habitat Relationship classes grouped into 13 major land cover types) *available at*: https://www.arcgis.com/home/item.html?id=b7ec5d68d8114b1fb2bfbf4665989eb3.
[2] This data is based on the definitions and maps maintained by the United States Department of Agriculture, https://www.fs.usda.gov/Internet/FSE_DOCUMENTS/fsbdev3_053107.pdf and https://www.fs.fed.us/nrs/pubs/rmap/rmap_nrs8.pdf

<table>
<tr><td>Threat Districts (based on total area)</td><td colspan="2"></td></tr>
<tr><td>Prevailing Wind Directions & Speeds by Season</td><td colspan="2">Please refer the link below to California, Burbank Airport
https://wrcc.dri.edu/Climate/comp_table_show.php?stype=wind_dir_avg
Wind is Southerly, except in January, when fire danger is low, it is ESE</td></tr>
<tr><td rowspan="2">Miles of Owned/Controlled Lines* Underground and/or Overhead</td><td>In Service Territory</td><td>Outside Service Territory</td></tr>
<tr><td>Overhead Dist.: [247.31] miles
Overhead Trans. [28.13] miles
Underground : [283.8] miles</td><td>Overhead Dist.: [0] miles
Overhead Trans.: [0] miles
Underground: [0] miles</td></tr>
<tr><td rowspan="4">Percent of Owned/Controlled Lines* in CPUC High Fire Threat Districts</td><td colspan="2">Overhead Distribution Lines as % of Total Distribution System
(Inside and Outside Service Territory)</td></tr>
<tr><td colspan="2">Tier 2: [21.73] %, 53.75 miles
Tier 3: [5.54]%, 13.71 miles</td></tr>
<tr><td colspan="2">Overhead Transmission Lines as % of Total Transmission System
(Inside and Outside Service Territory)</td></tr>
<tr><td colspan="2">Tier 2: [19.54] %, 5.57 miles
Tier 3: [5.72] %, 1.63 miles</td></tr>
<tr><td rowspan="2">Number of Owned Poles**</td><td>In Service Territory</td><td>Outside Service Territory</td></tr>
<tr><td>Wooden: [14,660]
Steel: [146]
Composite: [0] Total 14,806</td><td>Wooden: [0]
Steel: [0]
Composite: [0]</td></tr>
<tr><td>Have GWP customers ever lost service due to an IOU PSPS event?</td><td colspan="2">☐ Yes ☑ No</td></tr>
<tr><td>Have GWP Customers ever been notified of a potential loss of service to due to a forecasted IOU PSPS event?</td><td colspan="2">☐ Yes ☑ No</td></tr>
<tr><td>Has GWP developed protocols to pre-emptively shut off electricity in response to elevated wildfire risks?</td><td colspan="2">☑ Yes ☐ No
There is a protocol to pre-emptively shut off the power to Bel Aire – Montrose Transmission line during elevated fire danger weather, but it does not result in loss of power of any customers. The elevated fire danger is based on the Red Flag Warning by the National Weather Service (NWS).
Below is the data related to pre-emptive shut-offs for calendar year 2021:
Number of shut-off events: [7] on 1/14, 1/21, 10/13, 10/14, 11/22, 11/24
Customer Accounts that lost service for >10 minutes: [0] Zero
For prior response, average duration before service restored: [0] Zero
Note: No customers lost power during pre-emptive shutoffs, the transmission line that was shut off does not have any direct customer feed, it provided system redundancy and rigidity.</td></tr>
</table>

4. Executive Summary

The City of Glendale and the Glendale Water and Power (GWP) Department recognize that the potential loss of property and human life posed by wildfires is a growing concern. On September 21, 2018, the state of California passed Senate Bill 901 (SB 901) to provide guidance to electrical utilities in mitigating the risk of wildfires ignited by the utilities' electrical assets, and to mandate electric utilities develop a plan to mitigate against wildfires. This plan establishes methods and procedures aligned with GO – 95, that are used to construct, maintain, and operate GWP's electrical lines and equipment to minimize the risk of wildfire posed by its infrastructure. This plan in accordance with California Public Utilities Code (CPUC) Section 8387 subpart (b) will require each local publicly owned electric utility and electrical corporative to prepare and present a wildfire mitigation plan (WMP) to its governing board addressing the elements listed in subpart (b) (2). This plan will also cover measures of effectiveness to inform future improvements to specific programs and strategies.

GWP's Wildfire Mitigation Plan (Plan) details its two-pronged approach to mitigate wildfires, in which a "wildfire" requires two elements: ignition and spread.

WILDFIRE = IGNITION x SPREAD

If only one of these two elements is present, a wildfire does not result. Both ignition (a spark or other source of the initial fire) and spread (the fire is free-burning) must be present in order for a wildfire to occur.

GWP's wildfire mitigation efforts focus on 1) limiting the likelihood of ignition of localized fires from its assets and equipment, and 2) limiting the spread of localized fires into a wildfire. It is impossible to eliminate wildfires, but by reducing the likelihood of igniting fires and by containing any fires that do start, GWP's approach can significantly mitigate the risk of igniting and spreading wildfires while complying with SB 901 and other, related mandates.

To minimize the likelihood of ignition, GWP has adopted a risk-based methodology to prioritize mitigation of electrical assets that could ignite a wildfire in high-wildfire danger service areas of the City of Glendale.

Methodology for calculating high-wildfire danger areas in the City of Glendale

Identify the areas of the City of Glendale that are at highest risk of igniting and spreading wildfires.

- GWP has elected to use Cal Fire's Fire Threat maps, which show that approximately 62% of the City's total area is at an elevated risk of wildfires. The Glendale Fire Department has conducted its own wildfire risk assessment that validates the Cal Fire Threat maps.

- Of the areas identified on these Fire Threat maps that are at an elevated risk of wildfires (namely, Tier 2 and Tier 3 zones), eliminate all areas where GWP has no electrical assets that could potentially ignite a wildfire. Where there are no GWP electrical assets, no GWP-initiated ignition is possible and no further wildfire mitigation is prioritized at this time.
- Of the areas that remain, eliminate the areas where electrical assets reside within 100 feet of a private structure. The City of Glendale's Fire Department's robust Vegetation Management Program (VMP) requires homeowners to clear or manage hazardous vegetation within 100 feet of structures, reducing the intensity and rate of spread of wildfires. Where the VMP limits the rate and intensity of spread, no further wildfire mitigation is currently proposed.
- **By applying this methodology, GWP has developed a distilled map** of the locations of GWP electrical assets requiring further mitigation. The land area under these electrical assets comprises approximately 0.47% of the City's total area. In terms of circuit miles, there are 9.55 miles of high voltage overhead conductors in Tier 2 area and 3.37 miles of conductors in Tier 3 area. The total liable overhead circuit length is 12.92 miles. Compared to the total GWP high voltage circuit miles, the liable miles comprise 4.6 %.

Appropriate Mitigating Effort

Determine the appropriate mitigating effort(s) at each of these remaining assets to reduce the risk of igniting or spreading wildfires, which may include one or more of the following potential solutions:

- Enhanced vegetation management practices.
- Expanded asset inspections
- Fast-acting automatic protection schemes.
- Use of non-wood poles; Conduct advanced (radiographic) pole inspections.
- Increased wind loading calculation for poles in threat areas to increase integrity.
- Wider spacing on cross-arms; Modified construction standards in the Fire Treat Zone.
- Stronger, composite material cross arms. Cross-arms made of stronger, composite material.
- The use of vibration dampers to reduce conductor abrasion and fatigue from vibration caused by wind. Vibration dampers are usually attached to the conductor near insulators.
- Application of fire-resistant wraps to prevent wood poles.
- Applying new mitigation technologies to reduce the potential for the wildfire ignitions. Such as, fire monitoring cameras to be installed, SCADA enabled reclosers, advanced sensors/protection system.
- Replacing mineral oil filled transformers with less flammable new ester fluid transformers.
- Increased use for covered conductor to reduce contact from objects and wire-to-wire ignitions.

- Conductor-spacing devices to minimize the likelihood of wire slapping.
- Insulated “tree wire”.
- 24/7 monitoring of weather station data and HD cameras.
- Move overhead conductors and assets underground. Moving forward with our program to install 1107 feet of underground distribution lines in High Fire Threat Districts (Tier 2 & Tier 3)—and hardening additional miles with covered conductor or line removal using a risk-ranked approach to prioritize work
- Modify recloser settings during high-risk periods to minimize the likelihood of inadvertently reclosing in a high-wildfire risk area. Block reclosing and increase relay sensitivity on all feeder lines in the Tier 2 and Tier 3 HFTD (High fire threat district) during RFW (Red flag warnings) events.
- Proactive de-energization during high-wildfire risk periods.
- Animal intrusion covers
- Replacing expulsion fuses with Fuse Saver, use concealed Lighting Arrestors.
- Visual inspection and infrared thermography of distribution substations.
- Utilization of Public Safety Power Shutoff (PSPS) protocols as a safety of last resort that results in more targeted and smaller PSPS events.

The specific mitigating measure will depend upon the specific situation. GWP staff will evaluate each GWP asset (or logical group of assets) requiring further mitigation and evaluate all solutions based upon criteria like up-front and life-cycle costs, effectiveness in reducing risk, longevity, impact to reliability and serviceability, and alignment with long-term utility and City goals and priorities.

GWP metrics will evaluate the effectiveness of this Plan and of its wildfire mitigation, making adjustments to priorities and funding as appropriate to ensure continued successful mitigation.

5. Definitions

Catastrophic Fire	See also Wildfire. A wildland or wildland urban interface fire with a fast moving front, extending over a large area (300+ acres) and/or highly destructive to lives, property or natural resources.[3]
Hazardous Vegetation	Refuse, grass, weeds, shrubs, trees, or other vegetation which are in such condition and location, or by the unique characteristics of a species, as to provide a ready fuel supply to augment the spread or intensity of a fire.[4]
POU	**Publicly-Owned Utilities** are subject to local public control and regulation. POUs are organized in various forms including municipal districts, city departments, irrigation districts, or rural cooperatives. Municipal districts may include territories outside city limits or may not even serve the entire city. Cooperatives are owned by the customers they serve usually in rural areas. There are more than 40 POUs in the state that account for approximately a quarter of electricity supply in California. Most POUs are smaller than IOUs in the electricity sales and the number of customer accounts.[5]
Red Flag Warning	The National Weather Service issues Red Flag Warnings to alert fire departments of the onset, or possible onset, of critical weather and dry conditions that could lead to rapid or dramatic increases in wildfire activity.[6]
Wildfire	See also Catastrophic Fire. Any *free-burning* vegetative fire that initiates from an unplanned *ignition*, whether natural or human-caused, where the management objective is full suppression.[7] GWP considers both ignition and spread as required elements of a Wildfire.
VMP	The City of Glendale's **Vegetation Management Program** was developed to ensure there is adequate defensible space in the wildland-urban interface areas between the open space and homes in its hillside and canyon communities. Activities include annual inspections and review/permitting of landscape and fuel modification plans for properties in the High Fire Hazard Area.[8]
Wildland	Uncultivated land, other than fallow, neglected or maintained for such purposes as wood or range-forage production, wildlife, recreation, protective watershed cover, or wilderness.

Uncontrolled Fire	The term "uncontrolled fire," as used in this division, means any fire which threatens to destroy life, property, or resources and either: (1) is unattended by any person; (2) is attended by persons unable to prevent its unrestricted spread; or (3) is burning with such velocity or intensity that it could not be readily controlled with those ordinary tools available to private persons at the fire scene.

[3] California Office of Emergency Services. https://www.caloes.ca.gov/FireRescueSite/Documents/20040405-BRC-Final%20Report%20-%20Part%205%20of%205.pdf
4 Glendale Building and Safety Code (Sec. 4906.1.2). https://www.glendaleca.gov/home/showdocument?id=35639
[5]California Energy Commission. https://ww2.energy.ca.gov/pou_reporting/background/difference_pou_iou.html
[6] California Department of Forestry and Fire Protection. https://www.fire.ca.gov/programs/communications/red-flag-warnings-fire-weather-watches/
[7] California State Hazard Mitigation Plan. https://www.caloes.ca.gov/HazardMitigationSite/Documents/011-2018%20SHMP_FINAL_Ch%208.pdf
[8] City of Glendale Fire Department. https://www.glendaleca.gov/government/departments/fire-department/fire-prevention-environmental-management/vegetation-management-and-weed-abatement

6. Overview

The City of Glendale's Water & Power department (GWP) has developed this wildfire mitigation plan (Plan) to protect City customers, employees, wildlife and assets against the potential dangers and costs of damage incurred as a result of wildfires inadvertently ignited by GWP electrical assets or equipment. Also, to protect the above-mentioned entities from a wildfire started by a source other than GWP electrical equipment, for example, a campfire. As requirements change and condition reassessments are performed, this Plan will be updated to fully comply with updated needs.

Legislative and Regulatory Context

Senate Bill (SB) 1028, which passed into law in 2016, SB 901, which passed into law in 2018, and Assembly Bill (AB) 1054, which passed into law in 2019, intend to strengthen wildfire mitigation through oversight of public utilities under the jurisdiction of the California Public Utilities Commission (CPUC). Although the City of Glendale does not fall under the authority of the CPUC, it is likely that the requirements proposed by these Senate bills will eventually apply to the City.

- Per SB 901, all Publicly-Owned Utilities (POUs) are required to adopt a Wildfire Mitigation Plan (WMP), which shall be reviewed by an independent third-party evaluator.
- Per Assembly Bill (AB) 2911, GWP may access property as necessary, regardless of land ownership or express permission, to prune trees to maintain clearances pursuant to Section 4293 of CA Public Resources Code.
- Per AB 1054, POUs must annually submit a WMP to the California Wildfire Safety Advisory Board, which will review the Plan and provide recommendations on mitigating wildfire risk.

This document outlines the City's approach to comply with state law, as well as Public Utilities Code (PUC) section 8387 for POUs to have a wildfire mitigation in place and update the plan annually.

In addition, the CPUC has published several General Orders (GOs) for overhead line design, construction, maintenance, and inspections, the application of which is intended to ensure adequate electrical service and to secure safety to persons engaged in the construction, maintenance, operation, or use of overhead lines and to the public in general. GWP shall meet or exceed the recommendations and requirements within these GOs, including GO 95 and GO 165.

Compliance

The GWP General Manager or his delegate shall support and administer this Plan to include monitoring and auditing the implementation of the Plan. The Plan shall be updated, reviewed, and approved by the General Manager of GWP on an annual basis, or as required by law. This periodic review shall ensure that the Plan is updated to comply with all state regulations and City regulations and requirements. The General Manager may elect to summarize and review the Plan with the City Manager and/or present updates to the GWP Commission and/or City Council to obtain required approvals.

Plan Structure

As prescribed by the Plan, GWP staff shall construct, maintain, and operate its electrical system assets to minimize the likelihood of catastrophic wildfires posed by the electrical system and equipment. The Plan is comprised of the following elements:

- **Stakeholders**. City personnel and contractors who are responsible for maintaining, updating, approving, and executing this Plan.
- **Objectives**. Frame the Plan's objectives and the risk-based approach. See Section J for additional details on the approach.
- **Preventative Strategies and Programs**. To accomplish these Objectives, GWP shall pursue the following preventative strategies and programs.
  - **Capital Project**s. GWP staff shall tailor its resource plans to upgrade, enhance, and reinforce its electrical infrastructure.
  - **Operations & Maintenance (O&M) Efforts**. Staff shall also initiate contracts to address on-going, non-capital priorities, including vegetation management, system inspections, and maintenance and support of this Plan.
  - **Wildfire Mitigation Budget Measures**. Staff shall also allocate and initiate the approval of the budget for Capital projects and Maintenance work.
  - **Operational Practices**. GWP shall continue to de-energize transmission lines and distribution feeders, disable reclosers, and take any other operational steps necessary to ensure public safety during high-risk scenarios.
- **Metrics**. To ensure the protocols and steps taken in this Plan are effective, GWP shall establish metrics that measure and quantify the elements of this Plan.
- **Metrics Feedback**. GWP shall evaluate the Plan's performance and adjust this Plan to ensure these goals are achieved.
- **Operational Practices**. Operational practices shall aim to mitigate the risk of causing catastrophic wildfires.
- **Customer Outreach**. GWP shall develop a process that ensures customers are informed and aware of the potential for emergency power cutoffs.
- **Vegetation Management**. Tree trimming and related mitigating actions are intended to prevent inadvertent vegetation contacts to conductors and to minimize the spread of fires.
- **System Inspections**. Periodic and on-going inspections of GWP equipment and infrastructure helps identify failing equipment that can lead to fire ignition.
- **Wildfire Risks and Drivers**. Describe wildfire risks to the electric utility and drivers of those risks.
- **Wildfire Zones**. GWP has leveraged the tiered zones developed and mapped by the California Department of Forestry and Fire Protection (Cal Fire) to identify electric utility dangers that have historically caused the most wildfire damage, as measured in acres.
- **Enterprise-Wide Risks**. Wildfires pose a risk not only to the energy delivery function of the electric utility, but also to the energy supply function, the water utility, and to various City functions, including Police, Fire, and Public Works.
- **Restoration**. Continuing its current practice, in the event of customer outages, GWP shall restore customers as safely and as quickly as possible.

7. Stakeholders

This Plan is subject to direct oversight by the City of Glendale City Council, it is prioritized at the direction of the General Manager, and it is maintained, updated, and implemented by GWP personnel.

City Council

As the governing board overseeing GWP's operation, Glendale's elected, 5-member City Council approves funding and directs the City Manager, or her designee, to implement the key elements of this Plan. SB 901 requires the governing board (i.e., the Glendale City Council) to determine whether any portion of the geographical area where the utility's overhead electrical lines and equipment are located has a significant risk of catastrophic wildfire resulting from those electrical lines and equipment. If so, GWP must, at an interval determined by City Council, present to City Council for approval those wildfire mitigation measures the utility intends to undertake to minimize the risk of its overhead electrical lines and equipment causing a catastrophic wildfire.

City Manager

The City Manager serves as the chief executive overseeing City-wide operations, including GWP, Fire, Police, Public Works, Parks, Libraries, and other departments. The City Manager delegates oversight and tactical implementation of this Plan to the General Manager of GWP, and maintains responsibility for promoting City-wide resources to implement and support this Plan as approved by City Council.

General Manager

The GWP General Manager maintains responsibility for, and provides management commitment to, the execution of this Plan, including coordination with other department heads, with tactical and day-to-day implementation responsibilities delegated to the roles below. The General Manager shall support the Plan's implementation as developed by GWP management and staff.

Chief Assistant General Manager/Assistant General Manager

The GWP Electric division shall:

- Facilitate coordination between the General Manager and other GWP Electric functions.
- Coordinate activities between Electric Engineering and Electric Construction and Operations sections.
- Coordinate directly with the Glendale Fire Department and other City Departments, as necessary, during emergency situations, including during activation of the City's Emergency Operations Center (EOC) and in implementation of the Citywide Emergency Response Plans.
- Justify and request sufficient funding to support this Plan.
- Commit management support for the Plan.

Electrical Services Administrator

The GWP Electric Engineering section shall:

- Hold primary responsibility for maintenance of this Plan, which includes the periodic review and substantive updates. Make appropriate updates to this Plan as Cal Fire modifies the zone boundaries or makes other fundamental changes that impact this Plan.
- Coordinate with Electric Construction and Operations to provide input to the capital and O&M budgeting process in support of this Plan, including capital funds to fortify infrastructure and O&M funds for inspections and vegetation management.
- Track GWP assets within the physical boundaries of the Cal Fire zones and their respective mitigation solution(s), as applicable.
- Design and engineer enhancements to GWP equipment and infrastructure with the intent of preventing and mitigating the start and spread of wildfires by GWP assets.
- Coordinate with Dispatch to develop and document specific operational practices to be implemented during pre-determined "high wildfire danger" periods.
- Develop switching procedures and other mitigating steps on an operational basis with the aim of keeping customers energized.
- Delegate implementation of these responsibilities as appropriate.

Electrical Superintendent

The GWP Electric Construction and Operations section shall:

- Coordinate vegetation management activities in accordance with this Plan and California regulatory requirements, including oversight of contractors and the vegetation management budget.
- Coordinate with Electric Engineering to provide input to the capital and O&M budgeting process in support of this Plan, including capital funds to fortify infrastructure and O&M funds for inspections and vegetation management.
- Implement the infrastructure upgrades and enhancements as engineered by Electric Engineering in support of this Plan.
- Delegate implementation of these responsibilities as appropriate.

Assistant General Manager – Power Management

The GWP Power Marketing and Dispatch sections shall:

- Coordinate and procure replacement energy in response to planned and unplanned outages of the critical transmission corridors that provide up to approximately 200 MW of incoming energy to the City of Glendale to meet load.
- Declare and initiate rolling blackouts to customers as a preemptive action to minimize the likelihood of sparking wildfires, or as a response to the loss of energy supply that results in an imbalance between energy supply and load.
- Coordinate with Electric Engineering to develop and document specific operational practices to be implemented during pre-determined "high wildfire danger" periods.
- Delegate implementation of these responsibilities as appropriate.

GWP Legislative Analyst

The function of the GWP Legislative Analyst can be filled at any level and shall:

- Monitor legislative developments and requirements at the local, state, and federal level.
- Communicate these requirements to GWP Stakeholders and the Wildfire Mitigation Committee.
- Facilitate coordination among City department representatives in the support and implementation of this Plan.

Public Benefits Charge Marketing Manager

The Marketing, Communications, and Outreach office of GWP shall:

- Execute education and outreach on wildfire prevention and strategy.
- Execute communication and collaboration with customers.
- Coordinate all outgoing alerts and messages to residential and business customers.
- Develop and broadcast messages as necessary via social media, the City's website, and the Reverse 911 calling system.
- Conduct media outreach.
- Coordinate messaging with GWP employees.
- Coordinate with GWP's Customer Service Call Center.
- Coordinate with the City's Public Information Office (PIO), Glendale Police Department PIO, and Glendale Fire Department PIO.
- Maintain a website devoted to wildfire and tree safety and public safety shut offs.
- Develop, distribute, and maintain all collateral items related to wildfire and tree safety and public safety shut offs.

Independent Third-Party Evaluator

As mandated by SB 901, this Plan shall be reviewed by an approved, independent, third-party evaluator to review and assess the comprehensiveness of, and GWP's compliance with, this Plan. The evaluator will also conduct a safety culture assessment of GWP. GWP shall engage the independent contractor annually, or as required by law, once the list of approved, qualified evaluators is released by the Office of Planning and Research's *Commission on Catastrophic Wildfire Cost and Recovery*.

The specific requirements for the independent third-party evaluator are mandated by SB-901.

Wildfire Mitigation Committee

To maximize the effectiveness of this Plan, representatives from multiple, key City departments meet quarterly, or as deemed necessary by the Committee, to review the performance of this Plan, discuss new and existing legislative requirements related to wildfire mitigation, validate the risk-based approach, and review and update this Plan in response to the Plan's performance and regulatory updates.

Attendees at these meetings may vary; representatives, or their delegates, from the following areas comprise the core of the cross-functional Committee:

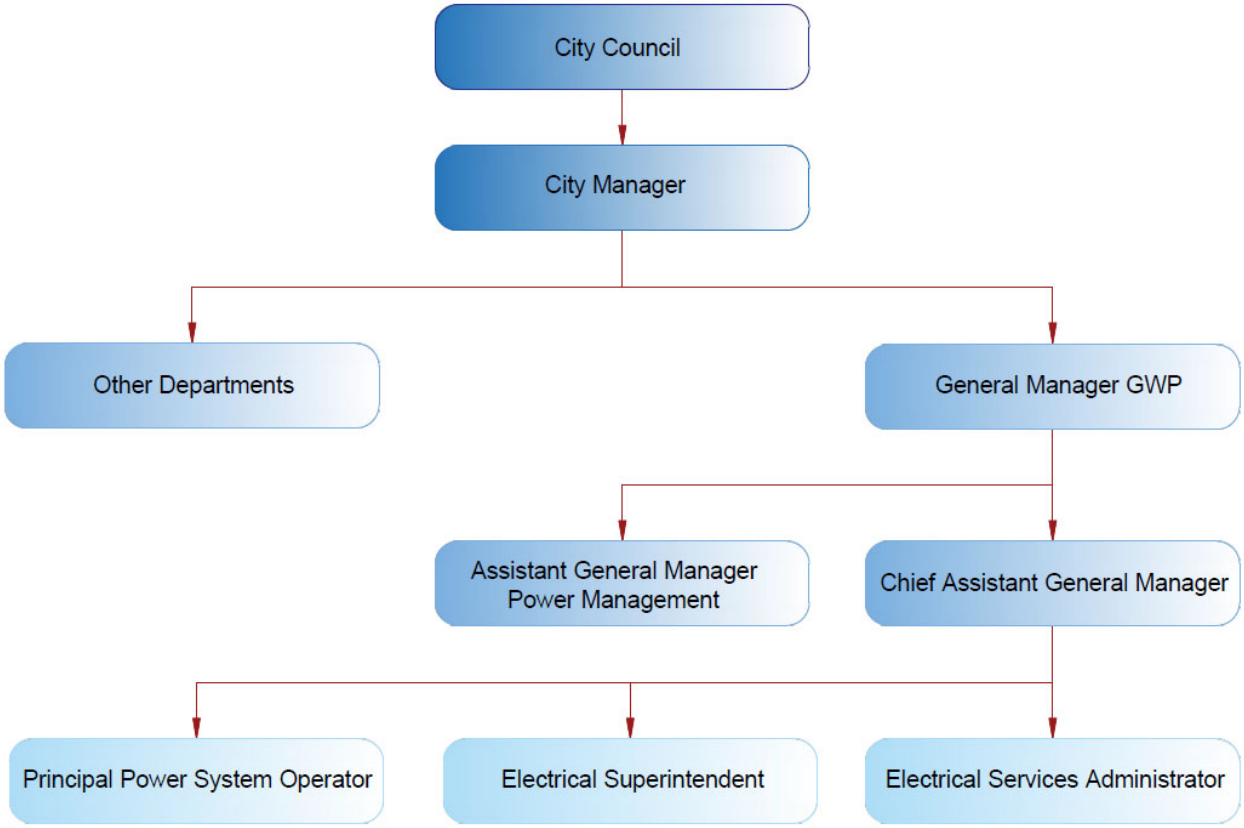
- GWP Electric Engineering
- GWP Legislative Analyst
- GWP Electric Operations & Construction
- GWP System Dispatch
- GWP Mapping & Records
- GWP Marketing & Communications
- GWP Water
- City of Glendale Fire Department
- City of Glendale Legal Department
- City of Glendale Public Works Maintenance Services (Forestry)

GWP staff acknowledge staffing deficiencies where additional, permanent (or long-term contracted[9]) staff is necessary to implement and maintain the elements of this Plan.
The staffing deficiencies reflect permanent increases in workload, including:

- Increased oversight of crews responsible for clearing trees and hazardous vegetation. There are currently two FTEs allocated to monitoring, overseeing, and directing contracted tree-trimming crews. Additional staff time is required to accommodate the increased level of tree-trimming activities and the added responsibility of clearing hazardous vegetation throughout Tier 2 and Tier 3 zones.
- Additional engineering resources to investigate, detail, engineer, and design the replacement of equipment consistent with this Plan. Replacement of overhead conductors, splices, transformers, capacitor banks, and other equipment will require engineering expertise above and beyond the current workload, as the existing assets would remain in use until replaced during life-cycle replacement.
- Additional field and real-time personnel will be needed to implement, maintain, and use the new equipment, products, and solutions that are implemented as mitigating measures. These crews are already fully subscribed and lack the capacity for permanent increases in work throughput.
- Maintaining, troubleshooting, and monitoring real-time weather or fire-detection equipment and data and systems.

[9] Contracted resources may be utilized to supplement GWP efforts – for example, to identify hazardous vegetation clearing needs.

Utility Governance Structure



8. Objectives of Wildfire Mitigation Plan

Primary Objective

The primary objective of this plan is to reduce and eliminate the probability of GWP's Electric infrastructure as a contributing factor for the ignition of wildfire(s). Since the adoption of SB 901 (Dodd) in 2018, GWP has been continuously evaluating and updating its WMP to effectively address the provisions set by the plan and to be consistent with state, and local laws and regulations. GWP understands the threat wildfires impose to the electric grid and is effectively Working on making cost-effective inspection and maintenance programs to improve the resiliency of the grid. The provisions set forth below detail the preventative strategies GWP is perusing to limit potential fire ignition during elevated weather conditions.

The goal of this Plan is to establish a framework to:

Engineer, construct, maintain, and operate the GWP electric transmission and distribution system in a manner intended to minimize the risk of catastrophic wildfire caused by electrical lines and equipment.

Secondary objectives

- Improving the resiliency of GWP's energy delivery infrastructure. GWP aims to continually assess new industry practices and technologies designed to reduce the likelihood of a disruption in service and improve the restoration of service. Due to global warming and gradual climate change, there is a prognostication of an increase in wind speeds. High wind and gust speeds can inflict significant damage to GWP's overhead power infrastructure. To mitigate this rise in wind speed, GWP is conducting more stringent pole inspections, including invasive testing. Also, GWP contracted with a company that utilizes drones for the inspection of power facilities and vegetation management, using infrared and LIDAR imaging. Higher winds imply that a wider zone of vegetation clearing is required to diminish the possibility of trees, tree limbs and other vegetation debris contacting overhead equipment. GWP is taking extra measures and trims the vegetation from the communication level to the top of the pole.
- Climate related increase in temperature results in higher peak power consumption. This elevated peak loading of infrastructure can lead to overloaded lines and transformers, which in turn may become a source of fire. GWP is replacing transformers that are close to their 90% loading limits.
- Improving the resiliency of GWP's energy generation and delivery infrastructure in case of a wildfire that has not been ignited by GWP assets. Wildfires can be started by various sources, not just electrical equipment. For example, improperly controlled camp fires, lightning, overheated construction machinery coming into contact with dry brush, etc. To assess the treat of wildfire to GWP Transmission and Distribution network, various scenarios are reviewed by GWP Wildfire Mitigation Committee considering different geographic points of origin of ignition and the direction of the prevailing winds.

- Implementing Enhanced Powerline Safety Settings (EPSS) to reduce ignitions by adjusting the sensitivity of our equipment to automatically turn off power faster if the system detects a problem. Public Safety Power Shutoffs (PSPS) and EPSS have significant safety and wildfire risk benefits. It is intended to reduce the PSPS and EPSS customer impacts through the implementation of updated, data driven PSPS protocols as well as optimizing EPSS settings to reduce outage potential and having resources available to reduce the time and impact of outages.

- In addition, to mitigate against PSPS impacts, GWP will be continuing to install sectionalization devices/reclosers as well as performing system hardening work and operating temporary distribution.

- Additionally, GWP Wildfire Mitigation Plan is intended to improve the situational awareness by refining our models, such as weather models, continuing to install weather cameras and high-definition cameras that provide data that we can both use and share with first responders and local governments.
  To reduce the risk of spread of wildfire, the Glendale Fire Department will be using multiple cameras and weather stations at strategic locations to monitor conditions and take immediate action. Cameras are found at:

  Mt. Lukens 1&2
  https://alertca.live/cam-console/2181
  Verdugo Peak 1&2
  https://alertca.live/cam-console/2477
  Mt. Lee North
  https://alertca.live/cam-console/2176

  Weather Stations area located at:
  https://www.weather.gov/lox/fwmV3

- Measuring the effectiveness of the mitigating measures described in the Plan. Where a particular action, program, or protocol is determined to be unnecessary or ineffective, GWP will aim to assess whether a modification or replacement is merited. This Plan will also help determine whether more cost-effective measures could produce the same, or better, results.

- Complying with all local, state, and federal regulations related to wildfire mitigation.

9. Preventative Strategies and Programs

GWP recognizes and acknowledges the impact of dynamic climate change in California. Direct impacts include altered weather patterns, extended summers, and dryer seasons that increase the risk of uncontrolled wildfires, especially during windy periods (e.g., Santa Ana winds). California wildfires have been getting more intense, more destructive, and more deadly in recent years, where 2018 was the deadliest and most destructive wildfire season in California on record. 14 of the 20 largest wildfires since 1932 have occurred in the last 20 years: the size, number, and devastating impacts of wildfires are expected to continue to increase. In developing and implementing this Plan in light of these facts, GWP intends to use proven technology, work practices, and programs to enhance the performance and safety of its equipment and infrastructure to minimize the risk of causing or spreading wildfires. To accomplish this, GWP shall prioritize its:

- **Capital investments** in system hardening.
- **Operations and maintenance (O&M)** expenditures on vegetation management, system inspections, and equipment maintenance.
- **Wildfire Mitigation Budget Measure** and allocation of funds to initiate the mitigation efforts.
- **Operational practices** on disabling reclosers, proactive de-energization, and public outreach, as well as leveraging City programs that are consistent with this Plan (e.g., VMP).

Capital Projects

GWP's capital funding includes plans to upgrade, enhance, and reinforce its electrical infrastructure to minimize the risk of its electrical system causing or spreading catastrophic wildfires. Mitigation efforts will be grouped into manageable, logical, geographically co-located collections of assets to be mitigated as a project for ease of management. Specific mitigating activities associated with wildfire mitigation will be evaluated based upon the following criteria (additional criteria may be added, as appropriate):

- **Existing Mitigation**. The City of Glendale, including GWP and the Glendale Fire Department, has already implemented wildfire mitigation steps throughout many parts of the City. For a given set of assets, if existing mitigation measures already provide a sufficient level of protection against ignition or spread, then other assets without existing mitigation would be addressed first.
- **Time Commitment**. Some mitigation projects can be completed quickly, while other projects require a significant investment of time, perhaps due to licensing or permitting issues.
- **Cost**. Total investment (and on-going operating and maintenance costs) to mitigate each project will be considered, as different solutions can have different costs for a relatively equivalent outcome. For example, moving assets underground often has the highest cost, so if a lower-cost alternative can provide an equivalent level of mitigation, then selecting a higher-cost solution must provide significant advantages in some other criterion.

Engineering Studies will refine the mitigation plan. The most appropriate engineering solution will be determined by conducting studies that incorporate all the above elements (existing mitigation, timeframe, and cost to implement and maintain) to the specific engineering challenges and issues that must be overcome. Depending upon the outcome of these detailed engineering studies to determine corrective actions, mitigating activities may include:

- Installation of insulated overhead **conductors** (i.e., "tree wire") in those areas where conductor contacts are likely to initiate a wildfire; as of May 2023, tree wires are purchased, and plans are being developed to convert a small stretch of overhead conductors that have been identified as requiring this mitigation. Increasing the **spacing** between conductors, as clearance requirements and easements allow, can also reduce the likelihood of palm fronds creating shorts across conductors, which could spark a wildfire.
- Leveraging **conductor-spacing devices** to minimize the likelihood of "wire slapping."
- Where appropriate, converting existing overhead transmission and distribution assets to **underground** assets (e.g., conductors and transformers). Most new installations are underground, unless doing so would be cost-prohibitive or is otherwise infeasible. Undergrounding will also allow for the spreading of costs over a longer period of time and will allow us to significantly reduce ongoing programs and the associated costs, such as vegetation management, in areas that have been undergrounded removing the need to inspect, trim and cut trees.
- Replacing wood poles, which can topple and ignite new fires in high-wind conditions, with **sturdier poles**, reducing the likelihood of downed poles igniting wildfires and speeding customer restoration. This may include the use of steel poles, where applicable.
- Using stronger, **composite materials for crossarms**, e.g., fiberglass.
- Replacement of **insulators** to reduce the likelihood of overhead conductors becoming detached and contacting vegetation or other flammable materials.
- Identification, and replacement, of **splices, clamps, and connectors** on overhead conductors, where stress from heat or general use can cause downed conductors to come in contact with vegetation or other flammable materials.
- Continue current practice of replacing overhead distribution **transformers** that are over 40 years old. Studies have confirmed that transformers over 40 years old have a higher likelihood of failure, which could result in sparking or explosions that could initiate a wildfire.
- Replacing overloaded transformers that do not meet loading criteria to prevent transformer failure
- Improving **transformer resiliency** to reduce the likelihood of transformer failures (which can trigger transformer fires) and to protect transformers against the heat of a wildfire (which can also trigger transformer fires). This may include investigating more robust materials and supplies (e.g., FR3 transformer oil).
- GWP's engineering redesigned the capacitor bank installation standards. Capacitor bank neutral that is grounded at the base of the pole can facilitate high fault currents (and the

potential for fire). According to the new standard capacitor bank neutral is no longer grounded.

- Installing fault indicators for detecting faults on electric lines or equipment. Remote fault indicators can provide line current measurement at device
- Implementing fast-acting, **automatic protection schemes** to detect broken conductors and de-energize before the conductor touches the ground.
- Installing remotely operable SCADA sectionalizing/reclosing devices and manually operated sectionalizing/reclosing devices on the distribution system can support GWP's ability to segment the distribution circuits close to designated meteorology shutoff polygons to reduce the customer impact and scope of PSPS events which are used as a last resort to avoid ignition risks
- Replacing non-exempt equipment with exempt equipment in HFTD areas and HFRAs to reduce fire risk by reducing the frequency of all types of ignition events since the exempt equipment is considered "non-expulsion" and does not generate arcs/sparks during normal operation. Accordingly. Replacing distribution fuses with **non-expulsive fuses** to prevent inadvertent sparking as fuses blow.
- Conducting engineering studies to identify ideal locations for **lightning arresters**, devices designed to protect equipment from the damaging effects of lightning. GWP has already installed throughout GWP's electric system, but these locations will be reevaluated for effectiveness.
- Installing **weather station** data equipment and HD camera footage to be monitored 24/7.
- Installing advanced monitoring methods such as Distribution Fault Anticipation (DFA), Early Fault Detection (EFD) and Brocken Conductor detection (BCD)technologies on circuits feeding into High Fire Threat District (HFTD) areas or High Fire Risk Areas (HFRAs). These technologies measure different electrical parameters over the distribution circuits and along with analytical methods may be able to detect issues and fire risks resulting from non-equipment failure type outage (where no problems are found) early in their degradation mode. One sensor per circuit will be installed at initiating substation in the HFRA and HFTD areas.
- Installing line sensor devices on circuits feeding into HFTD areas or HFRA to cover mainline and major tap lines in areas meeting minimum load requirements and within cellular coverage areas to provide visibility

Based upon these, and similar, criteria, each project will be evaluated for the best-fit solution, funded through the annual budgeting process, and implemented based upon priority. These efforts are intended to reduce the likelihood of GWP equipment igniting a wildfire.

GWP intends to also ensure rapid and safe restoration by improving the resiliency of its infrastructure against wildfire damage. For example, in those areas especially prone to wildfires, GWP will identify wood poles that could be replaced with non-flammable (e.g., steel or concrete) and/or taller poles. This type of action would not necessarily prevent wildfires, but it would speed restoration after a wildfire. These activities will be on-going and are subject to adjustment, depending upon the results of GWP's investigations and studies.

Operations & Maintenance (O&M) Efforts

Prioritization of wildfire mitigation efforts includes tailoring GWP's O&M resources to meet or exceed state utility standards to minimize the risks posed by vegetation and equipment failure. Funding shall be allocated through the annual budgeting process and is subject to management and City Council approval.

- **Vegetation Management – Reduction of Ignition**. GWP's existing vegetation management program is on a two-year cycle, ensuring that all trees under power lines have been trimmed at least bi-annually. Vegetation management practices is expanded to exceed minimum clearance requirements (as described in GO 95) by trimming trees down to the telecommunications layer and to clear hazardous vegetation in both Tier 2 and Tier 3 zones. GWP's more aggressive tree-trimming policy may also include trimming or removing trees that could fall onto overhead power lines from above.
- **Vegetation Management Program (VMP) – Limiting the Spread of Wildfires**. Reducing the risk of spreading wildfires posed by hazardous vegetation near structures is achieved, in large measure, by leveraging the City of Glendale Fire Department's Hazardous Vegetation Management Program (VMP); the VMP reduces the risk of a home igniting from a nearby wildfire by controlling hazardous vegetation within 100 feet of the home.
- **Inspections**. Expanding asset inspections and refining its master plan to address end-of-life infrastructure management. In January of 2021.GWP issued a Request for Proposals (RFP) to solicit proposals from qualified engineering firms to conduct a complete assessment of all overhead and underground assets. In May of 2021, Council awarded a three-year contract to an Engineering firm to provide Transmission & Distribution System inspection. This assessment includes pole inspections, vault inspections, and inspections of all assets connected to (or within) these assets, including (but not limited to) transformers, crossarms, insulators, conductors, cables, landings, capacitor banks, voltage regulators, and all other attachments. This program, consistent with GO 165, shall assess the condition of GWP assets and provide a mechanism to prioritize repair and replacement. Maintaining robust infrastructure will minimize the likelihood of downed power lines or failed equipment that can spark and ignite wildfires.
- **Reclosers**. Modifying recloser settings during high-risk periods to minimize the likelihood of inadvertently reclosing in a high-wildfire risk area.
- **Equipment Failure**. According to information collected by GWP staff, over 40% of equipment failures in recent GWP history were transformer failures and overhead conductor failures. GWP has instituted an on-going process to replace aged transformers, which are more likely to fail by tracking characteristics like age, installation date, manufacturer, loading factor, and size for each transformer. Currently, transformers with more than 40 service years are prioritized for replacement. The failure of overhead conductors can ignite a fire if the line is still energized when it touches the ground; GWP is investigating technological solutions to de-energize a falling conductor before it touches the ground. The probability of overhead conductor failure has been reduced.
-

Wildfire Mitigation Budget Measure

Project #	Project Description	FY 2021-2022 Budget	FY 2022-2023 Budget	FY 2023-2024 Proposed Budget
GWP00653AA	Wildfire Mitigation	$50,000	$200,000	$50,000
GWP00642AA	Pole Replacement	$175,000	$300,000	$300,000
GWP00652AA	4kV/12kV Feeder Upgrade	$3,000,000	$7,000,000	$7,000,000
GWP00656AA	Distribution Expansion	$30,000	$150,000	$50,000
GWP00643AA	Transmission & Distribution Inspection Program	$1,000,000	$1,000,000	$1,000,000
43110 Contract	Tree Trimming Contract	$2,500,000	$2,800,000	$2,800,000
	Total	**$6,755,000**	**$11,450,000**	**$11,200,000**

General Project Description

GWP00653AA System hardening and installation of composite poles and tree wires
GWP00642AA Pole replacement project within the entire city including Tier 2 and Tier 3
GWP00652AA Rebuilding power poles for 12 kV Operation within the entire city including Tier 2 & Tier 3. In 12kV operation, the conductors are spread apart, and the risk of fire is lower
GWP00656AA Converting Overhead to Underground and extending distribution lines for new services
GWP00643AA Inspection of electrical facilities Incl. Power Poles, Vaults, Pull boxes & Street lights
43110 Contract Vegetation management in accordance with WMP &California regulatory requirements

Operational Practices as Preventive Measures

- **Operational practices** on disabling reclosers, proactive de-energization, and public outreach, as well as leveraging City programs that are consistent with this Plan (e.g., VMP). **Situational practices** by the deployment of high-definition cameras to provide visual coverage of high-risk areas.
  To reduce the risk of spread of wildfire, the Glendale Fire Department uses multiple cameras and weather stations at strategic locations to monitor conditions and take immediate action.
  Cameras are found at:
  Mt. Lukens 1&2, https://alertca.live/cam-console/2181
  Verdugo Peak 1&2, https://alertca.live/cam-console/2477
  Mt. Lee North https://alertca.live/cam-console/2176

  Weather Stations area located at: https://www.weather.gov/lox/fwmV3

10. Metrics

To evaluate the effectiveness of these mitigation measures, GWP intends to:

- Evaluate and measure the effectiveness of this Plan by monitoring and tracking verifiable metrics.
- Establish a baseline by inspecting the condition of its transmission and distribution assets, including poles, switches, reclosers, vaults, and transformers. Based upon these inspection results, submit annual budget requests to repair or replace equipment in a subpar condition. Continue periodic inspections consistent with GO 165.
- Incorporate lessons learned and institutional intelligence specific to GWP to revise this Plan.

Tracking of the initial set of metrics commenced in January 2021. New metrics are tracked, to provide actionable data and feedback. These metrics are intended to provide a quantitative assessment of the effectiveness of the Plan over time. The metrics themselves are not as important as the trends that are quantified in the metrics; accordingly, GWP intends to prioritize its limited resources by minimizing the time spent on gathering metrics in favor of implementing mitigating measures.

As the Plan matures and its effectiveness is measured over time, the metrics will be modified and adjusted, just as the Plan itself will be modified and adjusted based upon performance, successes, and failures.

The formal list of metrics shall demonstrate results and measure the effectiveness of GWP's wildfire mitigation and will include the following:

- After any relay event, where GWP's protective relays automatically de-energize a feeder or transmission line, the following information will be collected during the post-mortem:
  - Did the outage ignite a fire? (yes/no)
  - If the outage ignited a fire, were first responders notified? (yes/no)
  - If the outage ignited a fire, how large was the fire? < 1 acre, 1-50 acres, 50-300 acres, or > 300 acres
  - If the outage ignited a fire, how many structures were impacted? 1, 2-10, 10-50, or > 50
- Number of trees trimmed by GWP.
- Number of poles replaced in Tier 2/3.
- Number of transformers replaced in Tier 2/3.
- Feet/miles of transmission/distribution lines moved underground in Tier 2/3.
- Feet/miles of tree wire installed in Tier 2/3.
- Number of standard (expulsive) fuses replaced by non-expulsive fuses.
- Glendale Fire Department average time to respond to fire incidents.

Following is the current metric set to track the number of poles, transformers and tree wires that are replaced in Tier 2 and Tier 3 within a given time period.

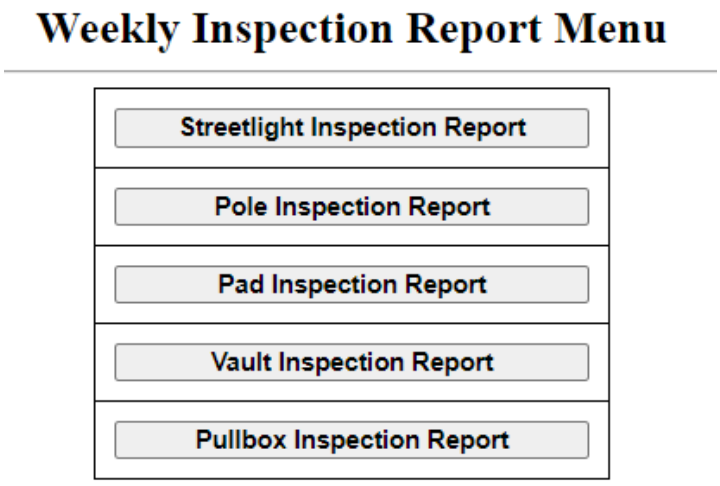
Wildfire Mitigation Summary
From 01/01/2021 To 03/18/2023

Transformers Replaced - Source GIS			
Tier	**Overhead**	**Underground**	**Pad mount**
2	8	11	0
3	1	1	0
Totals	**9**	**12**	**0**

Tree Wire Installed - Source GIS			
Tier	**Feet OH**	**Feet UG**	**Feet Total**
2	223.15	0	223.15
Totals	**223.15**	**0**	**223.15**

Poles Replaced - Source GIS	
Tier	**Count**
2	17
3	13
Totals	**30**

In addition, staff established a metric to track the number of facilities that are inspected within a given time period.



GWP funding and capital improvement priorities will be adjusted, based upon the results of these inspections, to replace and harden equipment and assets that are flagged as requiring replacement.

Sample of Pole Inspection Report by Date

From: 03/01/2023 To: 03/29/2023 Go Download

1 = perfect condition
2 = normal wear-and-tear and/or minor damage that does not pose any safety concerns or compromised operation
3 = significant wear-and-tear and/or damage that could pose a safety concern or sub-optimal operation (including that potential for operational failure), flag for future remediation/repair/replacement
4 = imminent failure and/or asset poses a legitimate and likely safety concern, schedule remediate/replacement/repair
5 = complete failure, requires immediate/emergency replacement [Note: any equipment in this category should be reported to the primary GWP contact on the same day it is identified.]

Pole Number	Address	Inspection Date	Repair Priority
12481A	LAUDERDALE AV E/S 272' S/o LOS AMIGOS ST EXTD	2023-03-06	PASS
14526A	LOS OLIVOS LN N/S 378' W/o BOSTON AV	2023-03-28	PASS

Sample of Vault Inspection Report by Date

From: 03/01/2023 To: 03/29/2023 Go Download

1 = perfect condition
2 = normal wear-and-tear and/or minor damage that does not pose any safety concerns or compromised operation
3 = significant wear-and-tear and/or damage that could pose a safety concern or sub-optimal operation (including that potential for operational failure), flag for future remediation/repair/replacement
4 = imminent failure and/or asset poses a legitimate and likely safety concern, schedule remediate/replacement/repair
5 = complete failure, requires immediate/emergency replacement [Note: any equipment in this category should be reported to the primary GWP contact on the same day it is identified.]

Vault Number	Address	Inspection Date	Repair Priority
1	GLENDALE AVE. A/W 1ST VAULT N/O HARVARD ST.	2023-03-20	1
1005	PIEDMONT AVE (2731) PP 130' N, 600' E/O LA CRESCENTA AVE	2023-03-07	1

Sample of Pullbox Inspection Report by Date

From: 03/01/2023 To: 03/29/2023 Go Download

1 = perfect condition
2 = normal wear-and-tear and/or minor damage that does not pose any safety concerns or compromised operation
3 = significant wear-and-tear and/or damage that could pose a safety concern or sub-optimal operation (including that potential for operational failure), flag for future remediation/repair/replacement
4 = imminent failure and/or asset poses a legitimate and likely safety concern, schedule remediate/replacement/repair
5 = complete failure, requires immediate/emergency replacement [Note: any equipment in this category should be reported to the primary GWP contact on the same day it is identified.]

Pullbox Number	Address	Inspection Date	Repair Priority
PB_1001	3552 PROSPECT AVE	2023-03-28	1
PB_1036	N/A	2023-03-08	3

11. Metrics Feedback

As GWP monitors and evaluates the metrics described in the previous section, it should also adjust this Plan to ensure these goals are achieved. During the annual review of this Plan, the following general questions should be reviewed with respect to the existing metrics:

- **Metric Not Met**. If a metric was not met, determine the cause. Review the metric for appropriateness – is the metric too strict, given GWP's resources? Are additional resources required to improve the metric performance? Will additional resources have an impact on performance, or is the return on investment minimal?
- **Metric Significantly Exceeded**. If a metric was significantly exceeded, review the metric for appropriateness. It is possible that the metric is too easily achieved, making the metric meaningless.
- **New or Obsolete Metrics**. Review any proposed new metrics and determine whether existing metrics are obsolete. Experience, legislative drivers, and management priorities can trigger the development of new metrics and the retirement of obsolete metrics.
- **Adjustments Based Upon Metrics**. Based upon performance against these metrics, this Plan should be updated to adjust priorities and goals. For example, once a known issue has been mitigated, it should transition from "active construction" to "active monitoring."

12. Operational Practices

The City of Glendale's operational practices are coordinated across Departments and implemented independently by each Department.

Citywide

The City of Glendale's Emergency Response Plan[10] addresses the City's planned response to extraordinary emergency situations associated with natural disasters, technological incidents, and national security emergencies. The Plan does not address normal, day-to-day emergencies or the well-established and routine procedures used in coping with such emergencies. Instead, the operational concepts reflected in the Plan focus on potential large-scale disasters which can generate unique situations requiring unusual emergency responses.

The City's Hazard Mitigation Plan[11] provides a set of action items that, if implemented, can help reduce the risk from hazards through education and outreach programs, the development of partnerships, and the implementation of preventive activities (such as land use programs) that restrict and control development in areas subject to damage from natural hazards.

City of Glendale personnel involved in emergency response and emergency management functions are provided ongoing training, including local workshops, SEMS[12] training, NIMS[13] training, and other special programs throughout the year. Key management and emergency personnel also attend the California Specialized Training Institute to receive in-depth training in related emergency management topics.

GWP

Engineering and field personnel will periodically review operational practices to identify preventative strategies and enhanced operational procedures to minimize and mitigate the risk of causing and/or spreading catastrophic wildfires, both during periods of high danger as well as during normal operating conditions.

The Principal Power System Operator oversees the real-time System Dispatch function and provides on-going, topical training to all Power System Operators (PSO's). At least two PSO's staff a Dispatch desk 24/7 to monitor and control GWP's electric grid while dispatching field crews to investigate and resolve problems, or to schedule work, on GWP electrical infrastructure.

[10] https://www.glendaleca.gov/government/departments/fire-department/other/emergency-preparedness-response/city-emergency-plans
[11] https://www.glendaleca.gov/Home/ShowDocument?id=48978
[12] Standardized Emergency Management System, which unifies all elements of California's emergency management community into a single, integrated system with standardized key elements. See https://www.caloes.ca.gov/cal-oes-divisions/planning-preparedness/standardized-emergency-management-system for more information.
[13] The Federal Emergency Management Agency's (FEMA's) National Incident Management System, which guides all levels of government, nongovernmental organizations (NGO), and the private sector to work together to prevent, protect against, mitigate, respond to, and recover from incidents. See https://www.fema.gov/national-incident-management-system for more information.

The Substation Operations Training Program includes training on system protection and trouble response; topics include discussions on preemptive de-energization, rolling blackouts, and automatic system protection schemes. This training is provided to all new PSO's, as well as to seasoned PSO's on an annual basis.

Operationally, the PSO retains the authority and obligation to de-energize electrical equipment, sub-transmission lines, and/or distribution feeders in the event of a high wildfire danger. The decision to preemptively de-energize GWP equipment is described further in GWP Standard Operating Procedure SOP-021 and is based upon multiple factors, including Red Flag Warnings, system conditions, and other operational considerations. The PSO considers several factors before de-energizing overhead lines during periods of extreme wildfire danger:

- Hospitals
- Elder care facilities
- Communications equipment (e.g., cell phone towers, pole-mounted cell sites)
- City of Glendale Public Works facilities (e.g., sewer)
- First responder facilities, including police, fire, and local government facilities
- Community information facilities (e.g., radio equipment).
- GWP Water Division and Crescenta Valley Water District systems, which maintain water quality, water supply, and water pressure to residents and to the Glendale Fire Department for fighting fires.

De-energization is always the PSO's option of last resort, given the potential impacts of de-energization as described below (e.g., traffic signals, air conditioning during high temperatures, lack of electricity to water facilities to fight fires, etc.). In the event preemptive de-energization is initiated, every attempt to minimize the number of affected customers is made by sectionalizing only the effected feeders or transmission lines.

Per SOP-021, it is GWP's policy to preemptively de-energize overhead transmission and distribution lines and to disable automatic reclosers in the Tier 2 or Tier 3 zones during periods of extreme wildfire danger, or at other times as deemed necessary by GWP, with the intent of reducing the risk of igniting a wildfire from energized equipment.

During these periods of extreme wildfire danger, if a protective scheme (e.g., relay or recloser) automatically de-energizes a feeder, GWP crews will physically patrol a feeder to identify and clear the cause of the protective action before any attempts are made to re-energize the circuit.

The benefits of preemptive de-energization are offset by the challenges and potential dangers of widespread and extended power outages during periods of high temperatures. As discussed in **18. Enterprise-Wide Risks**, the supply of safe drinking water, water for firefighting, infrastructure used for public safety, and the overall impacts of power outages could all potentially be compromised. Therefore, the decision to de-energize customers must be the solution of last resort after all wildfire mitigation efforts have been exhausted.

Thus far, GWP has never de-energized a feeder that would result in customer outage. Glendale reacts proactively whenever there is a Red Flag warning issued for the area by the National Weather Service, and de-energizes the Glendale's 34.5 kV "Bel Aire-Montrose transmission line. Also, before the line is re-energized, a lineman patrols to confirm that the line is intact and that there is no debris lodged across the insulators or the lines. Overwhelming majority of the area serviced by GWP is classified as 'Urban', with clear access by the city Fire Department, therefore the possibility of wildfire is very low, but there is a single sub-transmission line mentioned in the above paragraph "Bel Aire-Montrose line" that runs across an uninhabited hilly terrain covered with brush; it has limited vehicular access. This is an area of elevated fire risk. For that reason, GWP de-energizes this transmission line (without loss of customer load) each time the National Weather Service issues a Red Flag Alert.

The PSOs conduct and complete annual and periodic training on their job responsibilities, processes, procedures, and practices. This training includes their authority to de-energize customers as needed to prevent potential ignitions during extreme fire conditions, as well as during periods where there is insufficient energy supply to meet load requirements. SOP-021 is also covered in this training, including notification requirements before initiating planned de-energization of customers. System conditions can change rapidly, so in an emergency, the PSO may opt to de-energize first, then conduct the required notifications. GWP will make a case-by-case decision to shut off power based on the following factors:

- Red Flag Warnings issued by the National Weather Service for wildfire weather zones that contain GWP circuits.
- Real-time input from fire experts and vegetation experts.
- Input from local and state fire authorities regarding the potential consequences of wildfires in GWP territories.
- Alternative ways to reroute power to affected areas.
- operational considerations to minimize potential wildfire ignitions, including the blocking of reclosers on the identified circuit(s).
- On-going fire activity throughout GWP territory.
- Potential impacts to communities and customers.

While the PSOs determine whether and when de-energization is necessary, the field crews work in tandem with the PSOs to conduct field switching (as necessary, and as directed by the PSOs), patrol de-energized lines prior to re-energization, and repair damage to equipment and lines discovered during patrols. This is consistent with their usual duties and is folded into their standard job responsibilities and practices.

Energy Supply and Procurement Contingencies

Should the Los Angeles Department of Water & Power (LADWP), Southern California Edison (SCE), or other utilities elect to de-energize major transmission corridors during periods of

extreme fire danger (which usually correlate with periods of high electrical loads), the City will be forced to procure replacement energy from alternate energy sources to meet load.

Given GWP's load and contingency obligations during periods of peak load, the loss of a major transmission line could result in the loss of 100 MW or more of imported energy. Options to replace this energy are limited to local generation capability (e.g., Grayson) or purchases of energy that rely upon LADWP transmission. Most GWP transmission is closely tied to LADWP transmission, meaning the loss of GWP transmission likely includes the loss of LADWP transmission, further straining the local transmission grid. When GWP's transmission capacity is curtailed during periods of high load, LADWP is unlikely to have excess transmission capacity to sell to GWP, at any price; even if GWP could find an energy provider, it would be unlikely to be delivered to the Glendale (69 kV) side of the Air Way receiving station.
The next option would be to generate the energy locally (e.g., Grayson). The proposed repowered Grayson power plant must be sufficient to accommodate the loss of 100 MW of transmission import capability, which reflects the amount of transmission capacity that would be lost if the Pacific Direct Current Intertie (PDCI) transmission line were to be de-energized. However, should this local generation not be available when needed (for example, if the repower were to not occur), GWP would have insufficient capability to meet its load and contingency obligations while the PDCI were de-energized.
In the event GWP is unable to procure energy delivered to the Air Way receiving station or to generate the replacement energy locally, it would be forced to initiate rolling blackouts to balance its load with delivered energy. These rollouts would continue until the lost transmission capability is restored. In other words, preemptive de-energization of transmission lines, initiated by a party other than GWP, could result in rolling blackouts within the City of Glendale. In the scenario where an outside agency's actions caused a lack of energy supply to the City of Glendale, advanced notification to customers would likely not be possible given that the energy shortage would occur with no more than a few hours' notice, though "best efforts" would be initiated to provide notice when possible.
GWP has acquired a new Outage Management System (OMS) by DataVoice International Inc., which allows efficient and quick notification to our customers of impending power outage, whether than outage is due to generation shortage or due to PSPS.
GWP Dispatch maintains a rolling blackout schedule that is initiated at the direction of the Integrated Resource Planning Administrator or delegate.

To increase our generation reliability, GWP is planning more distributed generation in the city, namely by installing photovoltaic panels and battery storage. One of the projects involves placement of solar panels on city-owned properties, such as roof-tops and parking structures that are owned by the city of Glendale. Another project is considering the placement of 25 MW of battery storage at possibility Montrose Substation. In the future, GWP plans to install 50 MW of battery storage at the Utility Operations Center yard (UOC), close to GWP's power generation.

13. Customer Outreach

Prevention and Strategy

GWP will maintain a multi-level outreach and education strategy to create public awareness of fire threats, fire prevention, and support during a wildfire or a de-energizing event. GWP will work with the public, community leaders, and other agencies to collaboratively discuss fire-safety processes regarding public safety. These collaborations will provide forums for public education and opportunities to exchange improvement ideas and practices. Provide fire-safety and emergency preparedness communications such as general market TV, streaming radio, out-of-home (bulletins/posters/transit), digital ads, etc.

GWP partners with first responders, health care facilities, and operators of telecommunications infrastructures. GWP, in coordination with the Glendale Fire Department, proactively alerts customers on the Life Support list it maintains. GWP maintains a Public Safety Power Shutoff webpage for its website at https://www.glendaleca.gov/wildfiremitigation to provide information on power shut offs and fire mitigation plans, and a link to this page from the main GWP website will also be added. This webpage will be used to ask customers to update their GWP account information and emergency contact preferences, and to provide a link to both the login page to GWP account information and to the Everbridge Emergency Contact Information webpage. GWP will develop informational brochures on wildfire mitigation safety and what to do when a de-energizing event is called, referencing the website in all collateral items produced and distributed. On the dedicated Public Safety Wildfire Mitigation webpage, customers will be able to find the following information:

- GWP's adopted Wildfire Mitigation Plan;
- Information on how GWP mitigates wildfire risk;
- Emergency preparedness tips and guide;
- Information on what not to do during Red Flag Warnings (e.g., BBQs, smoking outdoors, throwing ashes out, etc.);
- Links to any additional resources;
- Links to GWP Account Information & Everbridge Emergency Notification sign-ups;
- Frequently-Asked Questions (FAQs) on the power shut-off process.

De-Energization (Public Safety Shutoff Event)

During an extreme weather event, GWP will actively provide customer outreach and support through a targeted communications strategy, with the goal of providing as much advance notice as possible. GWP will inform its customers of expected severe weather conditions and directly notify affected customers through established points of contacts such as email, phone, text, and/or push notifications. GWP will also alert customers through its social media platforms, alert the media, work with the City's Fire and Police PIO offices and websites, and post rolling

messages on local television (GTV6) and on the City's and GWP's websites. GWP can initiate automated pre-recorded phone calls to customers in the impacted areas, advising when the outages are called and directing customers to the dedicated GWP website for up-to-date information. Pre-recorded IVR (Interactive Voice Response) messages will have real-time recorded information informing customers that may be impacted. GWP will also post messages on its website and through its Mobile App, social media platforms, changeable and movable road signs and In-Home Digital Display program for targeted push messaging. Messaging will increase in urgency as the certainty of a Public Safety Power Shutoff approaches. Finally, in addition to alerting its customers, GWP will also notify, as a priority, first responders' PIO offices, health care facilities' communication offices, and the offices of the building engineers, the Chief Executive Officer (CEO), and operators of telecommunications infrastructure.

For customers on Life Support, GWP, if notified, will contact these customers through phone calls. Two phone attempts will be made, and an email will be sent if there is an email address on file. If no response is received, GWP will dispatch a field crew to contact the Life Support customer. GWP will also keep local news and radio outlets informed.

Timing of notifications
When GWP determines a preemptive de-energization is required, either because another entity's actions suddenly limits GWP's energy supply (e.g., Southern California Edison initiates a Public Safety Power Shutoff – PSPS – on a transmission line that impacts GWP's incoming transmission capacity) or due to the PSO's system assessment, GWP will provide advance notifications in three phases:

1. Advanced notification (when possible)
   - 48 hours before electricity is turned off
   - 24 hours before electricity is turned off
2. Shutoff notification just before electricity is turned off
3. Notifications during the event

Post event notifications will be provided to notify customers that power has been restored.

14. Vegetation Management

As described in this Plan, the majority of acreage burned by wildfires triggered by electric utilities was determined to be due to vegetation contacts and equipment failure. GWP oversees a contracted arborist that implements GWP's vegetation management program intended to mitigate the risk posed by vegetation contacts. This program is consistent with **General Order (GO) 95 – Rules for Overhead Electric Line Construction**, including the clearance requirements described in **Section III – Requirements for All Lines, Rule 35 Vegetation Management**. GWP staffs Line Clearance Forestry Supervisors who spend most of their time in the field, overseeing the contractor and monitoring vegetation under GWP transmission and distribution lines. These Supervisors are typically certified arborists who identify all trees that need trimming, direct the contractor to specific trees and/or areas that require trimming, and then confirm afterward that the identified trees have been trimmed to GWP standards.

Although the highest wildfire risk is presented in the Tier 2 and Tier 3 zones of the City, the Supervisors monitor the entire City for dangers posed by vegetation under GWP lines.

In fiscal year 2022-2023, GWP had budgeted approximately $2,500,000 to fund a contractor to conduct tree-trimming activities. For the fiscal year 2022-2023, GWP has increased its tree-trimming budget by approximately $300,000 for enhanced tree-trimming activities; these enhancements may include larger clearances, expansion of tree-trimming to nearby trees not directly under power lines, and other clearing of hazardous vegetation near power lines.

As part of its risk assessment to prioritize mitigation efforts, GWP has engaged the City of Glendale's Fire Department to leverage its Vegetation Management Program (VMP). The VMP was developed to ensure there is adequate defensible space around buildings in the wildland-urban interface. Activities include annual inspections and review/permitting of landscape and fuel modification plans for properties in the high wildfire hazard area. Property owners are required to maintain a 100-foot radius of defensible space (i.e., remove hazardous vegetation) around all property structures, including homes, backhouses, sheds, etc. The majority of GWP's electrical assets also reside within this 100-foot radius, so even if a localized fire were ignited by failed GWP equipment, the likelihood of this fire igniting nearby buildings would be reduced. Therefore, GWP can focus its resources on mitigating electrical assets that are outside of the zones covered by the VMP. The VMP facilitates GWP's ability to focus on mitigation of electrical assets on a subset of its assets, potentially improving the success and rate of its mitigation efforts.

GWP maintains an electronic tree database that tracks the inspection, trimming, and auditing activity, by containing an inventory number of trees. An inventory tree is one that could encroach the minimum required clearance or otherwise impact the electrical facilities within two-years of the inspection date. Check with John if in some places it is annually

Vegetation management in GWP service area is performed by the same Electrical Line Mechanics that are involved in the installation and maintenance of power lines and all other overhead equipment; it usually takes place under the watchful eye of GWP's Electrical Line Mechanic Supervisor II. Vegetation management has been expanded to exceed minimum clearance requirements as described in GO 95, by trimming trees down to the telecommunications level. Fiscal year 2022-23, we spent $ 0.78 million on vegetation management.

15. System Inspections

As described in this Plan, the majority of acreage burned by wildfires triggered by electric utilities was determined to be due to vegetation contacts and equipment failure. GWP leverages GO 165 requirements as a "best practice" to provide guidance on system inspections that are intended to identify failing equipment that may ignite a fire.

As part of its Master Plan, GWP conducts a system inventory that includes a system-wide inspection of its poles, streetlights, vaults, and all equipment and assets connected to, or contained within, these assets. GWP funding and capital improvement priorities will be adjusted, based upon the results of these inspections, to replace and harden equipment and assets that are flagged as requiring replacement. This system-wide inspection program commenced in November of 2022, by a qualified, contracted engineering firm that will formally inspect and assess of all overhead and underground assets. As assets are inspected, GWP will remediate based upon these inspection results and will issue work orders to address any problems that were observed: replace poles, repair equipment, etc. The completed inspection report will establish a baseline condition assessment of system assets; this program will establish the new inspection program going forward, and GWP staff will conduct all subsequent assessments as part of an on-going inspection program, consistent with the requirements of GO 95 and GO 165.

In fiscal year 2022-2023, GWP budgeted $1M per year for the contracted engineering firm to inspect the electrical facilities.

GWP has dedicated staff who are responsible for the preventative and routine inspections, construction, installation, maintenance, and repair of all transmission and distribution assets. For the fiscal year 2022-2023, GWP has budgeted capital and O&M funds related to wildfire mitigation, including system hardening, substation and distribution automation, and vegetation management.

The City of Glendale's VMP, managed by the Glendale Fire Department, includes annual inspections of properties in the high fire hazard areas of the City to ensure compliance with its defensible space standards (see Exhibit B).

16. Wildfire Risks and Drivers

The City of Glendale's wildfire risk is driven by controllable and uncontrollable factors. The City's topography consists of both a highly-developed urban center and mountainous open spaces with frequently dry vegetation; this diversity adds complexity to GWP's wildfire mitigation efforts and requires a surgical approach to tailored mitigation efforts in each area of the City. Climate change exacerbates the already hot, dry weather common to Glendale, as well as the seasonal winds, as discussed in **Section 9. Preventative Strategies and Programs**, and is assumed to only exacerbate GWP's wildfire risk going forward, namely with respect to making dry fuel available for ignition and for spread. This Plan focuses on preventing wildfires from being caused by inadvertent vegetation contacts with, or failures of, GWP electric utility equipment. Prevention of wildfires ignited by other causes (e.g., intentionally-set fires, accidental human-caused fires, etc.) are not considered.

GWP aims to reduce the risk of starting and spreading wildfires, acknowledging that it is not feasible to achieve zero risk. To that end, GWP has adopted a risk-based approach to prioritize capital improvements, Operations and Maintenance (O&M) work, and changes to operating procedures to achieve the objective stated in **Section 8** of this Plan.

This prioritization leverages historical data that measures the relative size (in this case, measured in acreage of burned land) of California wildfires and that describes the causes of the wildfires.

Historical data confirms that the majority of acreage burned was due to vegetation contacts and equipment failure.

To quantify the size (in acreage) of historical fires, 2016-2021 wildfire statistics from Cal Fire[14] indicate:

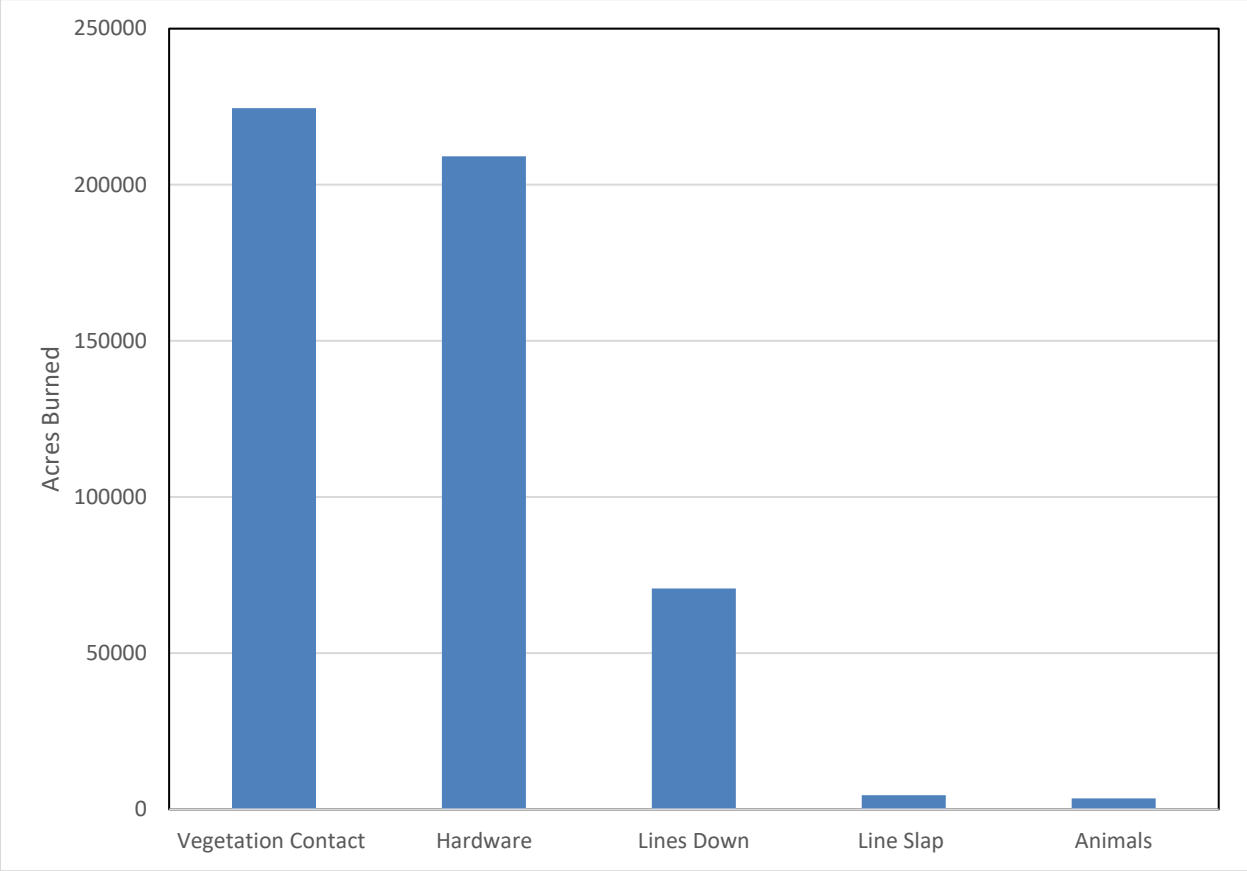
- 44**% of the acres burned were due to fires initiated by vegetation contacts** – i.e., trees touching power lines, causing sparks and starting fires. Plentiful brush and undergrowth can also facilitate rapid expansion of wildfires once the initial spark is provided.
- The majority of the acreage burned due to vegetation contacts occurred in 2018, which skews the acreage burned due to vegetation contacts. **41% of the total acres burned were caused by equipment failure** – i.e., failed hardware that possibly sparked or exploded and started fires.
- The majority of the acreage burned due to equipment failure occurred in 2016, which skews the acreage burned due to equipment failure. **14% of the total acres burned were caused by lines down** – i.e., energized power lines that touched the ground and started fires. Equipment and hardware failures are discussed in more detail below.

[14] "2016 Wildfire Activity Statistics," "2017 Wildfire Activity Statistics," "2018 Wildfire Activity Statistics," "2019 Wildfire Activity Statistics," "2020 Wildfire Activity Statistics," *Historical Wildfire Activity Statistics (Redbooks)*, http://www.fire.ca.gov/fire_protection/fire_protection_fire_info_redbooks. (Accessed September 21, 2018)

- The acreage burned due to animals (e.g., squirrels shorting lines and starting a fire) and line slap (transmission lines touching during high winds) was negligible.

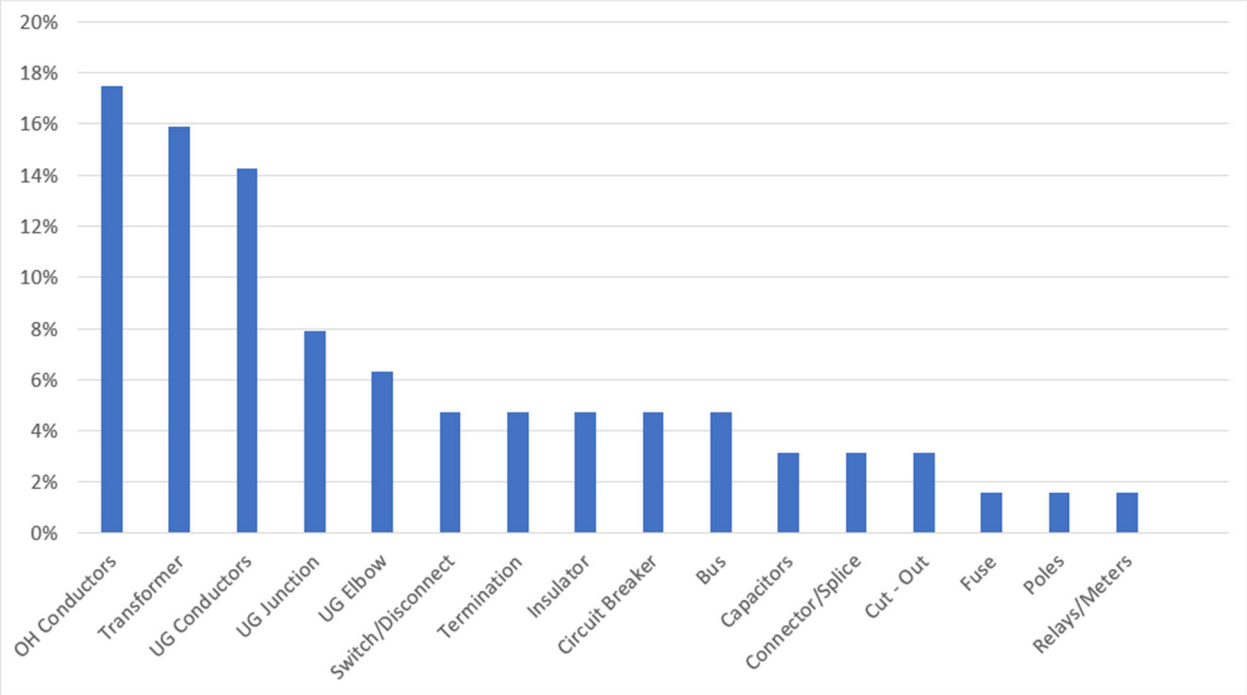
The chart below summarizes this data.

Figure 1. California Wildfires: Number of Acres Burned by Cause (2016-2021)



GWP concurs that its own risks stem largely from vegetation contacts and equipment failure. Equipment failures from 2009 – 2018, based upon historical GWP data, show that the largest number of equipment failures came from transformers, overhead conductors, insulators, and switches and disconnects. The chart below summarizes this data.

Figure 2. Outages Based on GWP Equipment (2012-2022)



GWP's transformer-replacement program prioritizes life-cycle replacement of transformers that are over 40 years old to minimize the likelihood of transformer failures igniting wildfires.

As part of its review of assets in the Tier 2 and Tier 3 zones, GWP Electric Engineering has identified overhead feeder and transmission line sections at highest risk of igniting and spreading wildfires. These sections will be analyzed on a case-by-case basis for the most appropriate mitigation approach, as discussed in **Section 9**.

17. Wildfire Zones

GWP has leveraged the tiered zones developed and mapped by Cal Fire; the Glendale Fire Department's independent wildfire zone assessment[15] correlates strongly with Cal Fire's maps and assigns similar levels of risk to these areas. GWP does not anticipate making any changes to these maps and accepts them as provided. In addition, Section 7 of the City's Hazard Mitigation Plan contains the City's independent assessment of wildfire risk within the City of Glendale. CalFire's methodology reflects the risk of a wildfire igniting and spreading by classifying each area within the City of Glendale as Tier 1 (low risk), Tier 2 (elevated risk), or Tier 3 (extreme risk).

The Fire Area Map in Exhibit A is from 2018 and shows that, approximately 48% of the City of Glendale falls within Tier 2 and 14% falls within Tier 3. GWP intends to prioritize its efforts to mitigate wildfire hazards within these areas, which cover nearly 62% of the City's area.

GWP and the Glendale Fire Department, working in concert, significantly reduce the wildfire risk imposed by hazardous vegetation:

- GWP's aggressive, City-wide tree-trimming program, consistent with GO 95, reduces the likelihood of trees coming in contact with live transmission and distribution wires.
- The City of Glendale's Vegetation Management Program (VMP) reduces the intensity and rate of spread of a wildfire near buildings, reducing the risk that nearby buildings will be ignited. The majority of GWP's electrical assets reside within 100 feet of structures on private property (where property owners are required to manage vegetation), so only 0.47% of the City's Tier 2 and Tier 3 land area contains GWP electrical assets that require additional mitigation to reduce the risk of igniting a spreading wildfire; this is compared to the nearly 62% of the City's area that is within the Tier 2 and Tier 3 zones.

By applying this risk-based approach of focusing wildfire mitigation resources on GWP's overhead resources in unmitigated areas, only 0.47% of the City's Tier 2 and Tier 3 land area contains GWP assets that require additional mitigation.

By applying prudent vegetation management programs, GWP has decreased the City of Glendale's wildfire exposure from 62% of its land area to 0.47%, a 99.5% decrease; this reduction in scope provides clear guidance on the remaining areas requiring additional wildfire mitigation. Figure 3 summarizes the impact of the existing mitigating measures, and Figure 4 graphically illustrates the level of mitigation currently in place. GWP intends to focus its added wildfire mitigation efforts and resources on mitigating the remaining electrical assets in these Tier 2 and Tier 3 zones.

[15] City of Glendale's High Fire Hazard Area map, https://www.glendaleca.gov/home/showdocument?id=50019

Figure 3. GWP Assets Currently Mitigated vs. Requiring Additional Mitigation

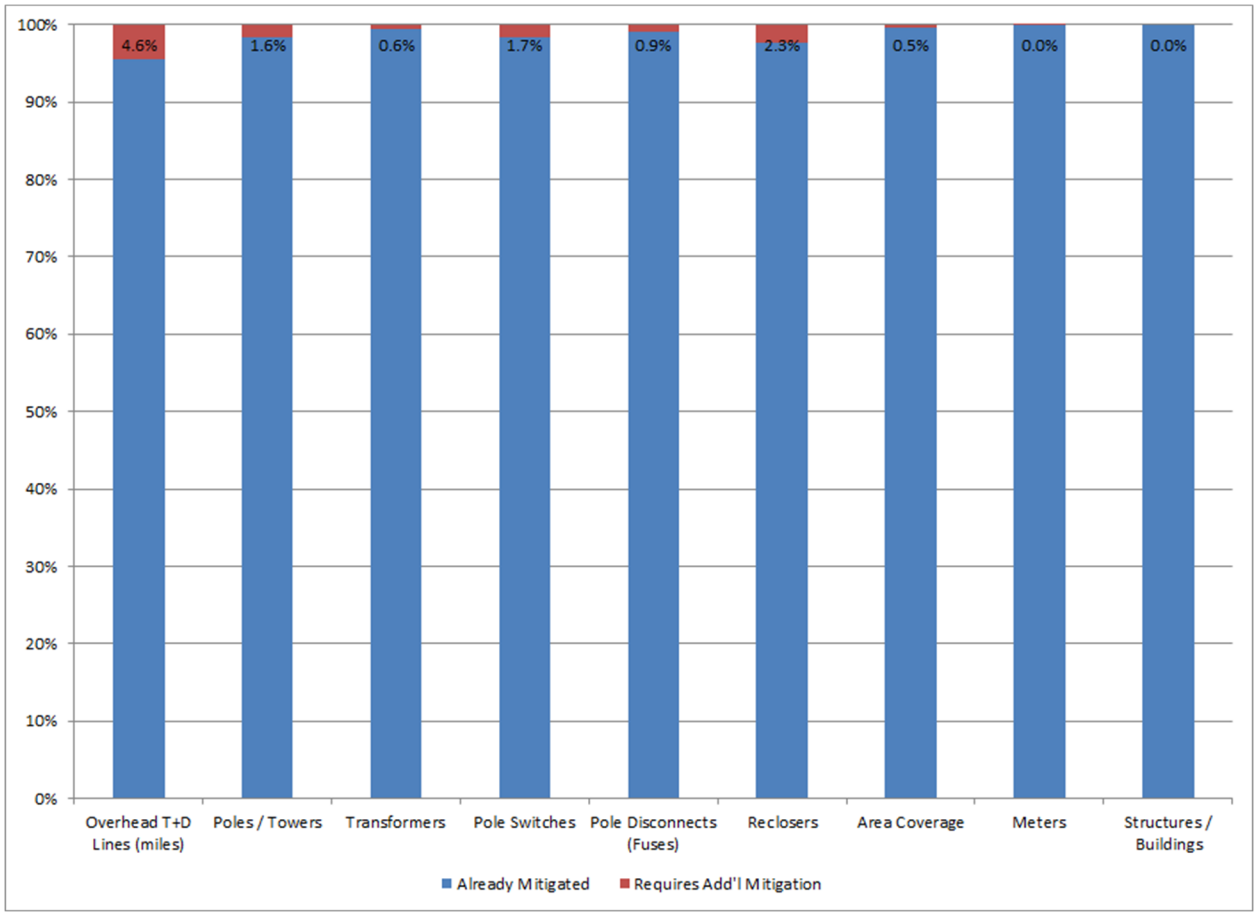
	Total Assets				Liable Assets Requiring Additional Mitigation					
	Tier 1	Tier 2	Tier 3	Citywide	Tier 1	Tier 2	Tier 3	Citywide	Reduction	Requires Additional Mitigation
Overhead T+D Lines (miles)	206.2	60.6	15.6	282.4	-	9.6	3.4	13.0	95.4%	4.6%
Poles / Towers	11,303	2,899	703	14,905	-	185	60	245	98.4%	1.6%
Transformers	3,528	673	165	4,366	-	23	3	26	99.4%	0.6%
Pole Switches	523	108	16	647	-	10	1	11	98.3%	1.7%
Pole Disconnects / Fuses	1,098	232	49	1379	-	7	5	12	99.1%	0.9%
Reclosers	28	12	3	43.0	-	1	0	1	97.7%	2.3%
Area Coverage	38%	48%	14%	100%	-	0.29%	0.18%	0.47%*	99.5%	0.5%
Electric Meters	77,524	10,889	1,945	90,358	-	5	1	6	100.0%	0%
Structures / Buildings	44,469	11,622	2,248	58,339	-	0	0	0	100.0%	0%

* *Refer to page 5 of report, Methodology for calculating high-wildfire danger areas in the City of Glendale*
Eliminate the area from Tier 2 and Tier 3 where
1) there are no GWP electrical assets
2) electrical assets reside within 100 feet of a private structure, are cleared by vegetation (VMP program)
3) Divide the remaining area from Tier 2 & Tier 3 to the entire City area to get 0.47%

The number of liable assets in Tier2 and Tier 3, requiring additional mitigation from Figure 3 is:

	Liable Assets Requiring Additional Mitigation		
Overhead Assets	Tier 2	Tier 3	Citywide
Overhead T&D Lines (Miles)	9.6	3.4	13
Poles	185	60	245
Transformers	23	3	26
Pole Switches	10	1	11
Pole Disconnects / Fuses	7	5	12
Area Coverage	0.29%	0.18%	0.47%
Electric Meters	5	1	6
Structures / Buildings	0	0	0

Figure 4. GWP Assets Currently Mitigated vs. Requiring Additional Mitigation



18. Enterprise-Wide Risks

This Plan discusses mitigating steps and measures intended to "protect City customers, employees, and assets against the potential dangers and costs of damage incurred as a result of wildfires inadvertently initiated by GWP electrical assets and equipment."[16] These dangers and costs also apply to functions and departments other than the GWP electrical division, including the GWP Water Division, Glendale Information Services, Glendale Police, and Glendale Fire. The primary impacts of a wildfire are the potential for preemptive de-energization of one or more feeders and evacuation of high-danger areas during an active wildfire.

GWP – Water Division

GWP's Water Division serves over 200,000 residents through 34,000 service connections to residential units and businesses and is an essential partner in public safety by ensuring sufficient water supply to the City of Glendale's over 3,000 fire hydrants. In order to provide this service, water needs to be pumped from the various points of delivery to the end users.

Due to the topography of the City of Glendale, water is delivered by gravity to the "downtown" area of the City and pumped from this elevation up to the canyons and hills and to the northern elevations of the City. Specifically, the hydraulic elevation, or grade, of the City's downtown is 724 feet and the highest water service elevation is at 2,483 feet, with several elevations in between. These areas primarily rely upon water storage tanks, which can supply a few hours of water for firefighting purposes to extinguish single structure fires as originally planned and designed when these neighborhoods were developed.

Many of these areas are in what could be called "native brush/urban" interfaces; reliable power to the water facilities can be restricted by wildfires or by proactive de-energization. Since the City has historically had a reliable, local source of generation at the Grayson Power Plant, the water system has not been required to install permanent back-up generation at its facilities. If electrical service to GWP's pump stations were unavailable for more than a few hours, GWP would be unable to provide additional water to an area where a large brush fire could be occurring. It is estimated that the planning, design, and installation of permanent on-site generation to power critical water facilities would cost around $10 million; on-going maintenance and operations would be an added annual budgeted expense.

Glendale Information Services

Among its myriad functions, the Information Services Department (ISD) maintains the Citywide radio communications system. Each radio site has unique characteristics and a different degree of resiliency against wildfires and loss of GWP power, depending upon the location and the degree of load on the radio system (more transmitters or more microwave radio links mean a greater power requirement). Each site has a backup battery plant capable of running the entire radio site and, with one exception, has an on-site generator with automatic start and an automatic transfer switch.

The radio system can run for several days without recharging the batteries (i.e., no generator). ISD has telemetry to report the loss of primary (GWP) power and the status of the generator (running or not), and they are aware of the GWP circuits that feed each site. For those sites not supplied by GWP, they have relationships for information sharing with the site owner and/or other tenants to make each other aware of planned and unplanned outages, as well as site access issues. Therefore, loss of GWP power would not have a significant impact unless the outage were to last for several days; resiliency against wildfires would be dependent upon the intensity and proximity of the wildfire, as physical access would nominally not be required to ensure uninterrupted operation.

The radio system "Master Site" is located near downtown Glendale and ISD also maintains a large battery plant, a fixed generator, and a manual transfer switch with terminals appropriate to connect to any suitable generator there.

During past power outages impacting these radio sites, ISD has recommended that GWP prioritize power restoration to GWP customers since ISD can ensure continued operation for several days without GWP power.

Glendale Police Department

Wildfires and power outages, planned and unplanned, impact the Glendale Police Department (GPD) directly ("First-Order Impacts"), other City services with Police effects ("Second-Order Impacts"), and the community in general ("Third-Order Impacts").

First Order Impacts:

- **Diesel Backup**. GPD has a 13,500-gallon diesel fuel tank, which provides no more than 95 hours of run time if the tank is full when an extended power outage begins. Typically, these tanks are not kept full and the tank volume fluctuates.
- **Loss of Data Center**. GPD's data center is not backed up outside of the City. As a result, evacuation due to wildfires or a long-term power loss that extends beyond the diesel backup means an inability to access local criminal justice records until the evacuation is lifted or power is restored. These records can include information supporting arrest warrants, involving active investigations, or related to critical missing persons – this accounts for all records-related functions.
- **Access to Fuel for Vehicles**. GPD's automotive fuel supplies require power to pump. Thus a loss of power beyond their diesel support means the fleet is drastically limited. They do not have a tanking capacity so would need to execute an emergency contract for fuel services in an area unaffected by power outages, or secure an emergency tanker from another source. The Los Angeles (LA) County Sheriff does not have an emergency tanker, so they would be forced to wait for a tanker from the California Governor's Office of Emergency Services (Cal OES), or they would drive somewhere to purchase fuel commercially.

Second Order Impacts:

- **Citywide Fuel for Vehicles**. The City as a whole has access to 115,000 gallons of tanked diesel fuels and a limited capacity to support moving fuel supplies from site to site. This tanked fuel would have to support all City operations. In all likelihood, mission-critical activities like Fire, Police, GWP, and Public Works would be given nearly equal priority in these supplies in the event of evacuation or loss of GWP power. If the fuel is unreachable due to evacuations or wildfire, the capacity of this fuel is further restricted.
- **Police Radio Towers**. Police radio towers use an uninterruptable power supply (UPS) consisting of batteries and generator backup.
- **Emergency 911 Calls**. If the 911 system fails at the Glendale Police building or the building is evacuated due to wildfires, calls roll over to Verdugo Fire. Depending on the location, extent, and duration of a power outage or wildfire, both centers could go down or become unreachable. Neighboring agency facilities have insufficient desk space to accommodate rolling calls to them, even if GPD sent personnel.
- **Internet**. Citywide data connectivity to the Internet, including GPD access, requires GWP power. If the City's primary data center goes down, GPD loses its Internet connectivity to the outside world.
- **Prisoner Impacts**. With an extended loss of GWP power, GPD would experience hindered water deliveries to the police building. They have limited supplies of drinking water, and dealing with wastewater / sewage would become an issue. With a loss of power to the police building or an evacuation, the prisoner population would need to be transported offsite and GPD could no longer hold or book arrestees locally.

Third Order Impacts:

- **Streetlights**. Extended loss of power to the streetlights would increase traffic collisions and dramatically snarl traffic, especially if coupled with a localized evacuation. GPD does not have sufficient staff to manually run traffic control, even at the City's major intersections.
- **Gas Stations**. Extended loss of power to area gas stations would limit local fuel supplies, even to the extent that some residents would enter emergency situations because they are stranded. For example, kids at school may need to be picked up, or people requiring medical care may need transportation.
- **Hospitals**. Evacuation or extended loss of power to area hospitals, if closure was forced, would result in patients being sent to distant facilities. Currently the limited ambulance capacity would be strained by long-range transports, impacting both GPD and GFD.
- **Grocery Stores**. Extended loss of power or a mass evacuation would impact grocery stores. Reductions in food supply would impact the most vulnerable. Many of the City's residents have limited transport ability (primarily, the elderly) who are unable to walk to the corner store for food and supplies.
- **Uninhabitable Areas**. Extended loss of power could create whole neighborhoods that are not serviced by GWP – first power, then water. Eventually, these neighborhoods become uninhabitable. Based upon observations after wildfires, situations like this require increased services on the order of 300% to 500%.

- **Cellular Services**. The area cellular telephone systems rely upon GWP power and have a limited battery backup. Once the battery backup fails, the cellular network breaks down and citizens will be limited in their ability to care for themselves or request aid.

Glendale Fire Department

Wildfires and power outages, planned and unplanned, directly impact the Glendale Fire Department (GFD). However, the GFD has mitigating measures in place to ensure continued operations.

- **Backup Generators**: GFD has diesel backup power generators at all GFD fire stations. There is sufficient fuel, when full, for 90 to 560 hours of emergency power generation at each station, depending on the size of the generator at the station.
- **Verdugo Dispatch**: Dispatch has a UPS (Uninterruptable Power Supply) with a manual transfer switch to accommodate multiple electric feeds. On a full charge, the backup batteries can run dispatch operations for 10 hours. After 10 hours, dispatch will rely on diesel backup generators at Fire Station 21.

19. Restoration

GWP restores power after a wildfire or preemptive de-energization in a similar manner, ensuring the assets are in a safe condition prior to re-energization.

GWP maintains a list of reclosers that are disabled in the event of a Red Flag Warning or as determined necessary by the Power System Operators based upon system conditions. These devices are disabled during periods of extreme wildfire danger to minimize the likelihood of inadvertently sparking a fire upon automatic re-energization. Upon restoration, the reclosers will be re-enabled to perform normally.

GWP maintains a list of transmission and distribution lines that must be manually patrolled prior to re-energization, in the event the lines were automatically (e.g., via relay action) or manually (through Power System Operator action) de-energized. System Dispatch notifies GWP staff that the lines are being patrolled in anticipation of re-energization. During these patrols, GWP personnel ensure that structures and equipment are not damaged – e.g., poles are upright, conductors are attached, transformers are in place, there are no trees or other vegetation in contact with overhead conductors, etc.

During these patrols, if equipment or assets are found in a suboptimal condition, GWP personnel will coordinate to repair the equipment and restore service. To facilitate repairs, GWP maintains a minimum level of spare distribution transformers, conduit, cables and conductors, other equipment, and associated parts in its warehouse. When minimum thresholds are reached, the warehouse automatically orders a pre-determined number of units to restore warehouse stock in anticipation of the next emergency.

In the event GWP lacks the personnel, equipment, or parts to rapidly restore service, it can leverage mutual assistance and mutual aid programs with neighboring utilities. In these cases, neighboring utilities can quickly offer personnel, equipment, and parts to safely and quickly restore service to customers.

Glendale reacts proactively whenever there is a Red Flag warning issued for the area by the National Weather Service, and de-energizes Glendale's 34.5 kV "Bel Aire-Montrose transmission line. Also, before the line is re-energized, a lineman patrols to confirm that the line is intact and that there is no debris lodged across the insulators or the lines. Overwhelming majority of the area serviced by GWP is classified as 'Urban', with clear access by the city Fire Department, therefore the possibility of wildfire is very low, but there is a single **sub-transmission** line mentioned in the above paragraph "Bel Aire-Montrose line" that runs across an uninhabited hilly terrain covered with brush; it has limited vehicular access. This is an area of elevated fire risk. For that reason, GWP de-energizes this transmission line (without loss of customer load) each time the National Weather Service issues a Red Flag Alert.

20. Plan Maintenance and Inspection Effectiveness

This Plan is intended to be a "living document," providing guidance to GWP on funding and operational priorities, yet with sufficient flexibility to be updated based upon new data and feedback from those responsible for its implementation.

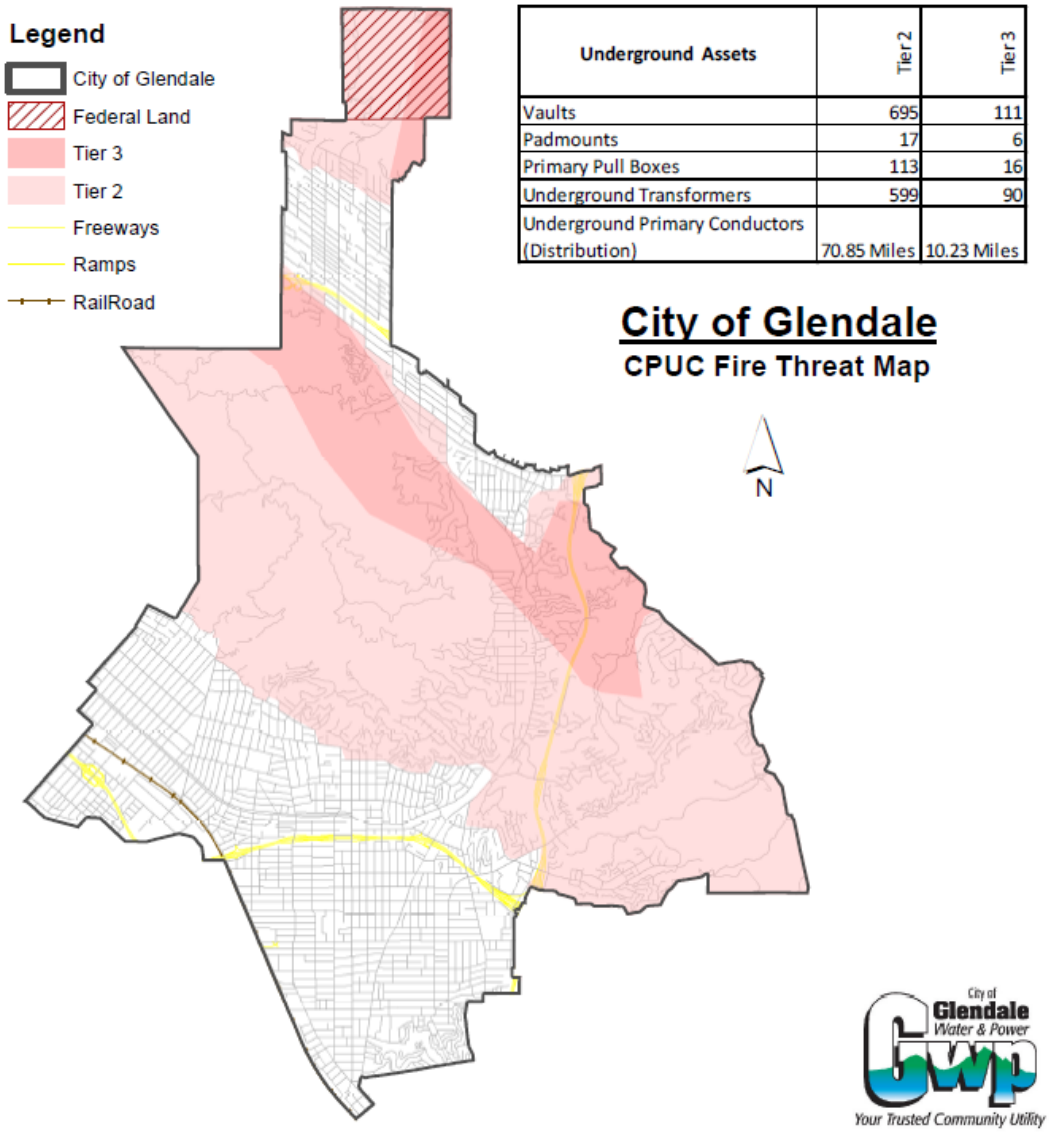
As described in **10. Metrics** and **11. Metrics Feedback**, GWP's metrics are intended to measure the effectiveness of this Plan. As the metrics are collected and analyzed, the Plan's effectiveness will be evaluated and, as necessary, the Plan will be modified in response to that feedback. The Wildfire Mitigation Plan Committee will meet quarterly, or as needed, to review the Plan metrics and compare against operational performance – specifically, the Committee will assess each metric and, with the benefit of hindsight and added experience, determine the metric's effectiveness. The Plan will be reviewed annually and circulated through GWP management, City of Glendale management, and the City of Glendale's City Council for review and approval. This review process will include making updates to the Plan to correct any Plan deficiencies.

As discussed in **9. Preventative Strategies and Programs**, *Operations & Maintenance (O&M) Efforts*, GWP contracted with an engineering firm to conduct a complete system inspection of all poles, vaults, and associated/attached equipment. GWP staff will oversee these inspections and will assign qualified personnel to monitor and audit the inspections to ensure that they are conducted in a consistent and thorough manner. As changes to the process are required, GWP staff will be empowered to initiate those changes with the contracted inspectors. Once completed, this set of system inspections will establish a condition baseline. GWP will then use internal staff to launch an on-going inspection program, using the contractor inspection plan as a basis, to ensure system assets continue to be monitored and inspected on a regular basis.

Exhibit A. City of Glendale Fire Threat Map

	Total Assets				Liable Assets Requiring Additional Mitigation					
Overhead Assets	Tier 1	Tier 2	Tier 3	Citywide	Tier 1	Tier 2	Tier 3	Citywide	Reduction	Requires Additional Mitigation
Overhead T&D Lines (Miles)	206.2	60.6	15.6	282.4	-	9.6	3.4	13	95.4%	4.6%
Poles	11,303	2,899	703	14,905	-	185	60	245	98.4%	1.6%
Transformers	3,528	673	165	4,366	-	23	3	26	99.4%	0.6%
Pole Switches	523	108	16	647	-	10	1	11	98.3%	1.7%
Pole Disconnects / Fuses	1,098	232	49	1,379	-	7	5	12	99.1%	0.9%
Area Coverage	38%	48%	14%	100%	-	0.29%	0.18%	0.47%	99.5%	0.5%
Electric Meters	77,524	10,889	1,945	90,358	-	5	1	6	100.0%	0.0%
Structures / Buildings	44,469	11,622	2,248	58,339	-	0	0	0	100.0%	0.0%

Underground Assets	Tier 2	Tier 3
Vaults	695	111
Padmounts	17	6
Primary Pull Boxes	113	16
Underground Transformers	599	90
Underground Primary Conductors (Distribution)	70.85 Miles	10.23 Miles



Your Trusted Community Utility

Exhibit B. Vegetation Management Program (VMP)

The two-page VMP brochure below was up to date as of the date of this Plan. For the latest version, please see https://www.glendaleca.gov/government/departments/fire-department/fire-prevention-environmental-management/vegetation-management-and-weed-abatement.

Exhibit B. Vegetation Management Program (VMP), continued

DEFENSIBLE SPACE

Creating and maintaining defensible space is essential for increasing your homes's chance of surviving a wildfire. It's the buffer that homeowners are required to maintain on their property between a structure and the plants, brush and trees or other items surrounding the structure that could catch fire. This space is needed to slow the spread of wildfire and improves the safety of firefighters defending your home.

Two zones make up the required 100 feet of defensible space.

ZONE 1

Extends 30 feet out from buildings, decks, and other structures

- Remove all dead plants, grass and weeds.
- Remove dead or dry leaves and pine needles from your yard, roof and rain gutters.
- Trim trees regularly to keep branches a minimum of 10 feet from other trees.
- Remove dead branches that hang over your roof, and keep branches 10 feet away from your chimney.
- Remove or prune flammable plants and shrubs near windows.
- Remove vegetation and items that could catch fire from around and under decks.

ZONE 2

Extends 30 to 100 feet out from buildings, decks, and other structures

- Cut or mow annual grass down to a maximum height of 4 inches.
- Create a minimum horizontal spacing of 20 feet between shrubs and trees.
- Create a minimum vertical spacing of 6 feet between grass, shrubs and the lowest branches on a tree.
- Remove fallen leaves, needles, twigs, bark, cones, and small branches. However, they may be permitted to a depth of 4 inches if erosion control is an issue.
- Protect water quality. Do not clear vegetation near waterways to bare soil. Excessive clearing can cause soil erosion.

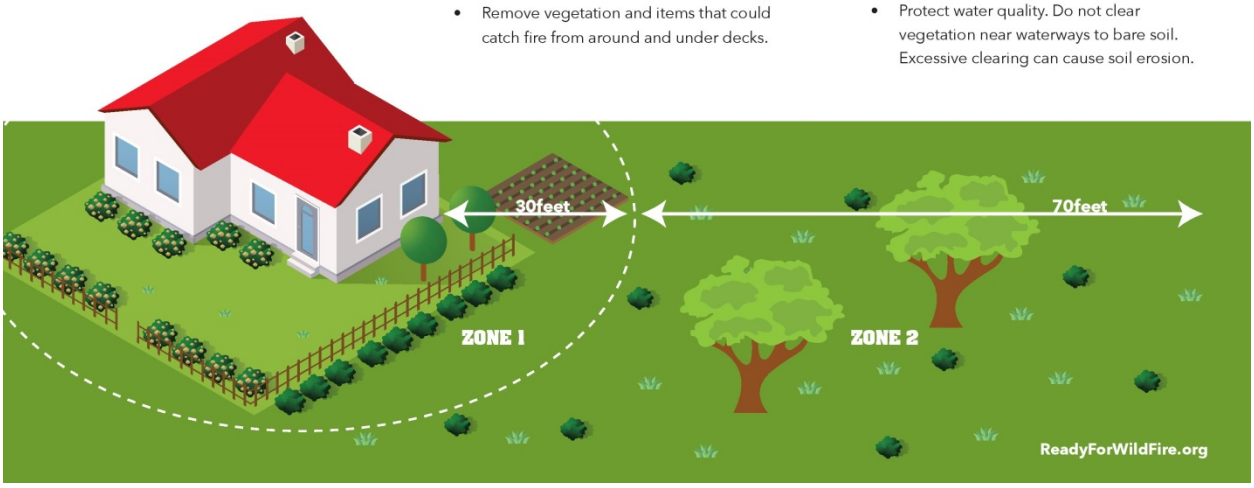
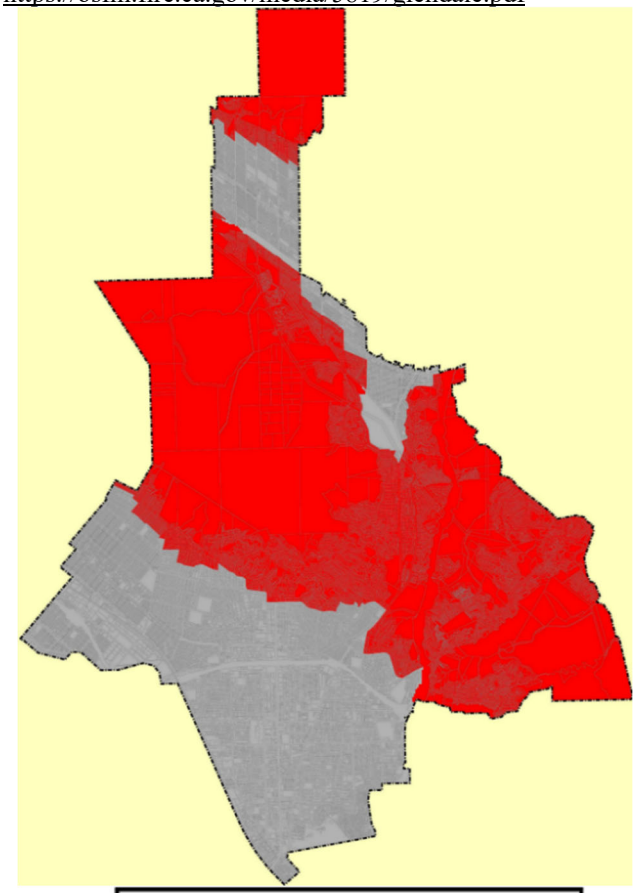


Exhibit C. General Statistics from CalFire

Glendale

Very High Fire Hazard Severity Zones in LRA
As Recommended by CAL FIRE
https://osfm.fire.ca.gov/media/5819/glendale.pdf



General Statistics

21. GWP Accomplishments during calendar year 2021

During calendar year 2022, GWP completed the following projects to mitigate the risk of wildfire.

- Replaced 8 power poles in Tier 2 and Tier 3.
- Replaced 8 transformers in Tier 2 and Tier 3.
- Trimmed 6787 trees within Tier 2 and Tier 3.
- Installed 8,306 feet of underground high voltage circuits within Tier 2 and Tier 3. Most new installations are underground, unless doing so would be cost-prohibitive or is otherwise unfeasible.
- Procured 15 fire resistant wrap/coating poles to install in the high risk.
- GWP's linemen replaced two power poles with fire resistant wrap/coated poles and also installed 250 feet of covered conductors in Tier 2. Project as the first was completed successfully.
- Field supervisors continually assess and inspect the electrical facilities when they are in the field for any project construction.
- We rebuilt three power poles/300 feet of overhead circuit per project #652AA-13, and 16 power poles/1568 feet under project #30076-20 for 12kV operation to increase the conductor-spacing. This will minimize the likelihood of fire due wire slapping.
- We purchased and installed the first batch of composite crossarms to improve the system reliability.
- Replacement of insulators to reduce the likelihood of overhead conductors becoming detached and contacting vegetation or other flammable materials.
- Identification, and replacement, of splices, clamps, and connectors on overhead conductors, where stress from heat or general use can cause downed conductors to come in contact with vegetation or other flammable materials.
- Installed Fusesaver device to minimize the risk of fire in brush area from ejecting a blown fuse.
- In calendar year 2021, 6787 trees were trimmed within Tier 2 & Tier 3.
- To evaluate the effectiveness of the wildfire plan, GWP came up with metrics posted on an internal website to track the number of electrical assets replaced in Tier 2 and Tier 3. These numbers were directly extracted from Electrical GIS map.
- GWP has acquired a new Outage Management System (OMS) by DataVoice International Inc., which allows efficient and quick notification to our customers of impending power outage, whether than outage is due to generation shortage or due to PSPS.

22. GWP Accomplishments during calendar year 2022

During calendar year 2022, GWP completed the following projects to mitigate the risk of wildfire.

- The approved budget for Wildfire Mitigation for the fiscal year 2022 -23 is $200,000.
- GWP's contractor trimmed 8016 trees within Tier 2 and Tier 3. Vegetation management has been expanded to exceed minimum clearance requirements as described in GO 95, by trimming trees down to the telecommunications level. In fiscal year 22-23, we spent $780 thousand on tree trimming and vegetation management.
- GWP construction crew replaced 14 power poles in Tier 2 and 10 power poles in Tier 3.
- Replaced 6 overhead transformers in Tier 2 and Tier 3.
- Replaced 6 underground transformers in Tier 2 and Tier 3.
- Installed 223 feet of covered conductor wires in Tier 2.
- Installed 1107 feet of underground conduits within Tier 2 and Tier 3. Most new installations are underground, unless doing so would be cost-prohibitive or is otherwise unfeasible.
- Procured 30 composite crossarms to install in the high risk.
- Inspected 71 power poles within the Glendale Service territory to identify any possible electrical equipment at the verge failure.
- Inspected 674 Street Lights within the City.
- Inspected 5 vaults within the City.
- Inspected 71 pull boxes within the City
- Glendale's longest sub-transmission line is the one connecting Bel Aire Substation in Northwest Glendale to Montrose Substation in Montrose. This 34.5kV line passes through both tier 2 and tier 3 fire-threat zones. Portions of the line lies in the mountainous area and accessing it can be difficult. The line which is mostly overhead has three conductors. These conductors can break due to aging, corrosion, lighting strikes and other reasons. If a downed energized conductor causes fire to break out due to generated heat and sparking, it would be difficult for emergency personnel to response quickly. GWP is currently implementing SEL's broken conductor detection scheme. This scheme will detect any broken conductor that may be under way to fall on the ground and de-energizes the line before the conductor hits the ground. A factory acceptance tests has been completed successfully and the project would be commissioned in the upcoming months.

23. Third-Party Independent Assessment

Exhibit D