BEFORE THE WASHINGTON UTILITIES AND TRANSPORTATION COMMISSION

DOCKET UE-240006

EXH. DRH-2

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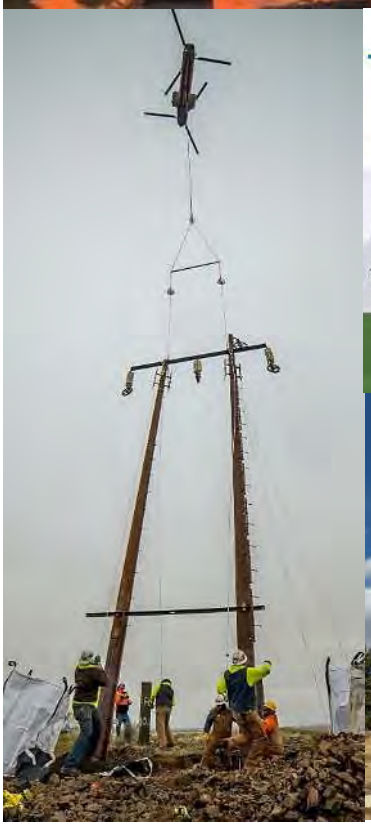
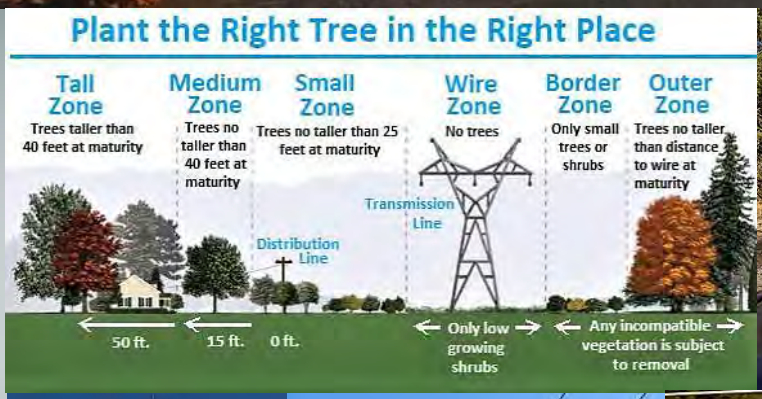
REPRESENTING AVISTA CORPORATION

# 2023 Avista Utilities Wildfire Resiliency Plan






# Statement from Avista Executive Management

2023 represents Avista's 3rd full year of implementing the Wildfire Resiliency Plan. Avista's wildfire strategies are firmly rooted in our 135-year operating history and represent the collective knowledge of Avista employees and fire agency professionals together with assistance from peer utilities, and most importantly, engagement with customers. This Wildfire Plan, updated for 2023, builds upon strategies developed in 2020 and aligns with the Company's mission to provide safe, reliable, and affordable energy. Avista's Wildfire Plan is a 10-year program to reduce fire risk associated with the operation of electric transmission and distribution facilities. It also reflects our commitment to partner with customers, communities, and those who manage forest landscapes and fight fires.

We all have a role to play in minimizing the risk of wildfire.

Heather Rosentrater, Chief Operating Officer (COO)

Date: January 23, 2023

Josh DiLuciano, Vice President Energy Delivery

Date: January 23, 2023

David Howell, Director Electric Operations

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Date: January 23, 2023

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# Executive Summary

Avista published its first Wildfire Resiliency Plan in June of 2020. That plan introduced the risks, costs, and benefits of implementing a holistic set of measures to reduce utility wildfire risk. The 2020 Plan built upon Avista's operating history responding to and mitigating for wildfire activity in addition to risk mitigation strategies developed by California utilities in the aftermath of the 2017 and 2018 fire seasons. This plan details the performance and investments made from 2020 through 2022 and serves to reaffirm Avista's commitment to reducing fire risk to communities, customers, and the company. Similar to other utility wildfire plans, Avista is making investments in four key areas:

- **Grid Hardening** – to invest in electric line infrastructure to reduce spark-ignition outage events and to protect critical assets from the impact of wildfires.

- **Enhanced Vegetation Management** – to inspect 100% of distribution line assets annually and combine remote sensing technologies such as LiDAR and satellite imagery to aid in overall vegetation management decision-making.

- **Situational Awareness** – to automate Avista's non-reclosing protection strategy and align short term, weather related fire risk with system protection levels.

- **Emergency Response & Operation** – to help customers be better prepared for wildfires and partner with emergency first responders before, during, and after fire events.


Avista's Wildfire Resiliency Plan spans 10 years from 2020 through 2029 and is intended to accelerate existing infrastructure programs as well as conduct new programs to reduce fire ignition risk from electric lines and to make systems more resilient against the impact of fires. Avista's Wildland Urban Interface (WUI) map indicates that 2,746 miles (36% of system) of electric distribution lines are located in high fire consequence areas. These zones reveal the intersection between forest land and human development and are the focal point of Avista's risk mitigation strategies.


Since 2020, Avista has completed upgrades on 392 miles of distribution lines (14%) and has installed 287 steel transmission poles at a cost of nearly $50 million dollars. Avista has made tremendous progress towards automating its distribution protection system with upgrades to 120 of 224 devices (55%). These investments in infrastructure will improve system resiliency and customer reliability by reducing the number of fire ignition events. In 2022, Avista recorded 107 spark ignition events as compared to the previous 5-year average of 117 indicating a reduction of 9%. While the vast majority of spark-ignition events do not result in wildfires, it an important measure of fire risk performance. Similarly,

Avista reported significantly fewer pole fires in 2022 versus the 5-year average with 50 events versus the 5-year average of 83 (40% reduction).[1]

*Figure 1. Pine Bark Beetle Damage*

Another key performance measure is how many times trees fall into powerlines. Tree fall-in rates are closely linked with wind and weather events but again, when vegetation comes into direct contact with electric lines, there is potential for fire ignition. In 2022, Avista inspected 100% of electric distribution lines to identify dead, dying, and diseased trees that are most likely to fall into electric lines. Historically, Avista crews inspected 20% of powerlines on a 5-year rotating cycle, but as part of the Wildfire Plan have committed to full annual inspection to locate and remove hazard trees. In 2022, over 22,000 trees were removed near powerlines that were weakened by drought, disease, and insects. Insects such as the pine bark beetle and spruce moth have emerged as significant contributors to tree mortality. In 2021, the Inland Northwest experienced profound drought levels which have contributed to tree mortality. In 2022, 375 trees fell into electric lines which was slightly higher than the 5-year average rate of 349. Reducing the number of tree falls is an important component of Avista's plan. Since 2020, Avista has invested over $27 million dollars to find and remove hazard trees in addition to investments made in remote sensing technologies including LiDAR to assist with the inspection process.

This plan, updated for 2023, will detail the progress to date and future projections associated with fifteen projects ranging from grid hardening to risk-based vegetation management together with efforts to work directly with customers to reduce fire risk at their homes and communities. Table 1 indicates the progress from 2020 through 2022 and remaining work through 2029. Though many of the infrastructure programs are expected to sunset in 2029, other programs such as vegetation management and fire risk monitoring will continue well past 2029.

| Programs and Resources | 2020-2022 Progress | 2023-2029 Remaining | Percent Complete |
|---|---|---|---|
| **Distribution Grid Hardening** | 392 miles | 2,357 miles | 14% |
| **Transmission Steel Poles** | 287 poles | 713 poles | 29% |
| **Fire Resistant Pole Wraps** | 4,627 poles | 7,000 poles | 40% |
| **Transmission LiDAR Survey** | 100% in 2022 | 100% annually | |
| **Distribution Satellite Imagery** | 100% in 2021-2022 | 100% annually | |
| **Dry Land Automation** | 124 devices | 104 devices | 55% |
| **Capital Investment** | $48,862,000 | $237,000,000 | 17% |
| **O&M Investment** | $27,305,000 | $99,136,000 | 22% |
| | | | |
| **Key Performance Measure** | **2022** | **5-Year Average (2018 to 2022)** | **Percent Change** |
| **Tree Fall-in Rate** | 375 | 363 | + 3% |
| **Tree Grow-in Rate** | 59 | 80 | - 26% |
| **Equipment Failures** | 745 | 650 | + 15% |
| **Pole Fires** | 50 | 83 | - 40% |
| **Spark-Ignition Events** | 107 | 117 | - 9% |

*Table 1. Wildfire Progress and Work Remaining*

[1] Note that there were 154 poles fires in 2021 due to hot dry conditions followed by light rains, ideal conditions for pole fires. This compares to 92, 77, 68, and 65 poles fire per year in 2017 through 2020.

# Avista's Commitment to Wildfire Resiliency

### *Why does Avista have a Wildfire Plan?*

The most straightforward answer to that question is one word: Risk. The risk of wildfire is ever present in the western United States. Though we have always faced the threat of wildfires, that threat is increasing both as a function of population growth and as the result of a changing climate. As examples, on October 16, 1991, winds in excess of 70 miles per hour blew across the Columbia Basin and into the Inland Northwest. The area was experiencing an extended drought and fire conditions were critical, resulting in nearly 90 fires. On September 7, 2020, excessive winds hit the area again. 28 fires were reported in Avista's electric service territory, some as a result of vegetation contact with powerlines.

Avista developed a wildfire plan to help mitigate this risk. This includes modified infrastructure design and operations such as Avista's Dry Land operating program that limits automatic circuit reclosing in order to reduce the risk of fire ignition. In the early 2000s, Avista migrated from wooden to fiberglass crossarms on distribution poles, which has reduced the number of pole fires. And, in 2006, Avista began installing steel rather than wood transmission poles to fire-harden the high voltage system. These types of tactics, and a more comprehensive risk-based approach, became a focus in beginning in 2019 and will be described in this report.

### *What are the Plan's Goals?*

Avista published its first Wildfire Plan in June of 2020 culminating 18 months of development working with peer utilities, internal subject matter experts, and regional wildfire and emergency response agencies. The initial 2020 Wildfire Plan identified 28 actions to reduce wildfire risk as grouped into four categories: grid hardening, enhanced vegetation management, situational awareness, and emergency response and operations. The stated goals of the 2020 Plan remain unchanged and include:

1. **Emergency Preparedness** – To recognize wildfire as a recurring threat to infrastructure, communities, and utility customers.

2. **Protect Life and Property** – To protect physical assets, property, and human lives against the threat of wildfires. To recognize fire potential as a manageable risk element of our operating and maintenance strategies.

3. **Financial** – To mitigate the probability and consequence of direct financial costs and liability associated with large scale fire events.

This Wildfire Plan is updated for 2023 and highlights the progress and milestones achieved since 2020. While Avista started work in the second half of 2020, the combination of 2021 and 2022 serve as the test bed for gathering direct feedback from employees, fire agency professionals, and customers. While many of the elements of the 2020 Plan remain relevant, this updated report enjoys the benefit of hindsight and provides focus for Avista's approach to mitigating fire risk.

### *Why is Wildfire Risk Increasing?*

Research indicates that climate change has fueled the increase in wildfires across the Western U.S. and that the frequency of wildfires has quadrupled since the 1980s. Fire season is also longer. Most areas report 80 additional days of fire season.[2] Climate scientists predict that a warming climate will produce longer duration and more severe droughts, especially in the Southwest United States.[3] In 2021, Eastern Washington and Northern Idaho experienced severe drought conditions with many locations receiving less than half of normal precipitation from March through August.[4] As illustrated in Figure 2, the U.S. Forest Service has extensive fire records which indicate a tripling in fires larger than 1,000 acres, from an average of about 50 fires in 1970 to nearly 150 today.[5]

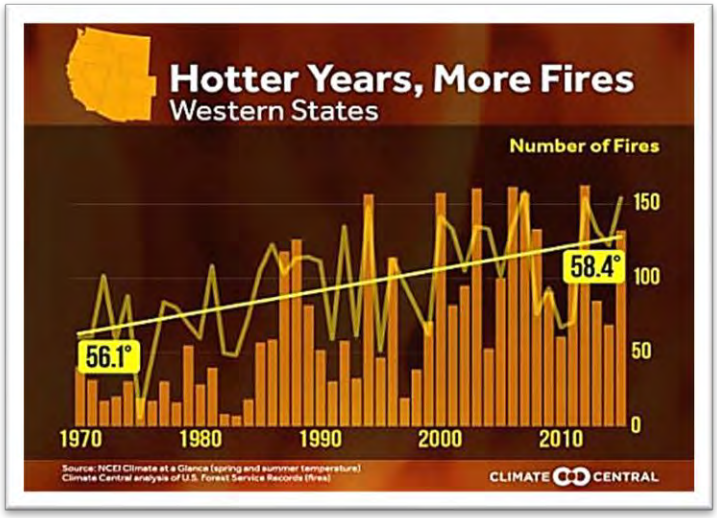



*Figure 2. USFS Fire Records as reported by Climate Central*

### *What is Avista's Role?*

*Figure 3. 2020 Labor Day Fire Fighting*

Electric faults occur when equipment fails or when weather and wind cause branches or trees to fall into powerlines. All electrical faults involve a release of energy before the fault is interrupted by the utility's protective equipment. The vast majority of electrical faults do not result in fire ignition. In fact, Washington's Department of Natural Resources (DNR) indicates that only 4 to 6% of wildfires involve electric lines.[6] The California Public Utility Commission (CPUC) recently reported that approximately 10% of the state's wildfires involved electric powerlines, but that 50% of the state's deadliest fires involved utility ignition.[7] When excessive winds (e.g., 30-60 mph) combine with critical fire-weather (e.g., low relative humidity and drought), the stage is set for large wildfires.

[2] John T. Abatzoglou and A. Park Williams, "Impact of Anthropogenic Climate Change on Wildfire Across Western US Forests," Proceedings of the National Academy of Sciences, October 10, 2016, https://www.pnas.org/doi/10.1073/pnas.1607171113
[3] U.S. Environmental Protection Agency, "A Closer Look: Temperature and Drought in the Southwest," https://www.epa.gov/climate-indicators/southwest
[4] Nicholas K. Geranios, "2021 a Record-Breaking Drought Year in Parts of Washington," HeraldNet, Sep. 20, 2021, https://www.heraldnet.com/northwest/2021-a-record-breaking-drought-year-in-parts-of-washington/
[5] Climate Central, "Graph: Hotter Years, More Fires in Western States," https://www.climatesignals.org/resources/graph-hotter-years-more-fires-western-states
[6] DNR Wildfire Intel Dashboard, Statistics, https://experience.arcgis.com/experience/6cdda73cf6154949a1fae76ccb2900a0/page/Main-Page/?views=Statistics
[7] California Public Utility Commission, "PSPS, History and Background," www.cpuc.ca.gov/psps

### *What are the Risks?*

As part of the Wildfire Resiliency Plan, Avista tracks overhead equipment failures, pole fires,[8] and spark-ignition events as key performance indicators. We also track the number of trees that fall or grow into powerlines. Each of these measures represents a situation that may lead to a wildfire. Recent values are summarized in Table 2.

| Outage Issue | 2018 | 2019 | 2020 | 2021 | 2022 | 5 Yr. Average |
|---|---|---|---|---|---|---|
| Overhead Equipment Failure | 654 | 651 | 590 | 612 | 745 | 650 |
| Pole Fire | 77 | 68 | 65 | 154 | 50 | 83 |
| Spark Event | 125 | 99 | 147 | 109 | 107 | 117 |
| Trees Fall Into Lines | 315 | 399 | 375 | 353 | 375 | 363 |
| Trees Grow Into Lines | 97 | 94 | 69 | 81 | 59 | 80 |

*Table 2. Distribution Outage Incidents*

These values represent a subset of unplanned outages that can be managed by upgrading powerlines and removing trees, which are primary objectives of Avista's Wildfire Plan. Project elements of the Wildfire Plan are grouped into four categories:

- **Grid Hardening** – Upgrade infrastructure to reduce equipment failures and protect poles and equipment from the impact of wildfires.
- **Enhanced Vegetation Management** – Remove dead, dying, and diseased trees that could strike powerlines. Employ remote sensing such as LiDAR and satellite-derived information to aid in the inspection and identification process.
- **Situational Awareness** – Align utility system protection with fire-weather conditions.
- **Emergency Response & Operations** – Recognize wildfire as separate and distinct from other weather events and partner closely with emergency first responders and firefighters before, during, and after an event.

Though reducing spark-ignition events is a core tenant of Avista's Plan, we acknowledge that fire risk cannot be completely eliminated, and that actions and investments must balance against affordability, reliability, safety and security, and other operating risks. Avista is committed to a multi-year Wildfire Plan to reduce the number of fire ignition events. This updated plan describes that commitment.

[8] Note that there were a high number of pole fires in 2021 due to that year's hot, dry conditions followed by periods of light rain, ideal conditions for the electrical tracking between poles and wood crossarms that can lead to fire. Each year in the U.S. there are over 3,000 pole fires. Pole fires are caused by periods of very dry conditions followed by moisture, when leakage current, which is normally present, heats and creates combustion in gaps where metal bolts connect wood crossarms to wood poles. This does not happen with fiberglass crossarms. For more information, see: John Lauletta, "The Industry's Most Definitive Pole Fire Fact Sheet," https://www.exacterinc.com/resources/uploaded/Brochures/Exacter%20Pole%20Fire%20Fact%20Sheet%20Final.pdf

### *Why is Avista Updating its Plan?*

The 2020 Plan stated that Avista would periodically revise its strategies to incorporate lessons learned, new information related to fire risk, and in response to feedback from customers, agency partners, and regulators. Avista uses a Plan-Do-Check-Adjust framework to adapt business strategies, plans, and processes to align with changing business and physical climates. In fact, core elements of the Wildfire Plan were derived from a series of business process improvement workshops to identify the opportunities to build upon Avista's operating history. Plan implementation is governed by a steering committee whose membership reflects a broad cross section of Avista departments including Regulatory and Rates, Financial Risk & Insurance, Electric Operations, Community Relations, Corporate Communications, Real Estate & Environmental, Legal, and Asset Maintenance. In addition to governance by the steering committee, an executive management team routinely meets to monitor progress and discuss forward looking strategies. Avista's Board of Directors is provided quarterly progress reports as well as two formal presentations annually. Wildfire is an enterprise level risk and executive level oversight is essential for producing prudent and cost effective outcomes for customers.[9] Figure 4 indicates the governance structure for Avista's Wildfire Plan.


*Figure 4. Avista Wildfire Governance*

## Comparison of the 2020 and 2023 Wildfire Plans

From June 2020 through December of 2022, Avista invested nearly $50 million dollars to upgrade powerlines and equipment. This includes upgrades to 392 miles of electric distribution lines and the installation of 287 transmission steel poles as part of the Wildfire program. It has also inspected over 10,000 miles of powerlines and removed nearly 42,000 dead, dying, and diseased trees, together with other vegetation related tasks totaling $27 million. The 2020 Wildfire Plan included 28 recommendations to mitigate wildfire risk. As we've initiated new projects and altered business processes, we've identified elements that can be grouped together, those that remain as standalone programs, and those which should be eliminated. The following section illustrates the current status of the original 2020 Plan elements.

### *2020 Wildfire Plan Scorecard*

The following table lists the recommendations included in the June 2020 Wildfire Plan including the project status, key performance metrics (KPM), notes, and implications for the 2023 Wildfire Plan.

[9] The Company continues to review the Washington Utilities and Transportation Commission Order 10/04, in Docket UE-220053, et. al., received on December 12, 2022, and will update with additional information as required by that Order, as appropriate, as we proceed through the 2023 wildfire season.

| 2020 WF Plan | Status | KPM | Notes | 2023 WF Plan |
|---|---|---|---|---|
| 1. Distribution Grid Hardening | Active | 392 miles complete | Single largest capital plan element. | Standalone |
| 2. DLM Circuit Reclosers | Active | 17 distribution line circuit reclosers | 52 distribution midline circuit reclosers to be installed through 2026. | Grouped with DLM Automation |
| 3. DLM Effectiveness Study | Complete | Internal Report Published Dec. 2020 | Recommendations to modernize the Dry Land Mode operating system. | |
| 4. DLM Trigger | Complete | Elevated and Extreme DLM modes added | Prescriptive trigger points to increase the system protection of distribution lines during periods of critical fire-weather conditions. | |
| 5. Transmission Steel Poles | Active | 287 wood poles converted to steel (Wildfire only) | Project areas align with 50-year fire history. | Standalone |
| 6. Transmission Wildfire-Related Inspection | Active | Conducted annually by Transmission Engineering | Visual inspection prior to fire season to identify fire risk situations. | Standalone |
| 7. Transmission Fire-Resistant Pole Wrap | Active | 1,000-1,500 wood poles wrapped annually | Several utilities are now transitioning from fire-resistant paint to the Genics fire-resistant mesh wrap. Paint must be reapplied every 3-5 years. The mesh has 20 year expected life. | Standalone |
| 8. Distribution Risk Tree | Active | Inspect 100% of electric distribution lines | Remote sensing (LiDAR and satellite) is expected to reduce ground inspections, but those technology tools must be calibrated and verified before they can be fully utilized. Single largest O&M expense. | Standalone |
| 9. Public Safety: Right Tree, Right Place | Active | First year pilot project in 2022. | Renamed Customer Choice: Safe Tree Program | Standalone |
| 10. Distribution Digital Satellite Imaging | Active | 100% system satellite scans in 2021 and 2022 | Vendor – AiDASH. 100% of the system to be scanned each year. | Standalone |
| 11. Transmission Digital LiDAR | Active | 100% system LiDAR in 2022 | Vendor – GeoDigital. Includes high resolution photographs in addition to LiDAR survey data to support infrastructure inspections.100% of the system is scanned each year. | Standalone |
| 12. Conforming Transmission Rights-of-way | Canceled | | 2021 Analysis indicates that tree fall-in incident rate on transmission lines is very low versus cost of this program. | |
| 13. Fuel Reduction Partnerships | Active | 211 acres treated in 2022 | Partnering with WA DNR and IDL fuel reduction programs. | Standalone |
| 14. Substation SCADA | Active | 1 station complete and 2 stations in construction | 57 circuit breakers upgraded in 37 substations by 2029. | Grouped with DLM Automation |
| 15. DLM “Fire-Mode Ready” Devices | Active | 100 circuit reclosers completed in 2022 | Renamed as ‘fire mode ready’ circuit breakers. Software-only changes to existing equipment. | Grouped with DLM Automation |

| 2020 WF Plan | Status | KPM | Notes | 2023 WF Plan |
|---|---|---|---|---|
| 16. Fire-Weather Dashboard | Complete | Beta version August 2020. Current version May 2021. | Avista developed a fire weather monitoring tool leveraging ESRI GIS systems. | |
| 17. Emergency Operating System | Not Started | Process design in 2023 | COVID interrupted in-person meetings. A wildfire specific section will be added to Avista's existing EOP procedures. | Standalone |
| 18. Engineering Role in Major Events | Complete | | Incorporated into transmission design workflow. | |
| 19. Wildfire Program Metrics | Complete | Monthly report | Metric reporting will be on-going through 2029. | |
| 20. Wildfire Training for Avista 1st Responders | Active | 100%, recurring annually | Fire safety training for Avista line operations personnel. | Standalone |
| 21. Expedited Fire Response | Active | Agreement in place with Spokane County & WA DNR | Allows for fire patrol of transmission level incidents during fire season. Will add Idaho Dept. of Lands in 2023. | Standalone |
| 22. Fuse Coordination | Complete | | Incorporated into distribution engineering workflow. | |
| 23. Circuit Recloser Event Reporting | Complete | | Incorporated into protection engineering workflow. | |
| 24. Fire Ignition Tracking | Complete | Data source: NIFC | Data from fire-weather dashboard used to create fire tracking log. | |
| 25. Fire Suppression Water Additives | Canceled | | A review of peer utilities indicates that they are not adding chemicals to water cans. May revisit if use trends change. | |
| 26. WUI Layer in Avista GIS | Complete | Updated for 2023 construction | Fire risk map used to help select distribution grid hardening projects. | |
| 27. Wildfire Notification System | Complete | | SMS Text messages sent from fire-weather dashboard. | |
| 28. Vegetation Management Included in Design Work | Complete | | Integrated into workflow. | |

*Table 3. 2020 Wildfire Plan Scorecard*

### *Completed 2020 Wildfire Recommendations*

Many of the 2020 Plan elements are noted as complete in Table 3. In some instances, the activity is 100% complete and there are no remaining tasks. However, many of the items noted as complete are work processes and though they may lack direct mention in this 2023 Wildfire update, they are ongoing and will evolve to support program objectives. Items of this nature marked as complete include: DLM trigger (threshold), fire weather dashboard, wildfire program metrics, fuse coordination, circuit recloser event reporting, WUI data layer in Avista's Geographic Information System, and the wildfire notification system. Two of the 2020 Wildfire recommendations were canceled, including: 1) the project to widen transmission rights-of-ways and, 2) adding fire suppression chemicals to crew water cans.

### *Canceled: Transmission Rights-of-Way*

In the 2020 Wildfire Plan, Avista planned to invest $50 million dollars over 10 years to widen transmission rights-of-ways. In 2021, we analyzed the number of trees that have fallen into high voltage transmission

lines. Since 2009 there have only been 58 tree related incidents that caused line outages on the 2,270 mile transmission system. Avista operates 700 miles of 230 kV transmission lines and another 1,570 of 115 kV lines. This equates to a very low annual rate of tree related outages, about 4 per year. These low outage rates do not justify the expense of widening transmission rights-of-way. The Wildfire Team, in collaboration with Avista's Real Estate and Transmission Engineering Departments, agreed to terminate the project. Avista's Wildfire Steering Committee affirmed that decision.

### *Canceled: Chemical Additives*

In 2022, the Wildfire Team consulted with several peer utilities to assess the benefits of using chemical additives in fire suppression water cans. Avista's line service trucks are outfitted with water cans like the one shown in the Figure 5. They are also outfitted with conventional fire extinguishers. The advantage of water cans is that they are refillable. Chemicals can be added to water to inhibit evaporation and enhance fire suppression. However, none of the peer utilities that we contacted including Idaho Power, Puget Sound Energy, PacifiCorp, NorthWestern, San Diego Gas & Electric, or Pacific Gas & Electric are using chemical additives in their water cans. Avista may revisit this issue if it becomes an industry accepted best practice.


*Figure 5. Crew Water Can*

## 2023 Wildfire Resiliency Program Elements

Of the remaining programs elements marked as active, four of them stand out as major elements of the Wildfire Plan based on their resource commitments:

- Distribution Grid Hardening
- Transmission Steel Pole Replacement
- Dry Land Mode Automation
- Distribution Enhanced Risk Tree Program

Those four elements account for most of the allocated resources from 2020 through 2029. The table below summarizes these major projects and other risk mitigation measures.

| Wildfire Category | Project ID | Project Scope (2020-2029) | Resource (2020-2029) |
|---|---|---|---|
| Grid Hardening | Distribution Grid Hardening | 2,746 miles. Includes accelerated wood pole management inspections. | $210.5M |
| | Transmission Steel Pole | 1,000 poles | $37.5M |
| | Transmission Inspection | Aerial Inspection & follow-up work | $1.5M |
| | Transmission Fire Resistant Wrap | 10,000 poles | $5.2M |
| Vegetation Management | Distribution Risk Tree | 100% system, annually | $95.1M |
| | Transmission LiDAR | 100% system, annually | $7.9M |
| | Distribution Satellite | 100% system, annually | $4.6M |
| | Safe Tree Program | 1,750 trees removed annually | $4.0M |
| | Fuel Reduction | 1,000-1,500 acres. In partnership with Washington and Idaho. | $2.3M |
| Situational Awareness | DLM Circuit Reclosers | 52 midline circuit reclosers installed to automate DLM function. | $7.5M |
| | DLM Fire Mode Ready | 139 compatible circuit reclosers automated for DLM function. | Embedded cost |

| Wildfire Category | Project ID | Project Scope (2020-2029) | Resource (2020-2029) |
|---|---|---|---|
| | DLM Substation | 57 substation circuit reclosers automated for DLM function. | $28.2M |
| Emergency Response & Operations | Wildfire Emergency Operating Procedure | Internal project to document Avista staffing support during a large wildfire event. | Embedded cost |
| | Fire Safety Training | 100% of Avista electric operations field personnel, annually. | Embedded cost |
| | Expedited Response | Agreements with WA DNR and ID Dept. of Lands. | Embedded cost |
| Wildfire Planning & Administration | Elements identified as complete in 2020 Wildfire Plan Scorecard | Avista's Wildfire Team has 4 FTEs. | $5.2M |

*Table 4 2023 Wildfire Plan Project Summary*

*A more detailed description of the active plan elements is included in the main body of this report.*

## Wildfire Risk Map

The concept of Wildland Urban Interface is often used to describe homes and properties most at risk from wildfires.[10] Human development near the boundaries of forest lands is among areas most at risk from wildfires. Figure 6 illustrates the various fire risk zones from forests to suburban and urban areas. Though fire risk is present in all of these zones, rural and suburban zones are generally at elevated risk due to the abundance of natural fuels, proximity to housing, and the lack of firefighting resources.

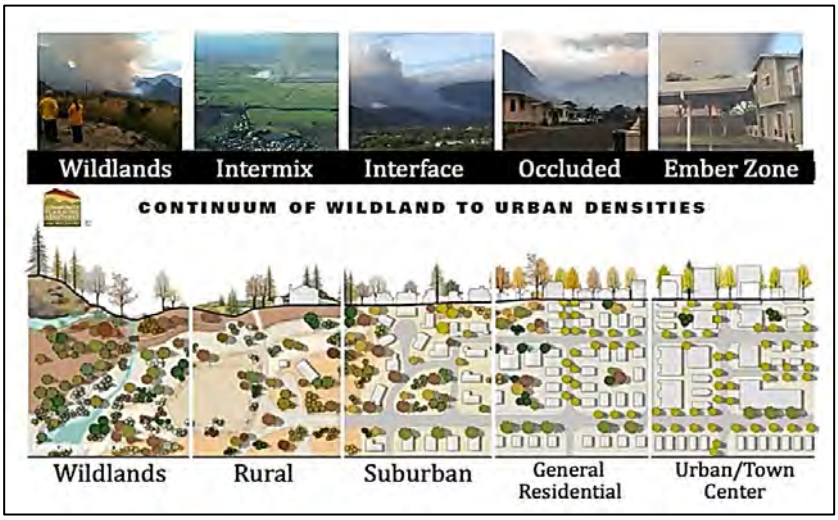



*Figure 6. Continuum of Wildland to Urban Densities*

In 2019, Avista developed a Wildland Urban Interface (WUI) map indicating the intersection between electric infrastructure and burnable fuels as quantified by the U.S. Forest Service. This map provides Avista with a means to quantify operating risks related to wildfire and helps the Company prioritize work in these areas. Figure 7 illustrates the U.S. Forest Service Wildfire Hazard Potential map (WHP)[11] which categorizes burnable landscapes from very low to very high.

This map identifies the burnability of all landscapes. Though not evident in this illustration, the data set quantifies fuel risk for every 270m x 270m square area. The data also identifies non-burnable spaces

[10] Molly Mowery, "Living on the Edge: Get to Know Your WUI," American Planning Association, January 16, 2018, https://www.planning.org/blog/blogpost/9141903/
[11] USDA Missoula Fire Sciences Laboratory, "Wildfire Hazard Potential," https://www.firelab.org/project/wildfire-hazard-potential


*Figure 7. 2018 Wildfire Hazard Potential*

such as water and city-scape areas that lack vegetation. It is interesting to note that about 85% of Washington fires are man-made[12] and that 50% of Idaho fires fall into that category.[13] However, as mentioned previously, only 4-6% of all fires in Washington State are attributable to electric utility operations.

## *WUI at Avista*

Avista's 2019 WUI map combined data from the Wildfire Hazard Potential with the location of Avista electric lines in areas of low, medium, and high population. This analysis indicated that 3,240 miles of Avista's 7,725 mile distribution system were located in high fire threat districts (42% of the system). Avista's 2020 Wildfire Plan focused grid hardening and vegetation programs in these elevated risk areas.

For 2023, Avista's WUI map was updated and now includes additional data which measures the impact of fire on human development. The USDA's Housing Unit Impact dataset[14] combined with the Wildfire Hazard Potential data mentioned previously, was used to refine the Avista WUI map. Areas shown on the 2023 WUI map with either an orange or pink highlight indicate these high fire risk zones. Communities like Chewelah and Colville border national forest lands, as do many other areas including Sandpoint, St. Maries, Grangeville, and portions of the Lewiston/Clarkston Valley, placing them more at risk. In total, 2,746 miles of electric distribution lines are in high fire risk areas or about 36% of the system. This analysis indicates slightly lower risk values as compared to 2019.

[12] Washington Department of Natural Resources Investigations, https://www.dnr.wa.gov/Investigations#:~:text=Wildland%20Fire%20Cost%20Recovery%20and,in%20Washington%20are%20human%2Dcaused.
[13] Idaho Department of Lands, "Managing Fires on Lands Protected by the State of Idaho," https://www.idl.idaho.gov/fire/2016-red-book-spreads.pdf
[14] USDA/US Forest Service, "Wildfire Risk to Communities: Spatial Datasets of Wildfire Risk for Populated Areas in the United States," 2020, https://www.fs.usda.gov/rmrs/datasets/wildfire-risk-communities-spatial-datasets-wildfire-risk-populated-areas-united-states

Avista's WUI map is an important data set because it charts the course for Wildfire Resiliency and focuses efforts such as grid hardening, enhanced vegetation management, and the project to fully automate Avista's Dry Land protection system. One should note that the WUI map does not predict where fires are likely to occur. Avista's WUI map indicates the potential impact to human lives and property if a fire starts near electric lines. A majority of the Palouse region as well as the Big Bend area indicate low fire risk, and this is largely based on sparse rural populations. In contrast, areas around Spokane and Coeur d' Alene where suburban development has encroached on forest lands, indicate higher fire risk. Avista's distribution grid hardening program is aimed at reducing equipment failures in these high fire impact zones.

*An internal report is available that documents Avista's approach to developing the Wildland Urban Interface map*.

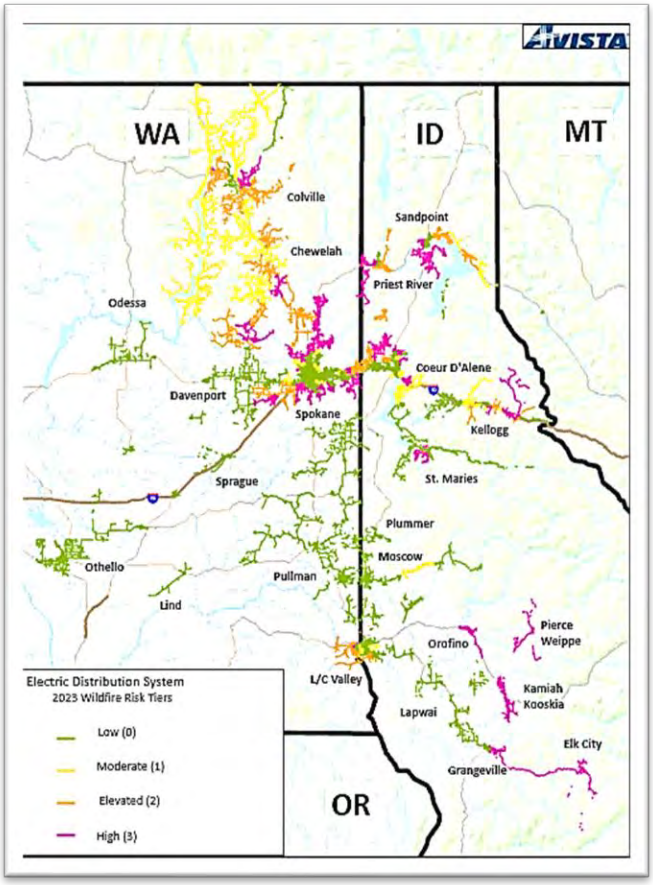



*Figure 8. Avista's 2023 WUI Map*

## Community Outreach

Avista is committed to partnering with emergency first responders, community leaders, and customers. The 2020 Wildfire Plan noted customer outreach as a goal and described some of the initial meetings with fire departments, elected leaders, regulators, and peer utilities. Avista's communication outreach extends well beyond wildfire issues and has adopted an 'all-means and all-channels' approach to communicating with customers and other interested persons.

In 2022, Avista established a cross-functional team including regional business managers, corporate communication specialists, tribal relations employees, customer engagement, electric operations, and wildfire resiliency to improve and expand Avista's customer outreach related to wildfire. The Company sponsored a series of meetings with first responder groups and county-level emergency management offices which combined expertise from police, fire, and emergency dispatch centers together with ambulance services, volunteer support, and elected officials. Avista attended meetings in 8 counties throughout Washington and Idaho in order to provide information about Avista's Wildfire Plan and summer-time operating strategies. Avista also met with members of the Colville

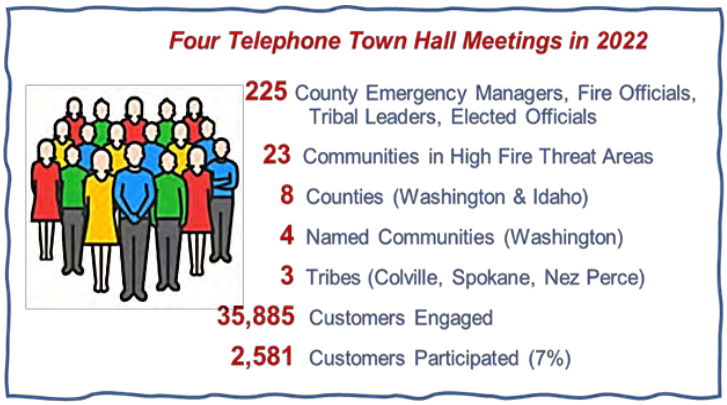



*Figure 9. 2022 Community Outreach Activities*

Confederated, Spokane, and Nez Perce Tribes. Meetings were convened with the Washington Department of Natural Resources, the U.S. Forest Service, the Bureau of Land Management, and the Spokane City Council. A communications framework was developed to assist employees who routinely meet with local emergency first responders.

Avista also conducted a series of residential customer telephone townhall meetings. Four meetings were held with 36,000 customers invited to attend via telephone. In these meetings, Avista employees provided an overview of the Wildfire Plan as well as information about changes to the protection system during fire season and how that might impact them. At each meeting a fire agency expert was available to answer questions about fire safety, home preparedness, evacuations, and other emergency response issues. The focus of these meetings was to connect with customers who live in high fire threat areas. As noted, 36% of Avista distribution lines are located in these high risk zones. The convenience of attending by telephone allowed customers to connect with utility employees and fire professionals more easily. Questions ranged from “who do I contact about a tree near a powerline” to “how should I prepare for a fire” to “how are evacuations handled in my area.” The response from customers was very positive. Customers gave Avista an approval value rating of 83%.

Conducting telephone townhall meetings require significant planning, coordination, and internal support, but the benefits both to customers and the Company were tremendous. Avista’s nearly 1,800 employees work and live in many of the communities where fire risk is high. It is important that we partner closely with emergency professionals, community leaders, as well as customers to understand fire risk and to work together before, during, and after a wildfire event. Providing clear and concise communication together with receiving feedback are important components of implementing a successful wildfire mitigation plan.

In 2023, Avista will build upon the experience in 2022. We plan to include more counties in the information sharing sessions and connect with additional fire departments, first responders, and forest managers. We also plan to expand the scope and scale of the customer telephone townhall meetings and provide messages in multiple languages.

## Public Safety Power Shutoffs

Public Safety Power Shutoffs (PSPS) were first used by San Diego Gas & Electric (SDGE) following the 2007 “Witch Fire” which caused extensive damage to homes and infrastructure. SDGE began an intensive program to reduce fire risk, including the plan to pre-emptively shut off power during periods of critical fire weather. Following the 2018 fire in Paradise, California, Pacific Gas & Electric (PG&E) and other California utilities developed their own PSPS plans. During the six year period from 2017 to 2022, PSPS was initiated 90 times in California as shown in Table 5.

The use of PSPS in California peaked in 2019 and 2020 but is now used less frequently, primarily in response to feedback from customers and regulators. At present, many utilities now describe their use of PSPS as a “measure of last resort” for use only after other mitigation strategies have been exhausted. For example, in Idaho Power’s Wildfire Plan they describe the use of PSPS as limited to “where wildfire risk is high due to extreme weather conditions” and “as a last resort to prevent wildfires.” On Puget Sound Energy’s website, they describe PSPS as: “During high-risk weather conditions, PSE may need to proactively turn off power lines to help prevent wildfires.” When PacifiCorp developed their PSPS plan

as required in California, they announced that they would extend the practice to other operating regions including Washington, Oregon, and Idaho. While the use of PSPS has become controversial, with some claiming that it creates more harm than it mitigates, PSPS will continue to play a role in reducing utility fire risk.

| | California PSPS Events | | | | | |
|---|---|---|---|---|---|---|
| | San Diego | So. Cal. Ed | PG&E | PacifiCorp | Other | Total |
| 2017 | 5 | 0 | 0 | 0 | 0 | 5 |
| 2018 | 4 | 3 | 2 | 0 | 0 | 9 |
| 2019 | 3 | 16 | 7 | 0 | 0 | 26 |
| 2020 | 5 | 12 | 7 | 2 | 0 | 26 |
| 2021 | 2 | 10 | 5 | 1 | 1 | 19 |
| 2022 | 0 | 4 | 1 | 0 | 0 | 5 |
| Total | 19 | 45 | 22 | 3 | 1 | 90 |


*Table 5. PSPS Events in California*

In 2021 and 2022, Avista reviewed various utility PSPS strategies in order to understand the risks, costs, and benefits of PSPS. Avista is currently studying the development of criteria for potential implementation of public safety power shutoffs. Avista has studied implementing PSPS over the past couple of years, including analyzing the potential costs to Avista customers based on California's PSPS programs. These estimates range from $21 to $57 million per year for a similar type of PSPS plan if implemented in Avista's service territory. This year we are taking an in-depth look at what other utilities, especially our Northwest neighbors, are currently doing, as many utilities have changed their practices since we began to look at this. Avista will be examining the analytics around what could potentially trigger a PSPS event in our service territory, the impacts on our customers (especially those who are most vulnerable) and how we might move forward with a PSPS plan that is suitable for our own service territory and our customers' needs. A team is coming together to study this issue in detail, and we hope to have recommendations in place by the end of 2023.


*Figure 10. Business Sign in California during a PSPS Event*

## Equity

Utilities, along with other large businesses, are increasingly being challenged to ensure equity (fair treatment) for all customers, especially vulnerable customers. In Avista's Washington service territory, 61 of 133 census tracts indicate populations that are designated as Highly Impacted Communities or Vulnerable Populations as defined by the Washington State Department of Health.[15] More than 65% of Avista's high fire threat districts coincide with 2010 census tracts that are "overburdened and

[15] Washington State Department of Health, "Instructions for Utilities to Identify Highly Impacted Communities," https://doh.wa.gov/data-statistical-reports/washington-tracking-network-wtn/climate-projections/clean-energy-transformation-act/ceta-utility-instructions

underserved" according to the Council on Environmental Quality's (CEQ) Climate and Economic Justice Screening Tool.[16] This includes tribal areas served by Avista.

In Washington State, 1,044 of 1,708 miles of powerlines located in high fire risk zones are in underserved and financially overburdened communities. In Idaho, 794 of 1,037 distribution line miles are located in underserved areas and high fire risk zones. Avista's WUI map indicates that 1,838 powerline miles are located in underserved communities out of the total mileage of 2,746 (67%). By definition, Avista's most capital intensive program, electric distribution grid hardening, will have significant impact on these communities. Avista recently applied for a federal grant to assist with its grid hardening program.[17] If Avista is successful in receiving these federal grant dollars, we have committed to converting 175 miles of existing overhead lines to underground facilities. Underground facilities incur electric faults at a rate 50 times less than overhead systems. This work would not only reduce fire risk in some of the most vulnerable communities, but also significantly improve reliability for these customers.

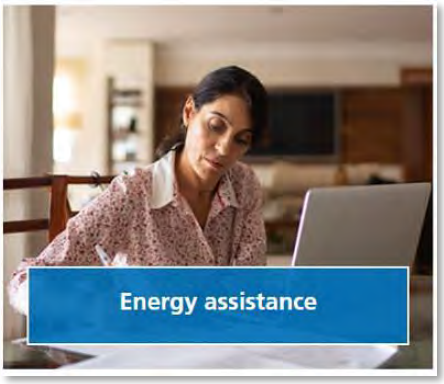


*Figure 11. MyAvista.com Website*

As part of Avista's state-required Clean Energy Implementation Plan (CEIP),[18] the Company is committed to ensuring that disadvantaged communities benefit from investments in clean energy. Avista has a long history of providing energy assistance and delivering energy efficiency programs to disadvantaged communities. For decades, Project Share has helped thousands of customers heat and light their homes. Partnerships with SNAP, various food banks, and emergency assistance from the American Red Cross have allowed Avista to help people who are struggling to meet basic life needs. Avista's website (www.myavista.com) provides information about how to arrange for payment assistance and lists other community resources. Avista's customer contact center includes a specialized team called CARES (Customer Assistance Referral and Evaluation Services) that supports and assists vulnerable customers and acts as a liaison between the customer and community partners. They are specially trained to help people who need assistance with their energy bills or with other resources such as food, housing, and medical care. Though Avista relies on community partners such as the Second Harvest Food Bank, Vanessa Behan Crisis Nursery, Red Cross, and many others, we are a trusted advisor for many customers and are committed to improving people's lives.

The Wildfire Plan is no different from many other Avista initiatives. Those most at risk from wildfires are typically also the most disadvantaged and economically challenged communities. These communities are often located in rural areas where electric service is threatened by terrain, weather, and human factors. By focusing on areas of highest risk, the bulk of the resources allocated to the Wildfire Plan will flow to these disadvantaged communities.

[16] Climate and Economic Justice Screening Tool, https://screeningtool.geoplatform.gov/en/#3/33.47/-97.5
[17] 2022 Grid Resilience and Innovation Partnership Program Grant, https://www.energy.gov/gdo/grid-resilience-and-innovation-partnerships-grip-program
[18] The Clean Energy Transformation Act (CETA; the Laws of 2019, Chapter 288) requires Washington's electric utilities to file a Clean Energy Implementation Plan (CEIP) every four years. https://www.utc.wa.gov/regulated-industries/utilities/energy/conservation-and-renewable-energy-overview/clean-energy-transformation-act/clean-energy-implementation-plans-ceips

# 2023 Wildfire Plan Performance and Goals

*Figure 12. Pole fire associated with wood crossarm*

### *Grid Hardening*

The goals of grid hardening are to reduce the number of spark-ignition events on the distribution system and to protect critical infrastructure from the impacts of fire. Avista supports four projects within grid hardening:[19]

- Distribution Grid Hardening
- Transmission Steel Pole Conversion
- Fire Resistant Wraps on Wood Transmission Poles
- Annual Fire Inspections on Transmission Lines

### *Distribution Grid Hardening*

The single largest program in the Wildfire Plan is Distribution Grid Hardening. This effort targets portions of electric circuits located in high fire threat areas with the goal of reducing spark ignition events. Though Avista has asset maintenance programs to replace poles and equipment, existing programs are condition-based and support reliability objectives. Wildfire Distribution Grid Hardening focuses on upgrades most likely to reduce spark ignition events and poles fires. The scope of this work includes:

- Replace wooden crossarms with fiberglass to mitigate pole fires.
- Replace small copper wire with modern steel-reinforced wire to reduce conductor failures.
- Install wedge-bail clamps at hot tap connector locations to prevent thermal failures.
- Add or replace wildlife guards to mitigate electrical contacts.
- Replace wood with metal poles at critical span locations such as highway and river crossings.

*Figure 13. Grid Hardening Work*

On average, Avista experiences about 80-90 pole fires per year mostly related to wood crossarms. By replacing wood crossarms with fiberglass units, leakage current is substantially reduced, and pole fire risk is much lower. Much of the small copper wire such as #6 and #8 was installed prior to 1950, with some wire sections dating back to the early 1900s. These old and obsolete wire types fail at higher rates than do modern aluminum conductors. Animals cause about 8% of Avista's outages but animal guards at transformers and other connection points are an effective means of reducing electrical contacts. Though hot taps fail at a low rate, a majority of peer utilities use a bail type connector in conjunction with hot taps to prevent burn downs, thus Avista crews are adding these connectors. At critical spans such as highways or river crossings, line personnel are replacing wood poles with metal units to strengthen those spans.

[19] The Company continues to review the Washington Utilities and Transportation Commission Order 10/04, in Docket UE-220053, et. al., received on December 12, 2022, and will update with additional information as required by that Order, as appropriate, as we proceed through the 2023 wildfire season.

As noted, the goal of distribution grid hardening is to reduce incidents mostly likely to produce spark ignition. Avista tracks outage performance on a monthly basis including equipment failures, poles fires, and spark-ignition events. Table 6 indicates annual measured values as compared to the 5-year average (2018-2022).[20]

| Performance Measure | 2018 | 2019 | 2020 | 2021 | 2022 | 5-Year Average |
|---|---|---|---|---|---|---|
| Overhead Equipment Failure | 654 | 651 | 590 | 612 | 745 | 650 |
| Pole Fire | 77 | 68 | 65 | 154 | 50 | 83 |
| Spark Ignition Events | 125 | 99 | 147 | 109 | 107 | 117 |

*Table 6. Distribution Outage Rates*

Converting overhead line sections to underground cables is not listed as a component of distribution grid hardening. Avista has conducted underground conversion of overhead lines on a case-by-case basis, but in most existing situations the physical challenges create an undue economic burden,[21] making conversion unfeasible. To date,

| Distribution Grid Hardening | 2020 | 2021 | 2022 |
|---|---|---|---|
| Miles of Distribution Grid Hardening Miles Completed | 61.2 | 150.5 | 180.0 |
| Miles of Overhead Conductor Installed/Replaced | 60.8 | 70.9 | 174.1 |
| Miles of Conductor Undergrounded | 3.1 | 5.8 | 4.8 |
| Number of Wildlife Guards Installed | 588 | 1,363 | 2,555 |
| Number of Fiberglass Crossarms Installed | 666 | 977 | 1,636 |
| Number of Distribution Steel Poles Installed | 0 | 16 | 31 |
| Number of Distribution Wood Poles Installed | 32 | 115 | 323 |
| Number of Open Wire Secondary Districts Removed | 0 | 1 | 1 |
| Number of Wedge/Bail Clamps at Hot Tap Connection Points Installed | 200 | 2,550 | 4,785 |
| Number of Lightning Arrestors Installed | 191 | 599 | 467 |
| Number of Distribution Reclosers Installed During Grid Hardening | n/a | 7 | 17 |
| Number Distribution Fire Resistant Mesh Installed | 6 | 201 | 100 |

*Table 7 Distribution Grid Hardening Details*

| Year | Mileage | Cost / Estimate |
|---|---|---|
| 2020 | 63 | $3,115,000 |
| 2021 | 146 | $11,848,000 |
| 2022 | 180 | $15,095,000 |
| 2023 | 210 | $17,650,000 |
| 2024 | 264 | $22,900,000 |
| 2025 | 255 | $22,900,000 |
| 2026 | 246 | $22,900,000 |
| 2027 | 238 | $22,900,000 |
| 2028 | 230 | $22,900,000 |
| 2029 | 222 | $22,900,000 |
| **Totals** | **2,053** | **$185,108,000** |

*Table 8. 2020-2029 Distribution Grid Hardening Financial Plan*

Avista has converted less than 2% of lines to underground cable under the Grid Hardening Program. However, for new applications, such as a new subdivision or business development, costs can be more manageable. In fact, over the last five year period, Avista crews have installed over 500 miles of underground cable and have removed over 100 miles of overhead lines. Avista has also made a commitment that new distribution facilities located in high fire risk zones will be installed underground to mitigate future risk.

In 2022 Avista completed upgrades on 180 miles of distribution lines. Some of this work took place on Tribal lands, which requires careful coordination with cultural resources.

Annual grid hardening results are shown in Table 8. Avista plans to perform grid hardening on 2,746 miles of distribution lines, but at present resource levels, this project plan will produce a net deficit of 693 miles at

[20] Note that there were a high number of pole fires in 2021 due to that year's hot, dry conditions followed by periods of light rain, ideal conditions for the electrical tracking between poles and wood crossarms that can lead to fire as described in the footnote on page 6.

[21] Underground cables are twice as expensive (or more) than overhead lines, in part due to restoration costs (sidewalks, roadways, landscaping) and environmental impacts. Maintenances costs are also significantly higher due to limited access. For more information: David Baker, "Despite Being Safer, Underground Power Lines Are Very Expensive," San Francisco Chronicle, October 23, 2017, https://www.govtech.com/fs/infrastructure/despite-being-safer-underground-power-lines-are-very-xpensive.html

the end of 2029. As noted, Avista recently applied for federal grant assistance in which Avista committed to undergrounding 175 of those 693 miles and complete all upgrades by the end of 2029.

### *Transmission Steel Pole Conversion*

Transmission lines are particularly vulnerable to wildland fires. Currently about 37% of Avista's transmission poles are steel, which protect these critical assets from wildfires. In 2006, Avista adopted steel poles as standard construction and since then, several lines have been upgraded, including portions of the Benton-Othello, Chelan-Stratford, and Coeur d'Alene-Pinecreek transmission lines. In 2021, Avista conducted analysis using 50 years of fire history to determine which transmission lines were experiencing recurring impacts from wildfires. This analysis indicated that several transmission lines are particularly vulnerable to recurring wildfires. Lines most at risk from fire, such as the Addy-Gifford line, are slated for wood to steel conversion. Other wood pole lines, in low vegetation areas, are being protected with a fire-resistant wrap product.


*Figure 14. Wildfire near Beacon Hill, Spokane WA*

In 2021 and 2022, transmission upgrades were focused on the 21-mile Addy-Gifford 115 kV line. This transmission line serves areas near the Columbia River including the towns of Wellpinit and Inchelium, Washington, both of which are Named Communities. Most transmission lines are part of a networked grid, and redundancy helps isolate customer impact during outages. However, some lines, like Addy-Gifford, operate in a radial one-way fashion. This makes the work very challenging since the line must remain energized during construction. In 2023, wood-to-steel conversion is slated for transmission lines near the Devil's Gap Substation which connects the hydroelectric dams of the lower Spokane River (Nine Mile, Long Lake, and Little Falls) with areas west of Spokane and communities including Reardan, Davenport, Odessa, and Othello.

Table 9 indicates the number of steel poles that were installed as part of the Wildfire Plan in addition to traditional condition-based replacement and construction of new facilities. The table also includes the number of wood poles that were protected using a fire resistant (FR) mesh wrap product. The Wildfire Plan has budgeted for approximately 1,000 steel pole replacements on the transmission system through 2029, with approximately 10,000 wood transmission poles receiving fire mesh wrap.

| Transmission Grid Hardening | 2020 | 2021 | 2022 |
|---|---|---|---|
| Total Transmission Steel Poles Installed | 368 | 1,016 | 632 |
| Wildfire Steel Poles Converted | n/a | 169 | 118 |
| Asset Condition/New Project Steel Poles | 335 | 812 | 476 |
| Failed/Damaged Replacement | 33 | 35 | 38 |
| Transmission Pole Wraps | 1235 | 1938 | 1454 |

*Table 9. Transmission Grid Hardening Work*

### *Fire Resistant Wraps on Wood Transmission Poles*

Avista began using fire-resistant paint to protect transmission poles as early as 2005. Though the paint has proven effective in protecting poles from fires, it has a limited expected life and requires maintenance every 3 to 5 years. Avista worked with Southern California Edison to adopt a more resilient product for protecting transmission poles at-risk from grassland fires. Fire resistant mesh wrap incorporates a heat activated chemical on a steel mesh substrate. When activated, the chemical expands to seal the pole and protect it from fire. This product works well in protecting wood poles that reside in grassland areas where fires move quickly and are low to the ground. Protecting wood poles from the impacts of wildfire also supports reliable operations for customers.

*Figure 15. Fire resistant mesh wrap demonstration*

Avista expects to wrap approximately 1,000 wood transmission poles per year. Crews wrapped 1,454 poles in 2022 and plan to continue work in the Company's West Region, which contains the Davenport and Othello operating districts. Several 115 kV transmission lines are located in this area. These lines are subject to recurring grassland fires such as the Lind and Wagner Road fires that occurred in 2022 *(see Addendum for 2022 fire season details).*

### *Annual Fire Inspections on Transmission Lines*

Avista conducts annual inspections of transmission lines prior to the summer operating season. Generally, inspections are conducted via helicopter, vehicle, or on foot, with maintenance personnel looking for failed equipment, bird nests, broken insulators, and other structural defects. The Wildfire Plan extends that activity to identify conditions that might lead to fire ignition. Table 10 indicates the costs for all grid hardening programs including transmission inspections. *Note that "Transmission Inspection/Construction" is listed both in the Capital and O&M portions of the table. Inspection is an expense activity (O&M) while the follow-up capital maintenance is an investment in plant.*

Maintenance personnel are also using the high resolution photographs taken during LiDAR (Light Detection and Ranging) survey flights to help identify both vegetation and infrastructure issues. These photos aid in the inspection process and are an added benefit when conducting vegetation inspections. LiDAR is an industry best practice for mapping transmission lines and their proximity to vegetation. It is explained in more detail in the Enhanced Vegetation Management section of this report.

### *Grid Hardening Financials*

Distribution grid hardening represents the single largest capital investment in the Wildfire Plan, comprising about 87% of total capital expenditures and about 60% of total program expenditures over the ten-year period (2020-2029). Grid Hardening expenditures are shown in Table 10.

| Grid Hardening | Actual | | | Projected | | | | | | | Total |
|---|---|---|---|---|---|---|---|---|---|---|---|
| | 2020 | 2021 | 2022 | 2023 | 2024 | 2025 | 2026 | 2027 | 2028 | 2029 | 10-Yr. Total |
| Capital | | | | | | | | | | | |
| *Distribution Hardening* | $3,114,919 | $11,863,780 | $19,556,565 | $20,650,000 | $25,900,000 | $25,900,000 | $25,900,000 | $25,900,000 | $25,900,000 | $25,900,000 | *$210,585,264* |
| *Transmission Steel Conversion* | $73,567 | $5,454,600 | $4,020,538 | $4,000,000 | $4,000,000 | $4,000,000 | $4,000,000 | $4,000,000 | $4,000,000 | $4,000,000 | *$37,548,705* |
| *Transmission Inspection/Construction* | $1,272 | $808 | $84,328 | $200,000 | $200,000 | $200,000 | $200,000 | $200,000 | $200,000 | $200,000 | *$1,486,408* |
| *TOTAL CAPITAL* | *$3,189,758* | *$17,319,188* | *$23,661,431* | *$24,850,000* | *$30,100,000* | *$30,100,000* | *$30,100,000* | *$30,100,000* | *$30,100,000* | *$30,100,000* | *$249,620,377* |
| O&M | | | | | | | | | | | |
| *Wood Pole Fire Resistent Mesh Wrap* | $178,232 | $420,820 | $719,992 | $550,000 | $550,000 | $550,000 | $550,000 | $550,000 | $550,000 | $550,000 | *$5,169,044* |
| *Transmission Inspection/Construction* | $137,372 | $172,047 | $251,223 | $150,000 | $150,000 | $150,000 | $150,000 | $150,000 | $150,000 | $150,000 | *$1,610,642* |
| *TOTAL O&M* | $315,604 | $592,867 | $971,215 | $700,000 | $700,000 | $700,000 | $700,000 | $700,000 | $700,000 | $700,000 | *$6,779,686* |
| *GRAND TOTAL* | *$3,505,362* | *$17,912,055* | *$24,632,646* | *$25,550,000* | *$30,800,000* | *$30,800,000* | *$30,800,000* | *$30,800,000* | *$30,800,000* | *$30,800,000* | *$256,400,063* |

*Table 10. Grid Hardening Program Costs. 2020-2022 Actual. 2023-2029 Projected.*

### *Enhanced Vegetation Management*

Vegetation management is an integral part of maintaining overhead electric distribution and transmission lines as well as reducing fire risk. Historically, utilities have trimmed and removed trees with a focus on service reliability and grid security. Avista has a long history of deploying industry best practices, including the use of tree growth inhibitors and herbicides to retard shrub growth, together with cycle-based tree trimming and hazard tree removals. For transmission lines, Avista manually inspects all 230 kV and WECC Path 115 kV lines (~ 850 miles) each year as required by federal regulators. Remaining 115 kV lines are manually inspected on a 3-year cycle.

*Figure 16. Dead tree falls into powerline*

As part of the Wildfire Program, distribution cycle trimming has been decoupled from hazard tree inspection, and in 2022 Avista inspected 6,466 miles of distribution lines, which is 100% of the system located outside of metro urban areas. Also in 2022, crews removed nearly 19,000 dead dying and diseased trees that could strike electric lines. The commitment to 100% inspection of distribution lines is a significant lift for Avista's vegetation planners and field crews.

Tree contacts with powerlines are categorized as either grow-in risk (encroachment into lines) or fall-in risk. Dead, dying, and diseased trees are more likely to fall into electric lines than live green trees. Trees fall into electric distribution lines five times more often than they grow into them. A key performance measure of the Wildfire Plan is to reduce the number of tree incidents. Table 11 indicates the tree incident rates for both distribution and transmission lines. The 5-year average is measured from 2018-2022.

As evident in Table 11, trees incidents on the distribution system far exceed transmission levels. In most situations, transmission lines occupy dedicated corridor rights-of-way which afford the utility greater authority to manage vegetation. Also, transmission systems are regulated by federal agencies such as FERC and NERC with prescriptive mandates for vegetation. A premium is placed on the reliability and security of the nation's high voltage transmission grid, and that focus is reflected in overall reliability performance, including tree incidents. Avista's Wildfire Plan did not alter the vegetation maintenance practices on the transmission system but did add LiDAR surveys to aid with inspections.

| Tree Incidents | 2018 | 2019 | 2020 | 2021 | 2022 | 5-Year Average |
|---|---|---|---|---|---|---|
| ***Distribution*** | | | | | | |
| Tree Grow-In | 99 | 96 | 69 | 83 | 59 | 81 |
| Tree Fall-In | 315 | 411 | 411 | 362 | 366 | 373 |
| ***Transmission*** | | | | | | |
| Tree Grow-In | 0 | 0 | 3 | 0 | 0 | 0.6 |
| Tree Fall-In | 2 | 0 | 9 | 1 | 3 | 3 |

*Table 11. Tree Incident Rates*

Enhanced vegetation management under the Wildfire Plan represents new activities such as digital data collection (LiDAR and satellite) as well as incremental activities beyond what was historically undertaken by Avista vegetation managers. These activities include:

- 100% Distribution Risk Tree Inspections
- Transmission LiDAR
- Distribution Satellite Imaging
- Customer Choice Safe Tree Program
- Fuel Reduction Partnerships

### *100% Distribution Risk Tree*

As noted, Avista increased the annual inspection of the electric distribution system from 20% to 100% of non-urban areas as part of the 2020 Wildfire Plan. The Company began ramping up activities starting in 2020 and achieved 100% inspection in 2022. Table 12 indicates the program results by year. Note that tracking inspections and remediations performed on time started in 2022 and that no goals are set for how many trees will be removed or trimmed or for corridor clearing requirements, as this varies greatly from year to year and is dependent upon many factors outside of the Company's control such as drought conditions and insect infestations.

| Enhanced Vegetation Management Programs | 2020 | 2021 | 2022 |
|---|---|---|---|
| Number of trees trimmed (Total) | 3,129 | 4,313 | 13,036 |
| Number of hazard trees removed (Total) | 10,091 | 12,796 | 18,959 |
| Distribution Risk Tree Inspections (miles) | 2,811 | 2,593 | 6,466 |
| Distribution Risk Tree Inspections Performed on Time | n/a | n/a | 100% |
| Distribution Risk Tree Inspections Remediated on Time | n/a | n/a | 90% |
| Distribution Risk Trees Removed | 10,091 | 12,796 | 15,678 |
| Distribution Risk Trees Trimmed | 3,129 | 4,313 | 10,780 |
| Distribution Satellite - AiDASH (miles) | n/a | 7,675 | 7,675 |
| Transmission Risk Tree Inspections (miles) | 1,355 | 2,270 | 2,270 |
| Transmission Risk Tree Inspections Performed on Time | n/a | n/a | 100% |
| Transmission Risk Tree Inspections Remediated on Time | n/a | n/a | 100% |
| Transmission Risk Trees Removed | n/a | 1,362 | 3,281 |
| Transmission Risk Trees Trimmed | n/a | n/a | 2,256 |
| Transmission Corridor Clearing (acres) | 1,270 | 1,848 | 736 |
| Transmission LiDAR (miles) | n/a | 1,143 | 2,270 |

*Table 12. Enhanced Vegetation Management Program*

Avista is committed to removing risk/hazard trees within six months of identification. The Company continues to work with line clearance contractors to build a local workforce to support that goal.

*Figure 17. Avista transmission corridor*

### *Transmission LiDAR*

Since 2000, Avista has used LiDAR surveys to assess vegetation encroachment and fall-in risks on the transmission system. Digital data supplements visual inspections and helps vegetation planners prioritize and prescribe treatments including herbicide applications, tree trimming, and tree removal. Transmission vegetation activities are regulated by federal agencies, and tree contacts are infrequent as indicated in Table 11. Historically, transmission lines were trimmed on a calendar cycle, but LiDAR is changing that practice. Digital data combined with machine learning computer algorithms allow vegetation planners to use a risk-based approach to treatments rather than maintenance cycles. While Avista is still calibrating LiDAR information based on human observations, digital inspections are quickly becoming the industry standard practice and allow for a complete vegetation record, including the efficacy of field work along with the information necessary to create future work plans.

### *Distribution Satellite Imaging*

Similar to the LiDAR project for transmission, Avista is incorporating satellite digital data to aid vegetation planners with the inspection and planning process. Satellite systems are quickly evolving and apply machine learning computer algorithms to large data sets and help vegetation planners create risk-based work plans rather than relying solely on cycle trimming. For many years, Avista has used cycle trimming to maintain vegetation near distribution lines on a rotating 5-year cycle. However, some areas have higher growth rates and may require shorter trim cycles, while other areas with slow-growing trees may accommodate longer cycle times. Beginning in 2020, Avista partnered with AiDASH to provide satellite data along with their Intelligent Vegetation Management System (IVMS).[22] Like the LiDAR project, vegetation planners are working with AiDASH to calibrate the system and align computer-derived assessment with field observations. In 2023, Avista vegetation planners intend to transition their work plans to the IVMS system. This will allow them to customize the cycle trim times and incorporate a risk-based approach to work planning. In short, they will focus attention in areas with higher levels of tree encroachment risk and outage rates as well as increased fire risk rather than solely relying on cycle trimming.

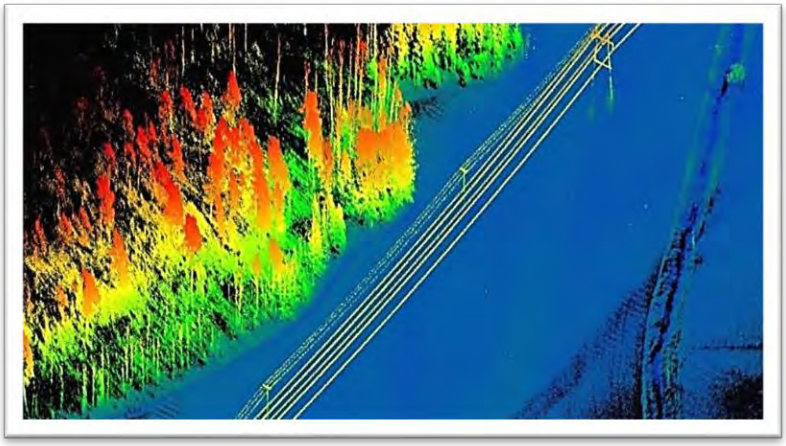


*Figure 18. LiDAR Image of Transmission Line*

[22] AiDASH Intelligent Vegetation Management System https://www.aidash.com/vegetation-management-system/

### *Customer Choice – Safe Tree Program*

In 2022, Avista initiated the Safe Tree Program modeled after the "right tree, right place" philosophy of replacing tall growing trees near powerlines with shorter species. This concept has been in practice for decades and Avista has incorporated this concept into vegetation planning. However, from a wildfire risk perspective, the Company is expanding this concept and is working more directly with homeowners to remove tall trees and replace them with powerline-friendly species. Avista recently conducted a pilot project and contacted over 600 homeowners near Kellogg, Idaho. Homeowners were connected with local tree arborists to remove tall trees. Table 13 indicates the program's performance in 2022. Customers responded favorably to this program and it will be expanded to additional areas of the service territory.


*Figure 19. Example of Fuel Reduction*

| Safe Tree & Fuel Reduction Programs | 2022 | 2023 | Total |
|---|---|---|---|
| Number of Trees Replaced Through the Customer Safe Tree Program | 870 | 0 | 870 |
| Number of Trees Removed Through Customer Requests | 63 | 0 | 63 |
| Systemwide Acres of Trees and Brush Removed and Trees Trimmed via Fuel Reduction Partnerships | 211 | 0 | 211 |

*Table 13. Safe Tree and Fuel Reduction Programs*

### *Fuel Reduction Partnerships*

Also in 2022, Avista partnered with the Washington Department of Natural Resources and the Idaho Department of Lands on their fuel reduction projects. Both Washington and Idaho have established programs which include tree thinning and brush removal along with prescribed burns. Avista is helping close some of their funding gaps and are targeting areas with electric lines. This a modest program and while we realize that we cannot significantly change the fuel regimes on a landscape level, these programs do reduce risk for homeowners. By partnering with agency professionals, fuel reduction can reduce the risk of wildfire to homes and communities by leveraging existing programs.

### *Enhanced Vegetation Management Financials*

Table 14 indicates actual and projected costs for enhanced vegetation management from 2020 through 2029. Note that the distribution risk tree program accounts for 83% of the overall Wildfire Plan operating and maintenance activities. Note also that costs for the risk tree program peak in 2022 and 2023 as field crews work through the initial backlog of hazard trees.

| Enhanced Vegetation Mgmt. | Actual | | | Projected | | | | | | | Total |
|---|---|---|---|---|---|---|---|---|---|---|---|
| | 2020 | 2021 | 2022 | 2023 | 2024 | 2025 | 2026 | 2027 | 2028 | 2029 | 10-Yr. Total |
| O&M | | | | | | | | | | | |
| Transmission LiDAR Digital Data | $491,422 | $450,000 | $679,917 | $900,000 | $900,000 | $900,000 | $900,000 | $900,000 | $900,000 | $900,000 | $7,921,338 |
| Distribution Satellite Digital Data | $59,282 | $327,211 | $494,070 | $535,000 | $535,000 | $535,000 | $535,000 | $535,000 | $535,000 | $535,000 | $4,625,563 |
| Fuel Reduction Partnerships | $0 | $0 | $158,652 | $300,000 | $300,000 | $300,000 | $300,000 | $300,000 | $300,000 | $300,000 | $2,258,652 |
| Distribution Annual Risk Tree | $1,239,113 | $5,775,745 | $13,970,280 | $14,200,000 | $12,780,000 | $11,502,000 | $10,351,800 | $9,316,620 | $8,384,958 | $7,546,462 | $95,066,978 |
| Safe Tree Program | $0 | $0 | $260,051 | $500,000 | $750,000 | $750,000 | $750,000 | $500,000 | $300,000 | $200,000 | $4,010,051 |
| TOTAL O&M | $1,789,817 | $6,552,956 | $15,562,969 | $16,435,000 | $15,265,000 | $13,987,000 | $12,836,800 | $11,551,620 | $10,419,958 | $9,481,462 | $113,882,582 |
| GRAND TOTAL | $1,789,817 | $6,552,956 | $15,562,969 | $16,435,000 | $15,265,000 | $13,987,000 | $12,836,800 | $11,551,620 | $10,419,958 | $9,481,462 | $113,882,582 |

*Table 14. Enhanced Vegetation Management Financial Performance*

## *Situational Awareness: Automating the Dry Land Operating System*

Avista has developed a computer algorithm to monitor, forecast, and adapt to fire-weather events. Avista's Fire Weather Dashboard combines the National Weather Service's 7-day forecast with Avista infrastructure data to quantify the daily fire risk on 350 distribution circuits. This allows system operators to align circuit protection settings with fire-weather conditions and to minimize the potential for spark-ignition on a circuit-by-circuit basis. This monitoring system is similar to those used in California. In fact, Avista worked closely with San Diego Gas & Electric to calibrate the system to achieve a balance between electric service reliability and fire ignition potential. This monitoring system supports Avista's fire season circuit protection program known internally as Dry Land Mode.

*Figure 20. Dry Land Mode Device: Viper Recloser*

FIRE RISK

Last Updated: Tue Sep 20 2022 09:06:32

| Max | Area_Office | Feeder | Setting | DLM | O/C | 09-20 | 09-21 | 09-22 | 09-23 |
|---|---|---|---|---|---|---|---|---|---|
| 6.3 | Colville | GIF12F1 | BASE | ADV | | 6.3 | 6.3 | 2.8 | 0.0 |
| 6.2 | Colville | VAL12F1 | OLD | YES | | 6.0 | 6.2 | 2.7 | 2.5 |
| 6.2 | Colville | KET12F2 | OLD | YES | | 6.2 | 6.1 | 2.8 | 0.0 |
| 5.9 | CDA | SPL361 | OLD | YES | | 5.7 | 5.9 | 0.0 | 0.0 |
| 5.9 | CDA | IDR253 | BASE | ADV | | 5.7 | 5.9 | 0.0 | 0.0 |
| 5.7 | CDA | RAT233 | BASE | ADV | | 5.7 | 5.7 | 0.0 | 0.0 |
| 6.6 | Davenport | ODS12F1 | OFF | NO | | 6.6 | 6.5 | 5.1 | 2.6 |
| 6.4 | Davenport | RDN12F1 | BASE | ADV | | 6.3 | 6.4 | 3.1 | 2.5 |
| 6.2 | Davenport | RDN12F2 | OLD | YES | | 6.2 | 6.2 | 3.1 | 2.6 |

*Figure 21. Fire-Weather Dashboard Results for September 20-23, 2022*

Avista developed the Dry Land Mode (DLM) operating program in the early 2000s in response to a number of very active fire years in the late 1990s. Historically, circuit reclosers are programmed to automatically reclose several times after detecting a line fault in order to maximize service reliability. However, analysis indicated that in some situations, this series of reclose attempts was adding to fire ignition potential. Engineers developed the DLM program to limit automatic reclosing on circuits with elevated fire ignition risk. Currently, 224 protection devices are included in the DLM program.

In December of 2020, Avista engineers reviewed the DLM program and made four recommendations:

1. Use of the U.S. Forest Service Wildland Fire Assessment System to determine when to initiate DLM protocols.
2. Use of the WUI map to determine which circuits should operate under DLM.
3. Enable instantaneous tripping for DLM circuits.
4. Transition to a fully automated DLM system.

Avista has fully incorporated recommendations 1-3 and is working towards a fully automated DLM system by the end of 2029. Currently, 120 of 224 devices are automated and capable of supporting 3 levels of protection (base, elevated, and extreme). The remaining 104 devices do not support remote operation and must be manually switched from the base setting to the extreme mode. These devices will not support the intermediate, elevated mode. Figure 22 illustrates the various DLM modes and associated reduction in available fault energy.

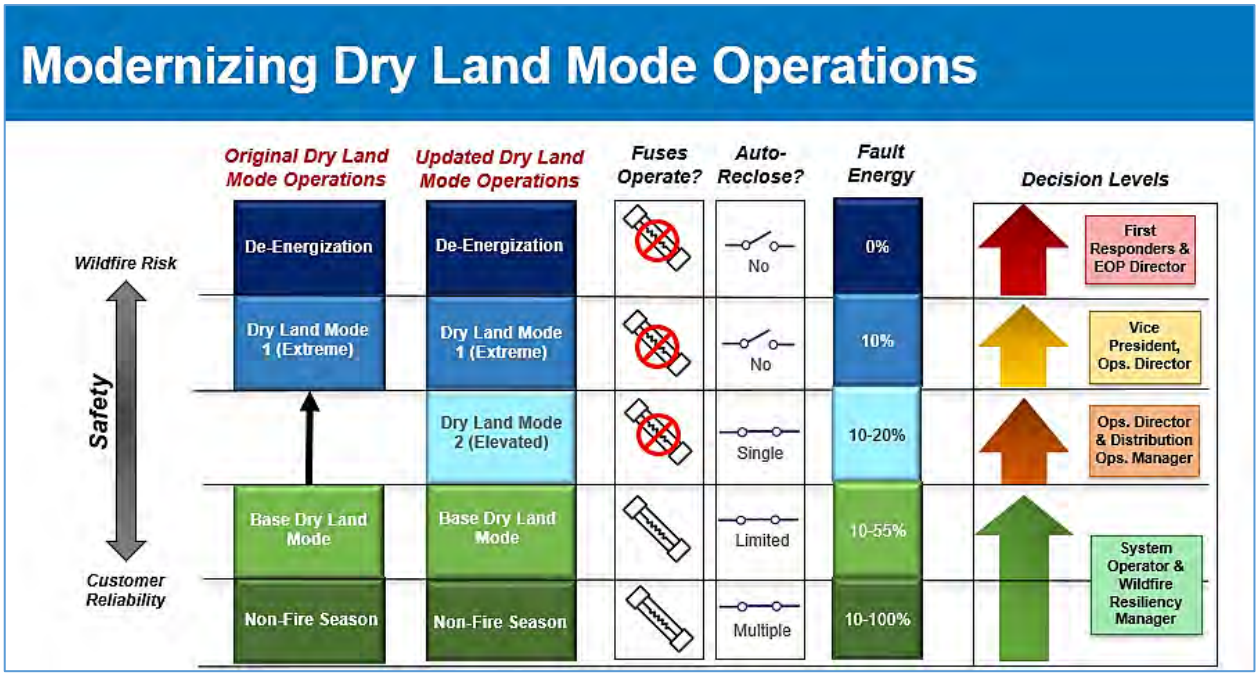



*Figure 22. Dry Land Mode Protection Levels*

During non-fire season (November-May), Avista operates distribution lines to maximize service reliability. Data indicates that 50% of distribution faults are temporary, such as animal contacts, lightning, and small tree branches. Temporary faults can be cleared by de-energizing a circuit and then re-energizing a couple of seconds later. However, if the fault is permanent such as a broken conductor, car hit pole, and when trees fall into powerlines, a combination of circuit breaker operation and line fuses are used to isolate the fault and limit the number of impacted customers. As illustrated in Figure 22, operation during non-fire season produces fault energies that range from 10% (temporary) to 100% (permanent fault on main line). When the system is transitioned to DLM, base protection levels limit available fault energy to 55%, essentially reducing fire ignition potential by half. In Base DLM, fuse links remain active and automated circuit reclosers are limited to a single reclose attempt. *Note that the graphic delineates between fully automated devices and original DLM or manual mode. Manual mode devices will be automated by 2029.*

Avista started upgrading the DLM system in 2021 by adding communications systems to substations, beginning in St. Maries, Idaho. At present, 100 fire mode ready reclosers have been commissioned with new DLM settings and 17 new distribution line reclosers have been installed. In total, 120 circuit reclosers, both in substations and on distribution lines, have been automated with 104 devices remaining.

While many utilities including Avista have initiated wildfire mitigation programs and are investing in grid hardening and vegetation management programs, electric systems will continue to experience equipment failures, weather related incidents, and human-caused electric faults. Avista's Dry Land Mode operating system is a powerful tool for mitigating fire risk potential.

### *Situational Awareness Financials*

Table 15 indicates actual and projected costs associated automating the DLM system including costs to develop and maintain the fire-weather dashboard.[23]

| Situational Awareness | Actual | | | Projected | | | | | | | Total |
|---|---|---|---|---|---|---|---|---|---|---|---|
| | 2020 | 2021 | 2022 | 2023 | 2024 | 2025 | 2026 | 2027 | 2028 | 2029 | 10-Yr. Total |
| Capital | | | | | | | | | | | |
| *Fire Weather Dashboard* | $200,255 | $186,200 | $64,209 | $0 | $0 | $0 | $0 | $0 | $0 | $0 | *$450,664* |
| *Dry Land Mode Substation SCADA* | $400 | $514,700 | $740,912 | $1,500,000 | $3,000,000 | $4,500,000 | $4,500,000 | $4,500,000 | $4,500,000 | $4,500,000 | *$28,256,012* |
| *Automate DLM/Midline Reclosers* | $30,533 | $1,355,400 | $1,599,130 | $650,000 | $650,000 | $650,000 | $650,000 | $650,000 | $650,000 | $650,000 | *$7,535,063* |
| *TOTAL CAPITAL* | *$231,188* | *$2,056,300* | *$2,404,251* | *$2,150,000* | *$3,650,000* | *$5,150,000* | *$5,150,000* | *$5,150,000* | *$5,150,000* | *$5,150,000* | *$36,241,739* |
| O&M | | | | | | | | | | | |
| *Fire Weather Dashboard* | $0 | $0 | $40,717 | $75,000 | $75,000 | $75,000 | $75,000 | $75,000 | $75,000 | $75,000 | *$565,717* |
| *TOTAL O&M* | $0 | $0 | $40,717 | $75,000 | $75,000 | $75,000 | $75,000 | $75,000 | $75,000 | $75,000 | *$565,717* |
| *GRAND TOTAL* | *$231,188* | *$2,056,300* | *$2,444,968* | *$2,225,000* | *$3,725,000* | *$5,225,000* | *$5,225,000* | *$5,225,000* | *$5,225,000* | *$5,225,000* | *$36,807,456* |

*Table 15. Situational Awareness Program Costs*

## *Emergency Response and Operations*

Avista system dispatchers and field crews routinely coordinate with emergency first responders, and the Company's communication systems continue to adapt and evolve to support emergency operations. While tremendous progress has been made to partner with fire agencies including community outreach efforts and fuel reduction programs, three elements remain active in the 2023 Wildfire Plan that support emergency operations:

- Avista Wildfire Emergency Operating Procedure (EOP)
- Fire Safety Training for Avista 1st Responders
- Expedited Response Agreements

[23] Note that once the Dashboard is fully developed and in place, no additional expenditures are anticipated as this becomes a part of routine workloads.

### *Wildfire Emergency Operating Procedure (EOP)*

Avista uses an Incident Command Structure (ICS) to respond to electric and natural gas emergencies. This system is activated several times each year in response to severe weather conditions and other high impact events. Avista Incident Command is focused on coordinating service restoration using a basic incident command structure including planning, logistics, operations, safety, and finance. As noted in the 2020 Wildfire Resiliency Plan, Avista plans to expand its EOP to incorporate a specific wildfire function in order to coordinate with fire officials and assist with cause and origin investigations. However, restrictions in place during COVID made it difficult to conduct face-to-face meetings. Avista postponed work on the Wildfire EOP until personnel could meet in person. In 2023, we plan to assemble a team to develop and document wildfire emergency operating procedures.

### *Fire Safety Training for Avista 1st Responders*

Avista employs approximately 290 electric line operating personnel across 12 operating districts. These employees respond to a variety of electric trouble calls including those that involve structure as well as wildland fires. In 2022, in-person training was provided to all electric line personnel with a focus on safety during wildfire response. A prominent theme in that training was direct contact and coordination with fire authorities prior to conducting any line inspections or attempting to re-energize portions of electric circuits. We recognize that in a wildfire event safety comes first, and that police and fire authorities command the scene. Though Avista crews respond to pole fire events and have basic firefighting training and equipment, they are not professional firefighters. We defer fully to fire professionals. Annual refresher training is aimed at reinforcing Avista protocols for fire safety and coordination with fire personnel to benefit both parties.

### *Expedited Response Agreements*

During development of the 2020 Wildfire Plan, Avista met with several fire agencies including those in Spokane County. Discussions led to an agreement whereby Avista transmission operators are directed to notify fire officials of transmission line faults. In turn, fire agencies dispatch crews to determine whether the incident resulted in fire activity. This agreement, known internally as Expedited Response, was piloted during the 2020 and 2021 fire seasons. In 2022, a similar agreement was executed with the Washington Department of Natural Resources. This allows for a state-wide approach as opposed to county-by-county agreements. Development of a similar agreement with the State of Idaho is underway and should be ready for the 2023 fire season.

### *Wildfire Resiliency Program Costs*

Avista is committed to reducing the risk of wildfire by deploying cost-justified and prudent measures. Wildfire risk is an enterprise-level initiative and is subject to executive management review and approval when allocating capital and operating budgets. Avista is committed to ensuring that the Wildfire Plan goals are reasonable and cost-effective based on the best data and science available.

Table 16 indicates actual expenditures for 2020 through 2022, and budget level projections from 2023 through 2029. Wildfire Resiliency costs over the 10-year operating horizon reflects a capital investment of $285.9 million with a corollary operating expense cost estimated $126.4 million dollars. The largest investments are associated with distribution grid hardening and the risk tree vegetation management programs. While most capital projects will sunset at the end of 2029, the majority of operating expenses are ongoing and are generally related to vegetation management. Capital investments are expected to peak at $35 million in 2025 and remain at that level through 2029. Operating and maintenance expense is expected to peak in 2023 and then decline from 2024 through 2029. Vegetation planners expect the number of dead, dying, and diseased trees to decrease as we work through the initial backlog of hazard trees identified during 2022 and 2023.

| Avista Wildfire Resiliency Programs | Actual | | | Projected | | | | | | | Total |
|---|---|---|---|---|---|---|---|---|---|---|---|
| | 2020 | 2021 | 2022 | 2023 | 2024 | 2025 | 2026 | 2027 | 2028 | 2029 | 10-Yr. Total |
| Capital | | | | | | | | | | | |
| *Grid Hardening* | $3,189,758 | $17,319,560 | $23,661,431 | $24,850,000 | $30,100,000 | $30,100,000 | $30,100,000 | $30,100,000 | $30,100,000 | $30,100,000 | *$249,620,749* |
| *Situational Awareness* | $231,188 | $2,056,300 | $2,404,251 | $2,150,000 | $3,650,000 | $5,150,000 | $5,150,000 | $5,150,000 | $5,150,000 | $5,150,000 | *$36,241,739* |
| *TOTAL CAPITAL* | *$3,420,946* | *$19,375,860* | *$26,065,682* | *$27,000,000* | *$33,750,000* | *$35,250,000* | *$35,250,000* | *$35,250,000* | *$35,250,000* | *$35,250,000* | *$285,862,488* |
| O&M | | | | | | | | | | | |
| *Grid Hardening* | $315,604 | $592,867 | $971,215 | $700,000 | $700,000 | $700,000 | $700,000 | $700,000 | $700,000 | $700,000 | *$6,779,686* |
| *Risk-Based Vegetation Management* | $1,789,817 | $6,552,956 | $15,562,969 | $16,435,000 | $15,265,000 | $13,987,000 | $12,836,800 | $11,551,620 | $10,419,958 | $9,481,462 | *$113,882,582* |
| *Situational Awareness* | $0 | $0 | $40,717 | $75,000 | $75,000 | $75,000 | $75,000 | $75,000 | $75,000 | $75,000 | *$565,717* |
| *Wildfire Planning* | $324,457 | $456,550 | $697,824 | $480,000 | $496,800 | $514,188 | $532,185 | $550,811 | $570,089 | $590,043 | *$5,212,947* |
| *TOTAL O&M* | $2,429,878 | $7,602,373 | $17,272,726 | $17,690,000 | $16,536,800 | $15,276,188 | $14,143,985 | $12,877,431 | $11,765,047 | $10,846,505 | *$126,440,932* |
| *GRAND TOTAL* | *$5,850,823* | *$26,978,233* | *$43,338,408* | *$44,690,000* | *$50,286,800* | *$50,526,188* | *$49,393,985* | *$48,127,431* | *$47,015,047* | *$46,096,505* | *$412,303,420* |

*Table 16. Wildfire Resiliency Program Costs*

## 2023 Wildfire Resiliency Plan Summary

Avista is committed to a 10-year strategy to decrease wildfire risk associated with transmission and distribution line operations and to make the grid more resilient to the impacts of wildfires. In 2022, the National Interagency Fire Center reported 67 wildfires in close proximity to Avista electric lines. Although fire activity in 2022 was below the 10-year average, human development continues to occur near forest landscapes and this proximity to burnable fuels combined with the uncertainties associated with climate change make wildfire a significant risk for many communities. Table 17 lists key wildfire plan performance measures recorded from 2018 to 2022.

A core tenant of the Wildfire Plan is to mitigate the number of ignition potential events associated with electric lines. In 2022, 107 spark-ignition events were recorded versus the 5-year average of 117. Electric pole fires were significantly lower at 50 versus the 5-year average of 83. The number of trees that fell into lines was about average, though the number of trees that encroached on lines was lower. Avista completed grid hardening upgrades on 180 miles of electric distribution lines in 2022 and installed 118 steel poles on transmission lines in high fire risk areas. Overall, Avista continues to make steady progress towards its long term objective of converting all transmission poles from wood to steel. In 2022, Avista conducted the first 100% inspection of distribution lines covering 6,466 miles and employing over 40 arborists. As a result of that effort, nearly 20,000 dead, dying, and diseased trees were removed near electric lines. Lastly, significant progress has been made to upgrade system protection devices. To date, 124 devices have been fully automated as part of Avista's Dry Land Mode operating system.

| Key Wildfire Performance Measures | 2018 | 2019 | 2020 | 2021 | 2022 | 5 Yr. Average |
|---|---|---|---|---|---|---|
| Wildfires Near Avista Electric Lines | n/a | n/a | n/a | n/a | 67 | n/a |
| Overhead Equipment Failure | 654 | 651 | 590 | 612 | 745 | 650 |
| Electric Pole Fire | 77 | 68 | 65 | 154 | 50 | 83 |
| Spark Event | 125 | 99 | 147 | 109 | 107 | 117 |
| Trees Fall Into Lines | 315 | 399 | 375 | 353 | 375 | 363 |
| Trees Grow Into Lines | 97 | 94 | 69 | 81 | 59 | 80 |
| **Key Wildfire Performance Measures** | **2018** | **2019** | **2020** | **2021** | **2022** | **5 Yr. Total** |
| Distribution Grid Hardening Miles Upgraded | n/a | n/a | 61.2 | 150.5 | 180 | 392 |
| Total Steel Transmission Poles Installed | n/a | n/a | 368 | 1,016 | 632 | 2,016 |
| Wildfire Steel Transmission Poles Installed | n/a | n/a | n/a | 169 | 118 | 287 |
| Distribution Risk Trees Removed | n/a | n/a | 10,091 | 12,796 | 15,678 | 38,565 |
| Transmission Risk Trees Removed | n/a | n/a | n/a | 1,362 | 3,281 | 4,643 |
| Automated Dry Land Mode Devices | n/a | n/a | n/a | 72 | 52 | 124 |

*Table 17. Wildfire Resiliency Program Costs*

Avista recognizes that the threat of wildfire impacts all of us, at our homes, communities and businesses. Avista is charged with the safely, reliably, and affordably delivering energy services and the 2023 Wildfire Resiliency Plan serves as a testament to that commitment and responsibility.

# Addendum

## 2022 Fire Season Recap

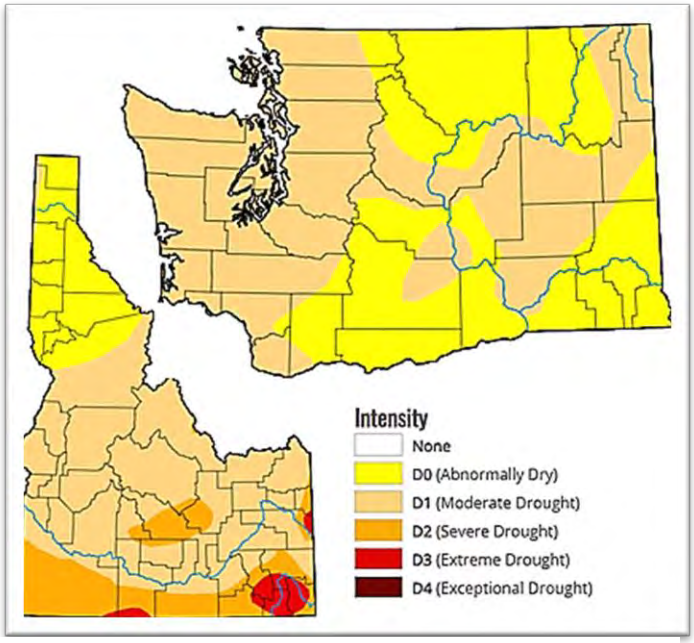



*Figure 23. October 2022 Drought Conditions*

In Washington, spring water supply conditions for 2022 were much better than average. In fact, the state experienced the second-wettest May through June since 1895. As a result, no part of Washington experienced more than "moderate" drought conditions. However, above-normal temperatures in July through September created an opportunity for expansion of moderate drought areas across western Washington. Still, this was good news compared to 2021, where nearly half the state was listed in the "exceptional drought" category. In 2022 Washington State had the fewest square miles burned in a decade, following the second- and third-worst fire seasons on record in 2020 and 2021. Only about 219 square miles burned in Washington state in 2022, compared to nearly 781 square miles in 2021 and 1,316 square miles in 2020.[24] Washington Commissioner of Public Lands, Hilary Franz, stated that modernized fire equipment, quick responses to fire starts, and increasing forest health programs have helped reduce catastrophic fire seasons. She reported that in 2022 the Department of Natural Resources held 94% of wildfires to 10 acres or less.[25]

Drought conditions were slightly worse in Idaho, especially in the southern part of the state, which saw very low snowpack into 2022. 2021 was a brutal year for water resources in Idaho, but moisture and cooler temperatures early this year helped prevent a repeat for 2022. The number of fires Idaho experienced this year was near normal yet led the nation in number of large fires at 33,[26] but with only about 383 square miles burned,[27] significantly below the annual average of nearly 983 square miles.[28]

[24] NYNorthwest/Associated Press, "Washington State's Fire Season Lightest in a Decade," October 10, 2022, https://mynorthwest.com/3669778/washington-states-fire-season-lightest-in-a-decade/#:~:text=State%20Commissioner%20of%20Public%20Lands,square%20kilometers)%20burned%20in%202020.
[25] Courtney Flatt, "Washington's 2022 Fire Season Has Been the Mildest in a Decade," Oregon Public Broadcasting, October 9, 2022, https://www.opb.org/article/2022/10/09/washington-wildfire-season-bolt-creek-fire-goat-rocks-fire-oregon-wildfires/
[26] Luke Randle, "Idaho Leads the US in Large Wildfires, Second in Acres Burned," September 11, 2022, https://idahonews.com/news/local/idaho-wildfires-leads-acres-burned#:~:text=Idaho%20has%20the%20most%20large,11%2C%202022.
[27] Luke Randle, "Idaho Leads the US in Large Wildfires, Second in Acres Burned," September 11, 2022, https://idahonews.com/news/local/idaho-wildfires-leads-acres-burned#:~:text=Idaho%20has%20the%20most%20large,11%2C%202022.
[28] Idaho Dept. of Environmental Quality, "Idaho Wildfire Emissions Estimates," January 2022, https://www2.deq.idaho.gov/admin/LEIA/api/document/download/16543#:~:text=These%20estimates%20may%20vary%20from,average%20of%20around%20600%2C000%20acres.

### *Impacts to Infrastructure*

In 2022 Avista lost 55 structures (transmission and distribution) to wildfire, though none of the large fires in our service territory were caused by Avista facilities (as reported by the Washington Department of Natural Resources.)

The Express Fire, near the Clearwater River Casino outside of Lewiston, Idaho, caused by lightning, burned through the Hatwai-Lolo 230 kV transmission line, but most of this section has steel poles, so it suffered no real damage.

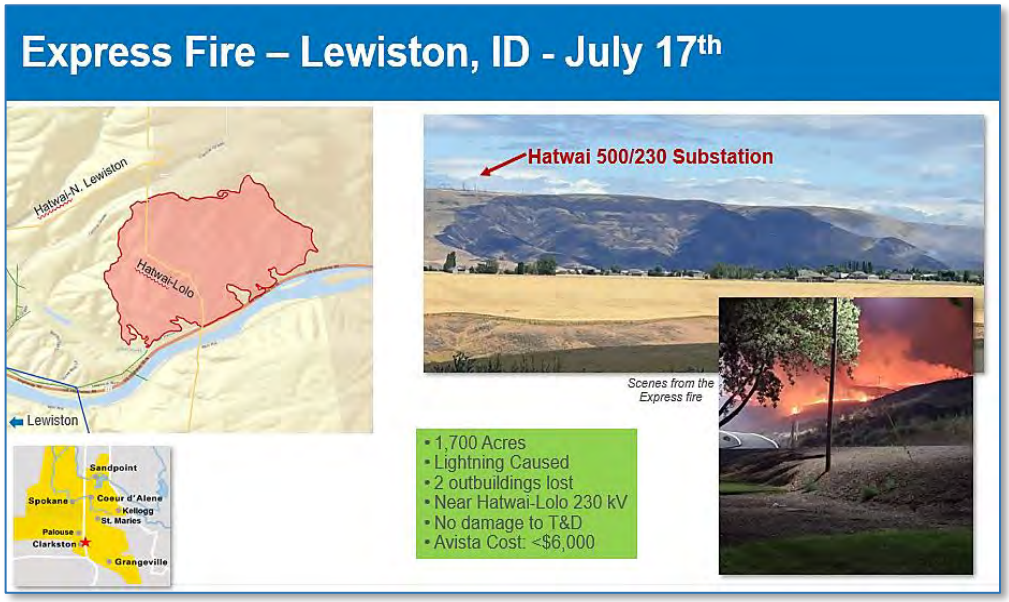



*Figure 24. Express Fire*

The Lind fire burned through low grassy areas and wheat fields and continued into the town of Lind, Washington, where it destroyed six homes and ten other structures. A local farmer claimed that his combine started this fire while he was harvesting his wheat. This fire damaged 12 transmission structures on the Lind-Washtucna line along with 22 distribution poles. Avista stepped up to provide impressive customer service related to this fire. We initially de-energized powerlines to protect fire crews but re-energized specific areas of feeders so that firefighters could pump water to fight the fire. Once conditions were safe, Avista crews rushed to replace the 34 lost structures, working through the night to restore service to all customers by the next morning.

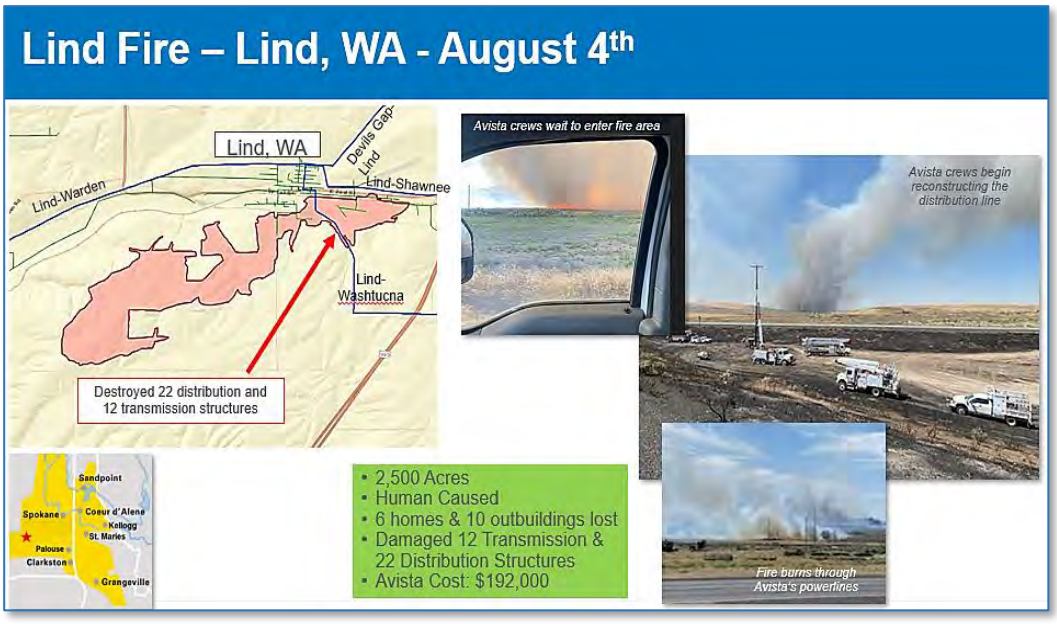



*Figure 25. Lind Fire*

The Wagner Road fire was one of the largest fires in Washington in 2022. It started east of St. John and burned through the Lind-Shawnee line. The official cause is unknown, but this fire is suspected to have been caused by a combine harvesting wheat. It burned through rangeland, stubble, and standing wheat, destroying four outbuildings and 20 Avista transmission structures. As soon as fire crews released our people to work in the area, Avista crews from Pullman, Spokane, and Coeur d'Alene mobilized. It took them only four days to get this line back in service, including working in dust three feet deep in places and bringing in special equipment to drill through solid basalt to place steel poles.


*Figure 26. Wagner Road Fire*


*Figure 27. Cannon Fire*

The Cannon Fire turned out to be a small fire in a very bad spot. This fire, caused by a passing train, started just south of Interstate 90 near Latah Creek in a Spokane residential area. It damaged a transmission structure on the Metro-Sunset line but was suppressed quickly. The damaged transmission structure was replaced.

### *2023 Fire Season Outlook*

Long term in the Northwest, the number, size, and severity of wildfires has increased in recent years, primarily associated with increased temperature and drought, hotter and drier summers (and the associated drier soils and vegetation), earlier spring melting leading to decreased summer water availability, and reduced snowpack. These climate changes lead to additional risk factors such as invasive grasses that provide fuel. Other influences include land use, prior fire suppression practices that led to increased forest density and fuel levels, invasive species that have damaged the health of trees,

and the largest factor, human activity, which accounts for 70-90% of wildfires.[29] As far as the outlook for 2023, scientists are predicting a La Niña for 2023, the third such winter in a row, meaning the Pacific Ocean temperatures will be cooler than normal. This typically means a lot of snow and cooler temperatures for the Northwest, which should help the region reduce or even avoid drought conditions in 2023, which is beneficial in reducing fire risk.[30]

# Continuous Improvement (Lessons Learned)

### *Challenges of Risk/Hazard Tree Program*

With the Wildfire Resiliency Plan, Avista expanded its risk/hazard tree program from cycle trimming (20% of the system annually) to 100% risk tree inspection and remediation program each year. Vegetation planners had forecasted the volume of dead, dying, and diseased trees that could potentially strike powerlines prior to 2022, but when 6,466 miles of distribution powerlines and 2,270 miles of transmission powerlines were inspected in 2022 – a new record for Avista - the number of risk trees came in at nearly double earlier estimates. Avista had never before conducted a 100% inspection of risk trees and is finding that forest health issues are much more dire than anticipated. This situation was made worse by the historic drought of 2021, but also reflects high impacts on forest health from long term drought, insects, human activity, disease, weather, and fire, leading to higher levels of tree mortality than expected and which continue to create spikes in risk trees on the system. In 2022 Avista removed nearly 19,000 dead, dying, or diseased trees within strike distance of powerlines. That is a record level of tree removals for Avista.

*Figure 28. Deer Park, WA: Beetle Infestation. Photos taken 4 months apart.*

Other issues are also creating complexity and cost around meeting our vegetation goals. As wildfire risk reduction has come to the forefront, utilities across the western U.S. are all competing for the same vegetation-related labor resources. Avista's primary inspection contractor has repeatedly been unable to recruit and retain enough inspectors to complete the work. We ended up requiring four times as many inspectors as we had

[29] USDA Climate Hub, "Climate Change and Wildfire in Idaho, Oregon, and Washington," https://www.climatehubs.usda.gov/hubs/northwest/topic/climate-change-and-wildfire-idaho-oregon-and-washington

[30] El Niño and La Niña events have wide-ranging impacts, affecting patterns of rainfall, flooding and drought around the Pacific Rim. A La Niña winter tends to be cooler and wetter in the Pacific Northwest, where an El Niño brings winters of low precipitation, resulting in dry conditions and low snowpack. Three La Niña events in a row has only happened twice since 1950, so it is considered a rare occurrence. Hannah Hickey, "Study Suggests La Niña Winters Could Keep on Coming," University of Washington, October 3, 2022, https://www.washington.edu/news/2022/10/03/study-suggests-la-nina-winters-could-keep-on-coming/

historically used in order to scale up to 100% risk inspection. The Company was required to contract with four additional vendors to bring enough people to the service territory to allow inspecting the entire system. And given the level of competition for resources, contractors – if they can be secured - are able to command 60-hour work weeks, lodging, and per diem allowances, unexpectedly increasing costs for this critical program.

Avista is also beginning to incorporate remote sensing LiDAR and satellite imagery data into the vegetation management programs. These are new technologies to the Company and more time, experience and refinement are needed before they truly begin replacing boots-on-the-ground labor resources. However, after our initial experience with 100% inspection and subsequent mitigation, and through the use of these technology tools and gaining confidence in them, risk trees should become more of a known quantity, making it easier to right size the labor required to complete this work on an annual basis. As tree fall-in risk represents the highest risk of spark-ignition potential on our system, Avista remains committed to inspecting 100% of the grid each year.

### *Implementing Elevated Dry Land Mode (DLM)*

Avista entered summer dry land mode operations on July 19th this year and ended in mid-October. This is consistent with a typical summer, as contrasted to 2021, which was abnormally hot and dry and resulted in entering DLM a month early.

1) July 29: 1 Circuit Elevated in Deer Park. Impact: 2,000 Customers
2) August 3: 7 Circuits Elevated in Ford – Gifford, W. Spokane, and Deer Park. Impact: 6,544 Customers

**NO SERVICE INTERRUPTIONS WERE EXPERIENCED.**

Customers were contacted ahead of time using email, social media channels, and interactive voice recordings (IVR).

This year, for the first time ever, we implemented Elevated Dry Land Mode on two separate days encompassing eight circuits, potentially impacting just over 8,500 customers in Washington state. It went off without a hitch. Customers were identified and notified in advance that they could potentially experience outages that may be longer than normal due to our need to patrol the line if it tripped to ensure there were no fire starts. Fortunately, there were no events that tripped these circuits and customers experienced no service interruptions. However, this experience helped prove the updated Dry Land Mode concept and that the framework developed for it was effective. All of the impacted Avista groups stepped up to make this a successful endeavor, helping prove its usefulness in protecting customers from potential fire events by reducing the chance that our facilities could trip and lead to a fire.

### *Transmission Steel Conversion*

Construction activity on the Addy-Gifford 115 kV line was completed in early October and will hit its budget target. The Addy–Gifford transmission line is a 21-mile radial line that was originally constructed as a 60 kV line in 1951 by a rural electric district. Avista acquired the line in 1955 and operated it as a tap off the old Magnesite–Orin 60 kV line for a time. In 1975 most of the old Magnesite–Orin line was dismantled, but the section from Orin to Gifford remained in service at 60 kV until the 1980s when the line was reinsulated to operate at 115 kV and connected to BPA's Addy Substation. Due to the absence of multiple sources to serve loads out of Gifford Substation, very little maintenance work has been conducted on this line since the 1980s.

*Figure 29. Addy-Gifford Steel Pole Replacement Work*

As part of a 2010 NERC Alert, Avista performed an aerial LiDAR survey and subsequent line rating analysis on the Addy–Gifford line which indicated clearance discrepancies that Avista committed to mitigate in 2021. Initially, the plan was to conduct a small project to mitigate these discrepancies. However, in 2020 Avista's Wildfire Resiliency initiative identified much of the Addy–Gifford line as being within the Wildfire Urban Interface (WUI) Zone 3 (the highest risk zone). For this reason, the Addy– Gifford line was identified as a good candidate to be rebuilt entirely with steel poles.

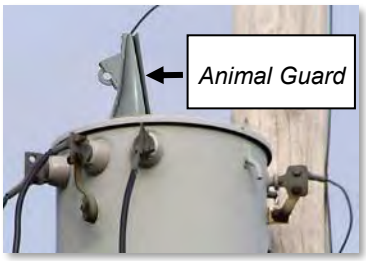
*Figure 30. Addy-Gifford Work*

The inability to support the load at Gifford Sub from alternate sources makes taking line outages for maintenance work very difficult. In recent years, Avista's Transmission Department has implemented a variety of solutions to accommodate outages on radial lines, including planning several short outages and "swarming" the line with as many crews as possible, building distribution tie-lines to back-feed radially fed substations, and/or installing temporary diesel generators and step-up transformers to feed directly onto the distribution system. Unfortunately, rebuilding the Addy–Gifford line is too extensive to "swarm" due to the multiple distribution voltages in addition to the extremely long feeder lengths, making a distribution tie-line impractical. Additionally, Avista's Transmission Department investigated the option of installing a diesel generator at Gifford Sub, but the operating costs alone were going to be nearly $1 million per month. It was determined that the most cost-effective and feasible way to perform the work on this line was to work the line while energized. Avista does not have much experience in energized transmission line work so contracted with Portello, who is the industry leader in energized transmission work, to perform the first phase of the Addy–Gifford rebuild. For this phase, all existing wood poles from Gifford Sub to Structure #9/3 will be replaced with self-weathering steel poles, and the existing conductor will be transferred. All distribution underbuild crossarms will also be replaced with fiberglass crossarms, and insulators upgraded to vise-top insulators. The existing line rating will be maintained, but the new poles are designed to accommodate a future "hot-reconductor" to 795 ACSS "Drake" capable of operating at 200℃.

# Glossary of Terms

**ADMS**: Advanced Distribution Management System. This is the replacement system for Avista's current inhouse-created Outage Management System (OMS). It is an enterprise level system. Wildfire is among many other Company users of this system. The new ADMS will manage and track all planned and unplanned outages that affect the grid.

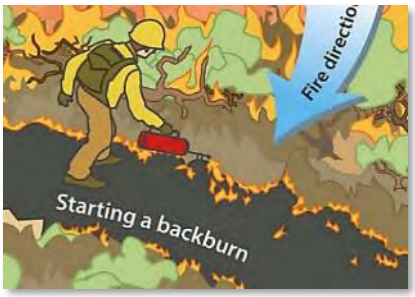
**Access and Functional Needs (AFN):** Customers who are especially vulnerable such as those who are disabled, dependent on electrically operated medical equipment, who are transportation disadvantaged, etc.




**Animal Guards:** Parts installed to act as a barrier to stop animals such as squirrels and birds from coming into contact with energized power equipment.

**Asset:** Electric lines, structures, equipment, or supporting hardware in the service of providing electric power to customers.

**At-Risk Species**: Species of vegetation that have an elevated risk of (1) coming into contact with powerlines, (2) causing an outage or ignition, and/or (3) being easily ignitable and are within close enough proximity to potential arcing, sparks and/or other utility equipment thermal failures. "At-risk species" must be a function of species-specific characteristics including growth rate, failure rate of limbs, trunk, and/or roots (as compared to other species), height at maturity, flammability, vulnerability to disease or insects, etc.




**Backburn/Backfire:** A fire set along the inner edge of a fire line to consume the fuel in the path of a wildfire and/or change the direction of force of the fire to help get it under control.

**Bail Connector:** A protection device installed on hot taps to hold the conductor if the hot tap fails, preventing live conductor from falling to the ground and potentially starting a fire.

**Base Level Dry Land Mode:** DLM is a non-reclosing distribution protection scheme used during summer fire season (typically July and August) on circuits determined to be at risk for fire activity based on a variety of factors including vegetation, past events, and age of equipment. These circuits are configured so that when they trip, they will wait for a predetermined length of time then reclose to test the circuit. This allows the line to go back into service for incidental and transitory faults such as a tree branch touching the line. If the line tests bad after the first reclose, it will wait for a predetermined length of time then test the circuit again. If the line tests bad the second time, it will stay off until it is manually inspected to ensure it is safe before it is placed back in service. This has the goal of balancing reliability and fire risk potential.


***Base Level Dry Land Mode***

**Baseline:** A measure, typically of the current state or condition, which establishes a starting point for comparison with measures from other states or conditions.

**Brush:** Refers to vegetation dominated by shrubby, woody plants, or low growing trees.

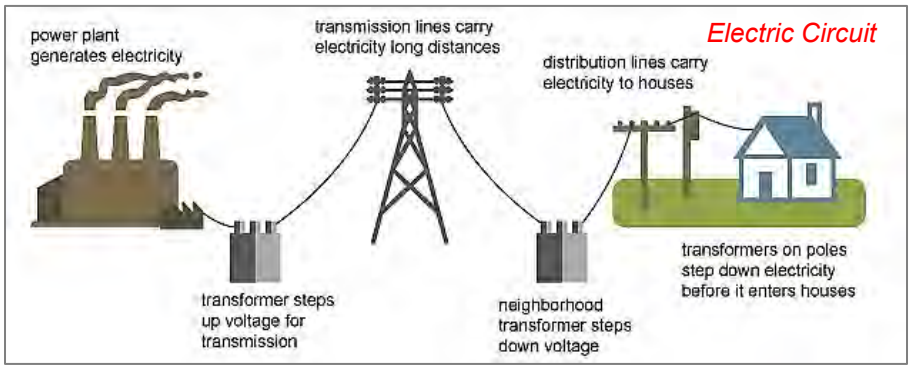
**Burning Index:** An estimate of the potential difficulty of fire containment, judged by the flame length at the most rapidly spreading portion of a fire's perimeter.

**CAIDI:** CAIDI refers to "Customer Average Interruption Duration Index." It is calculated as total minutes of customer interruption divided by the total number of customers interrupted. CAIDI describes the average time required to restore service. It only includes customers who actually experienced an interruption.

**CAIFI:** CAIFI refers to "Customer Average Interruption Frequency Index." It is calculated by dividing the number of interruptions by the number of customers experiencing interruptions. It describes how many interruptions each impacted customer experiences.

**CEIP / Clean Energy Implementation Plan:** An overview of Avista's plan for progressing toward the clean energy requirements of Washington State's RCW 19.405, the Clean Energy Transformation Act (CETA).[31] This Act requires all retail sales of electricity to Washington retail customers be greenhouse gas neutral by January 1, 2030. Avista's CEIP work impacts Wildfire in its efforts to communicate better with customers, including on wildfire preparation and Dry Land Mode impacts.

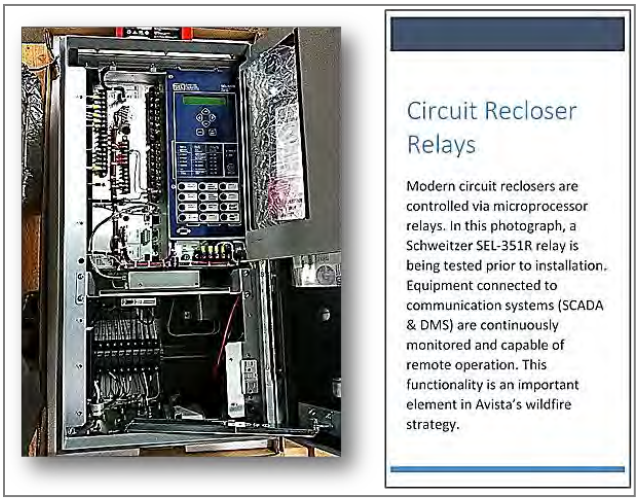
**Circuit:** The path for transmitting electric current from the device that creates the current (generator) across all associated equipment (such as the wire or conductor, switches, breakers, etc.) to the end user, as shown in the graphic on the right.




**Circuit Mile:** The total length in miles of separate circuits regardless of the number of conductors used per circuit.

**Circuit Recloser**: Circuit reclosers are similar to household breakers. They shut off the power when trouble has been detected then automatically test the line to see if the trouble has been removed. If the problem is only temporary the recloser automatically resets itself and restores electrical power. Adding communications to power system circuit reclosers provides monitoring and control

[31] RCW 19.405.040: Greenhouse gas neutrality—Responsibilities for electric utilities—Energy transformation project criteria—Penalties.
https://app.leg.wa.gov/RCW/default.aspx?cite=19.405&full=true#:~:text=(1)%20It%20is%20the%20policy,customers%20by%20January%201%2C%202045.




functionality, including the ability to operate the device remotely. By placing circuit reclosers at strategic locations, Avista Distribution Operations can re-task those devices during periods of elevated fire danger to operate in fire protection mode rather than in their typical reliability mode. In other words, if there is a high-risk situation, the reclosers can be set to not automatically reclose.

**Complex Fire**: As related to fire, this is when two or more individual fire incidents located in the same general area are assigned to a single incident commander or unified fire command and typically given one name that includes the word "Complex" to indicate that the fire has individual components.

**Condition-Based:** Maintenance based on the way equipment is performing, its age, number of times it was actuated, and/or other factors that indicate the actual condition of an asset.

**Consumer Average Interruption Duration Index:** CAIDI is the average duration of an interruption, calculated based on the total number of sustained (over five minutes in length) interruptions in a year.

**Control Line:** A completed fuel break around the fire. This break may include natural barriers, manually created barriers , and/or mechanically constructed fire lines to try to keep a fire within controllable boundaries.


**Cooperating Agency/Partner:** For Avista's Wildfire Program, this includes external fire professionals, agencies that provide customer assistance, law enforcement, the Red Cross, emergency management agencies, state/city/local government entities, etc. that the Company works with in planning and implementing our Wildfire Plan.

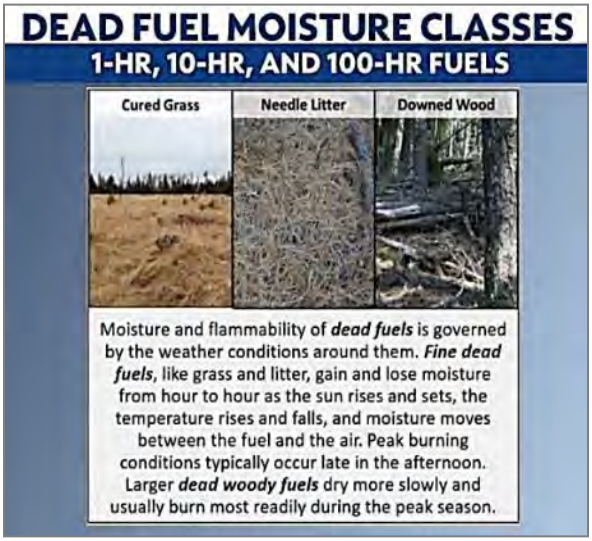
**Critical Facilities/Infrastructure:** Referring to outage events, these are elements critical to public safety such as emergency services, schools, jails/prisons, healthcare and medical services, water, waste and wastewater systems, communications, some manufacturing, and transportation. Referring to the utility, these are elements of the electrical grid that are required in order to provide customer service as well as safety. Critical infrastructure is a priority for restoration of service.

**Crown Fire:** A crown fire is defined as a fire that has ascended from the ground into the forest canopy/treetops and is spreading through it, usually in conjunction with the surface fuels. When a forest fire spreads from treetop to treetop it often begins advancing at great speed, well in advance of the fire on the ground.

**Customer Choice Safe Tree Program:** At Avista this has been renamed the "Safe Tree Program." It is a partnership with private landowners to remove risk trees, trees which are likely to come into contact with power lines, but which are located on private property. This program reduces the chances of their trees contacting powerlines and creating fire potential, improving customer safety and reliability.

**Customer Hours:** When referring to an outage, this is the total number of customers multiplied by the average number of hours of a power outage.

**Cycle Trimming:** At Avista, routine vegetation management divides the system into five segments which are patrolled on a rotating five-year basis, meaning about 20% of the system is inspected and subject to trimming each year. The Wildfire program added a 100% risk tree inspection to non-urban areas in addition to the routine cycle trimming vegetation program to more rapidly address vegetation issues that may lead to fire.

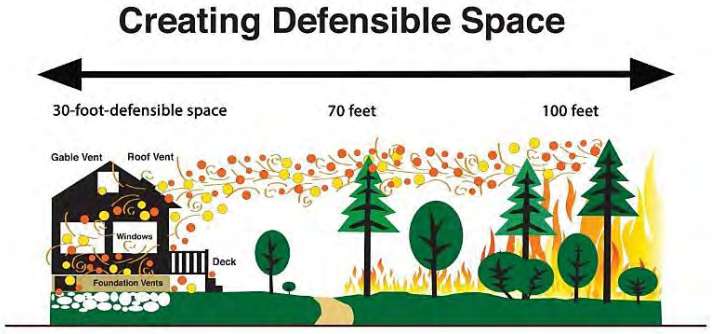



**Danger Tree:** At Avista, a danger or risk tree is a dead, dying, or diseased tree, or a tree that has a structural defect or lean that makes it likely to fail in whole or in part and contact electrical equipment or facilities within or adjacent to the utility right- of-way.

**Dead Fuels:** Fuels with no living tissue, so moisture content is governed almost entirely by atmospheric moisture (relative humidity and precipitation).

**Dead Fuel Moisture:** Moisture content of dead vegetation, which responds to current environmental conditions and is critical in determining fire potential.

**Defensible Space:** An area, either naturally or human-made, where material capable of causing a fire to spread has been treated, cleared, reduced, or changed to act as a barrier between an advancing wildland fire and the loss of life, property, or resources. In practice, "defensible space" is often defined as a buffer, an area a minimum of 30 feet around a structure that is cleared of flammable brush or vegetation. In forested areas, this buffer area typically increases to 100 feet of space.




**Digital Data Collection:** At Avista, this means collecting LiDAR and satellite images of our transmission and distribution systems in order to help pinpoint vegetation and other encroachments, which allows planning field work and mitigating problematic vegetation more accurately.

**Dispatcher:** A person who receives reports of discovery and status of outages, confirms their locations, and takes action to provide people and equipment likely to be needed, sending them to the proper place.

**Distribution (DX):** Electric facilities that have a voltage that is 60 kV or lower.

**Distribution Automation:** Avista's Wildfire program designed to aid in implementing wildfire protection measures. This program will fund upgrading or replacing 240 devices (including about 50 midline and substation breakers) to enable dynamic protection settings, allowing these devices to be operated remotely and automatically during fire season to support Avista's Dry Land Mode operations, reducing fire risk.

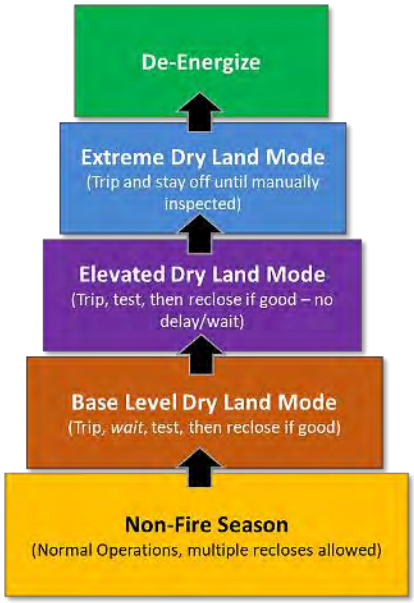
**Distribution Grid Hardening:** Avista's Distribution Grid Hardening Program targets portions of circuits located in high-risk fire areas with the goal of reducing spark ignition outages. This work includes replacing wood crossarms with fiberglass units, replacing end-of-life wood poles, changing out obsolete small copper wire with modern steel reinforced aluminum wire, installing wildlife guards to reduce animal related events, eliminating open wire secondary districts, installing wedge connected stirrups to provide protection and additional strength at hot tap connection points, and undergrounding conductor when cost-justified.

**Distribution Infrastructure Upgrades:** In Avista's Wildfire Plan, this means making improvements to our distribution system including adding wildlife guards, replacing wood crossarms with fiberglass, replacing wood poles with steel in specific locations, and replacing replaced obsolete equipment that has known spark potential. These changes are designed to reduce the potential for sparks.

**Drip Torch:** A hand-held device for igniting fires by dripping flaming liquid fuel on the materials to be burned. It consists of a fuel fount, burner arm and igniter. Fuel used is generally a mixture of diesel and gasoline. This tool is used to create back burns to help control a fire's spread.

*Drip Torch*

**Drought Index:** A number representing net effect of evaporation, transpiration, and precipitation in producing cumulative moisture depletion in the soil.



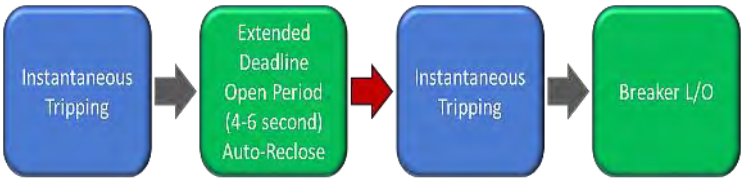

*Avista's Dry Land Mode Steps*

**Dry Land Mode:** DLM is a non-reclosing distribution protection scheme used during summer fire season (typically July and August) on circuits determined to be at risk for fire activity based on a variety of factors including vegetation, past events, and age of equipment. These circuits are configured so that when they trip, they will wait for a predetermined length of time then reclose to test the circuit. This allows the line to go back into service for incidental and transitory faults such as a tree branch touching the line. If the line tests bad after the first reclose, it will wait for a predetermined length of time then test the circuit again. If the line tests bad the second time, it will stay off until it is manually inspected to ensure it is safe before it is placed back in service.

**Dry Land Mode Automation:** Avista's plan to upgrade 240 midline and substation devices in areas at risk for wildfire to enable the devices to be operated remotely and automatically in response to fire situations.

**Emergency Operations Procedures (EOP):** Defines key roles and responsibilities for personnel, identifies communications channels, and outlines strategies for engaging with fire protection professional and emergency operating agency staff during expected or actual wildfire events, creating a consistent approach.

**Elevated Dry Land Mode:** Circuits whose fire risk exceeds nominal levels are modified to increase the protection level. This is similar to Base DLM but instead of a time delay tripping step, the circuit will instantly trip if it tests bad. This allows service restoration for temporary faults but will de-energize the entire circuit for permanent faults by tripping off the breaker.




**Elevated Fire Threat Areas:** Known as WUI Tiers 2 and 3, these are areas in which there is a higher risk for the ignition and rapid spread of wildfires as well as increased human safety and infrastructure risks due to the tendency for strong winds, abundant dry vegetation, significant levels of human activity and habitation zones, and other environmental conditions.

**Elevated Wildfire Risk:** This means that based on existing weather and vegetation conditions, wildfires are possible should ignitions occur.

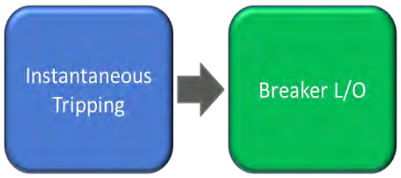
**Emergency First Responder Training:** Protects both firefighters and utility workers in the event of a fire event by providing proper training in response to both, mitigating the safety risks. Utility workers are trained in fire response and safety, and fire professionals are trained in utility operations, equipment, and power equipment safety.

**Emergency Operating Program (EOP)**: An EOP is a command structure that shifts normal operations to emergency response, with service restoration typically the primary objective. For a Wildfire EOP, the primary focus is safety, and the engagement includes outside fire and emergency-related entities to prepare for potential or actual wildfire events.

**Episodic Wildfires:** Wildfires that do not occur frequently or regularly.

**Expedited Fire Response:** In Avista's Wildfire Plan, this is an agreement with local firefighting agencies that sends fire crews directly to the site of a transmission trip event to ensure if there is a fire, it is managed immediately.

**Extreme Dry Land Mode:** Circuits whose fire risk is judged to be extreme are configured in a way similar to the crew safety mode called "Hot Line Hold." In this configuration, auto reclosing is disabled, and instantaneous tripping is enabled. A circuit that experiences a fault will trip off and stay off at the first instance. It does not test or try to reclose. The circuit must be manually inspected to ensure it is safe before it is placed back in service.




***Extreme Dry Land Mode***

**Extreme Fire Behavior:** "Extreme" implies a level of fire behavior that ordinarily precludes methods of direct control action. One or more of the following is usually involved: high rate of spread, prolific crowning and/or spotting, presence of fire whirls, and/or a strong convection column. Predictability is difficult because such fires often exercise some degree of influence on their environment and behave erratically, often dangerously.

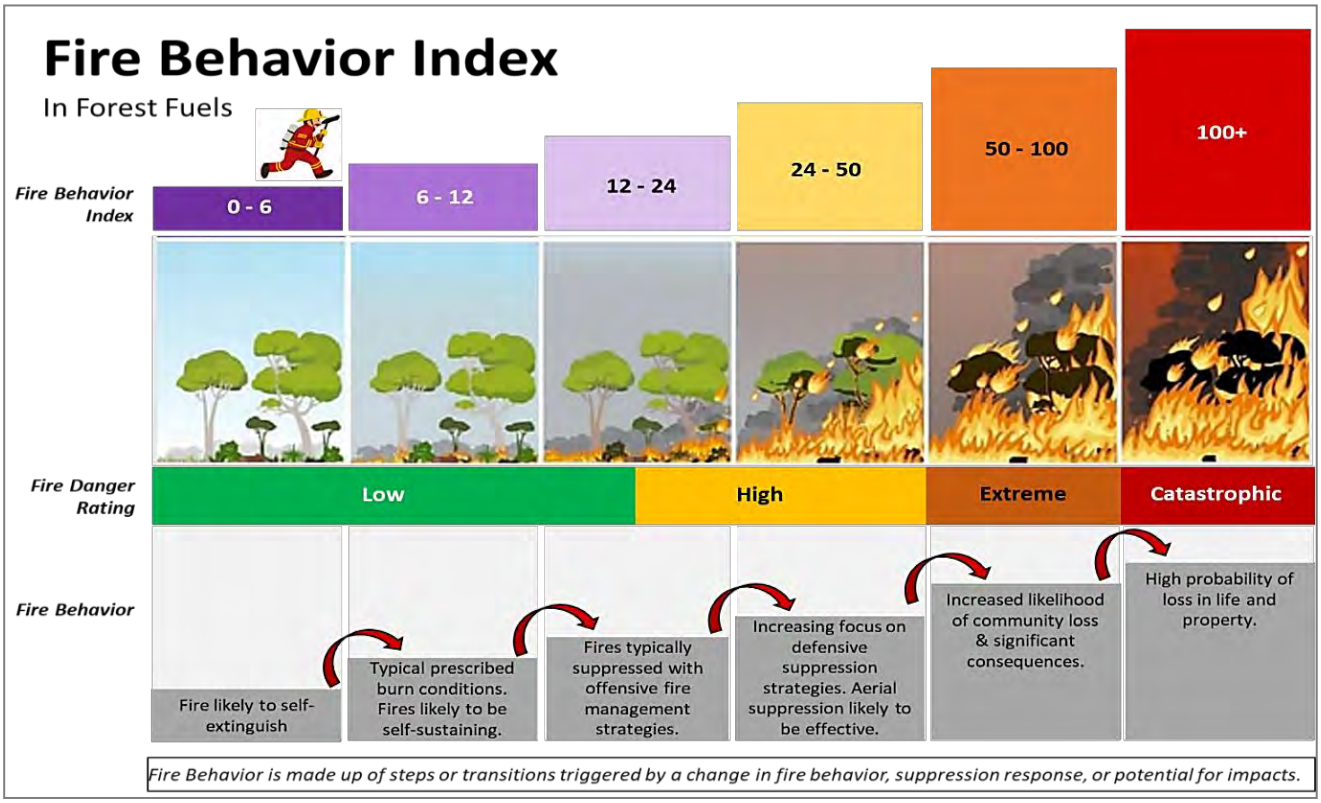
**Extreme Wildfire Risk:** Based on existing weather and vegetation conditions, a large, rapidly growing wildfire is possible should ignition occur.

**Fault Reduction:** Decrease the number of faults by prioritizing reliability programs that strengthen the utility's infrastructure, especially in higher wildfire risk areas.

**Fiberglass Crossarms:** Pole fires are a well understood phenomena within the electric utility community. Electric current tracking on wood poles and crossarms, especially during summer months, leads to increased rates of pole fires. Fiberglass crossarms reduce or eliminate electric current tracking and hence, pole fires. Fiberglass crossarms are smooth and resistant to contamination, do not rot or degrade over time, and are much lighter while being up to six times stronger than wood. In addition, fiberglass crossarms are inherently self-extinguishing, so perform well in fire situations.

***Installing a fiberglass crossarm***


**Fire Behavior:** The manner in which a fire reacts to the influences of fuel, weather, and topography.



**Fire Behavior Forecast:** A prediction of probable fire behavior, usually prepared by a fire professional, in support of fire suppression or prescribed burning operations.

**Fire Behavior Index:** A scale that captures fire severity as a function of flame length (intensity of burn) and rate of spread.

**Fire Break:** A natural or constructed barrier used to stop or check fires that may occur or to provide a control line from which to work to extinguish a fire.


*Crews bulldoze a fire break at the fire's edge*

**Fire Front:** The part of a fire within which continuous flaming combustion is taking place. The fire front is usually assumed to be the leading edge of the fire perimeter. In ground fires, the fire front may be mainly smoldering combustion.

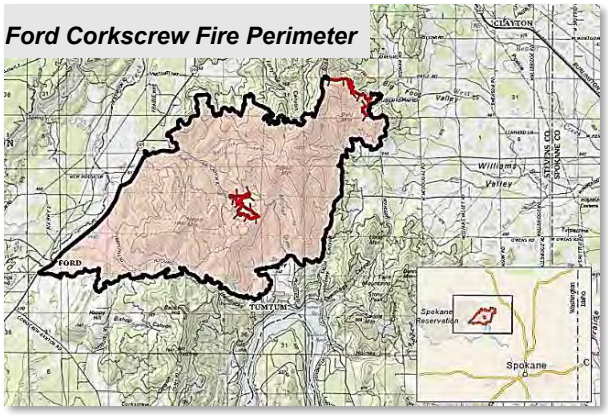
**Fire Ignition Events**: In Avista's Wildfire Plan, this is when a spark is created by the interaction of utility equipment and its surroundings (such as when a tree falls into a powerline) and this results in a spark that, under the right circumstances, could become a fire.

**Fire Mode Ready Devices:** Midline and substation devices located in high risk fire areas that Avista's Wildfire Program will upgrade or replace to allow protection settings to be operated remotely and automatically in reaction to wildfire or wildfire risk situations.

**Fire Mesh Wraps:** Avista uses Genics Fire Mesh, a wire mesh treated with intumescent graphic that, when exposed to extreme heat, rapidly expands to form a barrier between the fire and the wood pole. These wraps help prevent low-burning fires from accessing wood poles, protecting them from damage or destruction.


*A piece of fire mesh wrap*

**Fire Perimeter:** The entire outer edge or boundary of a fire.




**Fire Prone Area:** Areas where fires are most likely to occur or which have a higher tendency for fires to occur, often as a result of drought, forest health issues or insect infestations, human interaction, large amounts of dry undergrowth, low levels of humidity, etc.

**Fire Retardant**: Avista uses two primary forms of fire retardant on the transmission system. Fire resistant paint has historically been painted on wood transmission structures near ground line, which is an effective means of preventing damage caused by ground fires. This product must be re-applied every 3-5 years. Fire resistant mesh is a new product

the Company is switching to. It is chemically reactive to extreme heat, expanding to protect wood poles from fire. This product does not require ongoing maintenance and is quick and easy to apply.

**Fire Risk Potential:** This incorporates weather and fuels information to rate the overall fire threat at a particular location as well as a fire's likely behavior should one start.

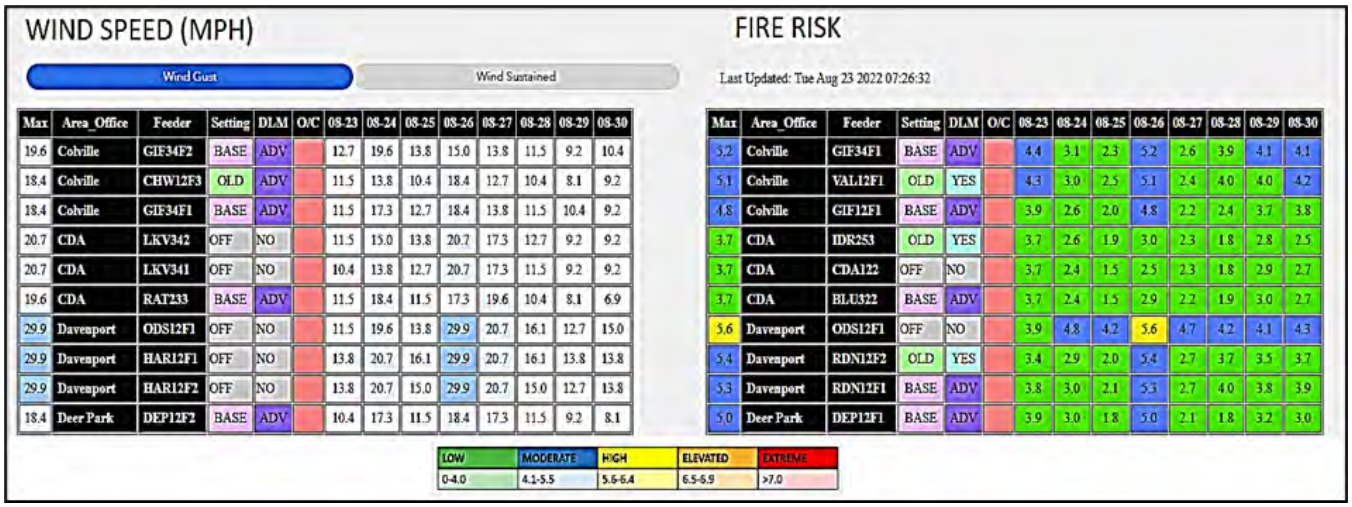
**Fire Season:** The time of year that wildfires are most likely to take place for a given geographic region due to seasonality, historical weather conditions, vegetative characteristics, etc.

**Fire Threat Conditions/Fire Danger Rating:** This considers current and antecedent weather, fuel types, and both live and dead fuel moisture to estimate the likelihood of a fire occurring as well as potential fire behavior should a fire occur.

**Fire Threat Areas:** Areas which have the highest likelihood of impacting people and property and where additional action may be needed to reduce wildfire risk. Threat level is based on elements such as population, topography, vegetation type, and historical fires in the area.

**Fire Weather:** Weather conditions that influence fire ignition, behavior, and suppression.

**Fire Weather Dashboard:** This is Avista's primary means of determining fire risk across our system. It is a risk-based computer program that combines the National Weather Service 7-day weather forecast with Avista equipment performance as well as time of year, drought conditions, type of vegetation and moisture levels, sustained wind and wind gusts, and more. It indicates the risk level for the upcoming week and highlights the maximum expected daily risk, helping the Company plan accordingly.




*Avista's Fire Weather Dashboard (Example)*

**Fuel:** Combustible material. This includes vegetation such as grass, leaves, ground litter, plants, shrubs and trees that can feed a fire.

**Fuel Concentration/Density:** Mass of fuel (vegetation) per area which could combust and result in a wildfire.

**Fuel Management:** Removing, thinning, or otherwise altering vegetation to reduce the potential rate of propagation or intensity of wildfires.

**Fuel Moisture Content:** Amount of moisture in a given mass of fuel (vegetation), measured as a percentage of its dry weight.

**Fuel Reduction:** Manipulation, including removal of fuels (vegetation management) to reduce the likelihood of ignition and/or to lessen potential damage and resistance to fire control.

**Fuel Reduction Partnerships:** In Avista's Wildfire Plan, this is partnering with external land management agencies and leveraging funding to remove fuels near Avista facilities. Sharing the cost allows both parties to do more work than each could accomplish with individual budgets.

**Grid:** General design of an electric system, whether looped or radial, with consequences for reliability and ability to support de- energization (e.g., being able to deliver electricity from an additional source if a line goes out of service). The purpose of the grid is to serve electric power to customers.

**Grid Hardening**: Actions such as equipment upgrades, maintenance, and planning for more resilient infrastructure, taken in response to the risk of undesirable events (such as outages or wildfires) or undesirable conditions (such as unreliable equipment) of the electrical system in order to reduce or moderate those events and conditions, maintaining reliability and safety. This is informed by an assessment of the relevant risk drivers or factors. In the Wildfire Plan, this specifically means adapting transmission and distribution materials and construction to minimize the potential for utility-involved fires in addition to protecting utility infrastructure in the event of a fire.


**Hazard Tree**: A dead, dying, or diseased tree or one which has a structural defect that makes it likely to fail into energized facilities whole or in part. Also called a "risk tree," this is a tree with the potential of imminent fall-in hazard to energized facilities located inside our just outside of our rights-of-way.

**Herbicides:** Typically used on the right-of-way to control incompatible tall growing species and noxious weeds. For the past several years, herbicide applications have primarily consisted of treating the stumps of fast-growing deciduous trees after they are removed to prevent resprouting. These applications are recorded within the same work records as the tree removals, generally categorized as risk tree work.

**High Risk Fire Areas:** These are areas that have been identified as most at risk for wildfire and associated damage, such locations in wildland urban interfaces (WUI zones) for which there is little or no fire protection (typically rural or remote areas), have human population and/or structures, and//or which have experienced historical wildfires.

**High Value Locations:** In Avista's Wildfire Plan, this refers to situations where wood poles are replaced with steel to add strength and durability at high value or high consequence locations such as high-

volume traffic areas, railroad, highway, and river crossings, at hard angles, or if access for maintenance is particularly difficult. These are locations where mechanical or fire-related pole failures could lead to increased safety risks and reliability impacts.

**High Wind Warning (HWW):** Level of wind risk from weather conditions as declared by the National Weather Service (NWS).

**Hot Tap:** A connection to the utility's powerline. A hot tap is a connection that can easily be removed versus a wedge connector, which is more permanent. The traditional hot line tap is attached via a bolt. Over time this type of connection can come loose and arc and spark and can melt through the conductor, dropping it to the ground. Thus, adding parts such as hot tap connectors that keep the conductor from falling may help prevent fires.

***Hot Tap Connectors***

**Ignition probability:** The relative possibility that an ignition will occur, quantified as a number between 0% and 100% (where 0% indicates impossibility and 100% indicates certainty). The higher the probability of an event, the more certainty there is that the event will occur. (Often informally referred to as likelihood or chance).

**Impact/Consequence of Ignitions:** The effect or outcome of a wildfire ignition upon objectives, which may be expressed by terms including, although not limited to, maintaining health, and safety, ensuring reliability, and minimizing economic and/or environmental damage.

**Incident:** In Wildfire Plans, this refers to human-caused or natural occurrence, such as wildland fire, that requires emergency service action to prevent or reduce the loss of life or damage to property or natural resources.

**Incident Command Structure:** The combination of facilities, equipment, personnel, procedures, and communications operating within a common organizational structure with responsibility to manage assigned resources to effectively manage an incident.

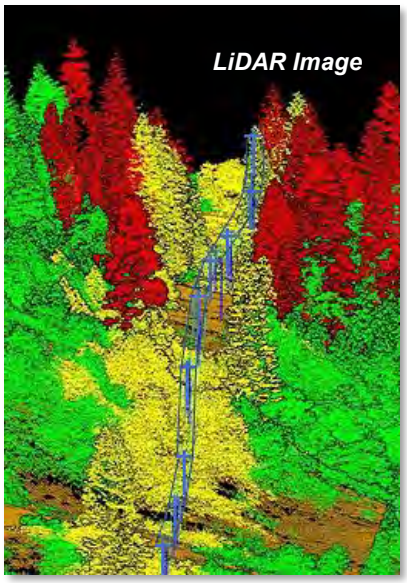
**InciWeb:** This is the Interagency All-Risk Incident Information Management System that provides a single source for fire incident related information and a standardized reporting tool for public use.

**Infrastructure:** This refers to the equipment Avista utilizes in order to serve customers, including poles, transformers, conductor, switches, substations, etc.

**Inherent Risk:** At Avista, this is the current state wildfire risk level which reflects Company wildfire defense strategies already in place.


**Ladder Fuels:** Fuels which provide a vertical path between the ground strata and higher vegetation, allowing fire to carry from surface fuels into the crowns of trees or shrubs with relative ease. They help initiate and assure the continuation of crowning when the fire spreads very rapidly from treetop to treetop.

**LiDAR:** Light Detection and Ranging, sometimes called 3-D laser scanning, that can be used to make high resolution representations of the earth's surface. At Avista it is used on the transmission system to identify vegetation encroachment and risk trees. It works well for transmission due to the open linear transmission rights-of-way. LiDAR is primarily collected via helicopter and fixed wing aircraft.




**Line Miles:** The number of miles of transmission and/or distribution line. Differs from circuit miles because individual circuits, such as the two circuits of a double-circuit line, are not counted separately in circuit miles but are counted as separate in line miles.

**Live Fuel Moisture Content:** Moisture content within living vegetation which can retain water longer than dead fuel.

**Medical Baseline Customers:** Residential customers with qualifying medical conditions and/or depend on power for qualifying medical devices for certain medical needs. For example, customers that have specific heating and cooling or mobility needs, those on respirators or dependent upon other electrically operated medical equipment.

**Member of the Public:** Any individual not employed by the utility.

**Managed Risk**: At Avista, this is the <u>future state</u> wildfire risk level as it is impacted by the addition of Wildfire Resiliency elements like grid hardening.

**Metrics**: In Avista's Wildfire Program, these are measurements that track how much utility wildfire mitigation activity has changed the conditions of utility wildfire risk exposure or the ability to manage and reduce wildfire risk.

**Viper Circuit Recloser**

**Midline Circuit Reclosers**: Often used on long distribution lines where substation-based equipment cannot adequately protect the entire length of the circuit. Avista's Wildfire Plan adds communications to these midline circuit reclosers in order to provide monitoring and control functionality, including the ability to operate the device remotely. By placing automated midline circuit reclosers at strategic locations, Avista Distribution Operations can re-task those devices during periods of elevated fire danger to operate in fire protection mode rather than in their typical

reliability mode. In other words, if there is a high-risk situation, the reclosers can be set to not automatically reclose.

**Miles Completed:** In Avista's Vegetation Management Program, this is a calculated value that equates to the known overhead line mileage within a polygon multiplied by the percentage of planned work completed within that polygon. Completion of planned work means executing the plan (trimming, removing, replacing) to the Company's specifications.

**Miles Patrolled:** Miles patrolled and miles planned effectively mean the same thing within the vegetation work plans.

**Miles Planned:** Miles patrolled and miles planned effectively mean the same thing within the vegetation work plans.

**Mitigation:** A measure or activity proposed or in process that is designed to reduce the impact/consequences and/or the likelihood/probability of a risk event such as wildfire.

**Momentary Outage:** The IEEE defines "momentary" outages as a brief loss of power caused by the opening and closing operation of an interrupting device that are less than five minutes in length.

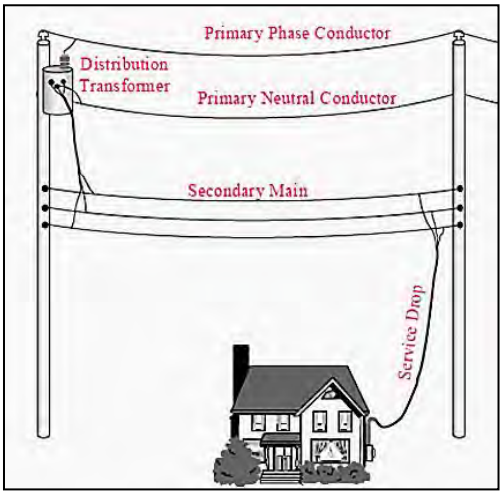
**Multi-Agency Coordination/Partnerships:** A generalized term which describes the functions and activities of representatives of a variety of involved agencies and/or jurisdictions who come together to make decisions regarding the prioritizing of incidents, and the sharing and use of critical resources. Also refers to agencies who work together, sometimes via financial assistance, in reducing fire risk.


**Normal Fire Season**: A season or time of year when weather, fire danger, and number and distribution of fires are about average.

**Old Dry Land Mode:** This is a program implemented by Avista in the early 2000s, when, during the summers, Avista changes the distribution system to turn off automatic re-closing when a fault occurs in certain parts of the system.

**OMS/OMT:** Outage Management System or Outage Management Tool. This is an Avista inhouse developed tool for tracking electric outage cause information (such as car hit pole, tree fall-in, wind, pole fire, etc.) as well as time stamp, reason, type, number of customers impacted, and length of outage. The OMS was designed to record actual events based upon cause, not impact, with the goal of repairing or replacing equipment that has or could lead to an outage. The current OMS does not include provisions for tracking outcomes beyond direct customer impacts, so is not set up to capture if an outage results in a fire unless that is noted in Dispatcher comments.

**Open Wire Secondary Districts:** Three conductors with 120/240 volts that run pole to pole below the primary conductors (primary conductors are on top of the pole in an overhead distribution system). It is called "open wire" because the three wires are clearly visible as opposed to a design in which the three conductors are bundled together.




**Outstanding Plan:** A still-to-be-completed plan. As inspections are performed, plans are created that consist of one or more units of work that need to be performed. In Avista's Vegetation Management, this can mean that completion of a plan is delayed due to customer permission, access, inclement weather, etc.

**NIFC/National Interagency Fire Center:** Located in Boise, Idaho, this is the home to the National Interagency Coordination Center (NICC) and National Multi-Agency Coordination (NMAC) group which provide unified guidance to fire agencies across the U.S., coordinate fire response and manage firefighting resources, and track and document fires, sources, size, and impact.

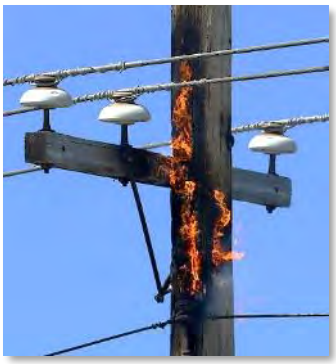
**Patrol:** Visual inspection of applicable utility equipment and structures that is designed to identify obvious structural problems and hazards.

**Patrol Inspection:** A visual inspection of applicable utility equipment and structures that is designed to identify obvious structural problems and hazards.

**Peak Fire Season:** That period of the fire season during which fires are expected to ignite most readily, to burn with greater than average intensity, and to create damages at an unacceptable level.

**Plan-Do-Check-Adjust**: A continuous improvement technique also known as the Deming Circle or Shewhart Cycle. Avista's Wildfire program uses this technique to help continue to grow and improve the program.

**Planned Outage:** Electric outage announced ahead of time by the utility.


*Pole Fire*

**Pole Fires:** Pole fires are a significant contributor to wildfire risk. The mechanism that causes pole top fires is well-known. This issue is related to periods of hot, dry weather when insulators become covered with dust and other contaminants, creating a path for leakage current, which happens as insulating properties of overhead equipment break down. Leakage current is usually invisible and does not cause a heat signature, making it almost impossible to detect. A light rain after the dry spell increases this leakage current and creates the right conditions for pole fires when the leakage current is concentrated between wood-to-wood contacts such as the contact point between wood crossarms and wood poles. Wood shrinkage and cracking around metal bolts holding wood crossarms to poles form a combustive-friendly cavity for arcing and burning, and the burning process accelerates when the moisture of wood increases. Fiberglass crossarms virtually eliminate pole fires. Avista has been installing fiberglass crossarms since the early 2000s. As part of Wildfire

Resiliency, the Company has an additional focus on replacing wood crossarms on structures located in elevated fire areas.

*Installing Pole Wraps*

**Pole Wraps:** Avista uses Genics Fire Mesh, a wire mesh treated with an intumescent coating that, when exposed to extreme heat, rapidly expands to form a barrier between the fire and the wood pole. These wraps help prevent low-burning fires from accessing wood poles, protecting them from damage or destruction. Mesh is more durable than the fire-resistant paint and is considerably less expensive than replacing a wood pole with steel. At Avista, pole wraps are used in areas subject to routine grassland or sage-shrub fires, areas of low vegetation.

**Polygons:** Between 2017 and 2018 Avista's Vegetation Management planning was changed from circuit level to polygon level. Polygons contain many circuits. Prior to switching to the polygon method, the overhead line mileage of a circuit was multiplied by the percentage of the circuit planned/inspected to arrive at "Miles Planned" and the percentage of the work on the circuit completed was multiplied by overhead line mileage to arrive at "Miles Completed."

**Polygon Planned Work Completed:** A polygon that has 100 percent "Miles Planned" and 100 percent "Miles Completed" requires no further remediation – all tree work has been completed. It is technically possible that an inspection could lead to no work needed at all, but it is not something that has been encountered in practice at Avista.

**Polygon Planned Work Not Done:** The entire Vegetation Management polygon has been planned/inspected but tree work is incomplete. This category helps keep track of inspections and work spanning between two plan years, so that those polygons will be carried into the following year for completion.

**Preparedness**: Condition or degree of being ready to cope with a potential fire situation.

**Preventive Maintenance (PM)**: The practice of maintaining equipment on a regular schedule based on risk, elapsed time, run-time meter readings, or number of operations. The intent of PM is to "prevent" maintenance problems or failures before they take place by following routine and comprehensive maintenance procedures. The goal is to achieve fewer, shorter, and more predictable outages.

**Priority Essential Services:** Critical first responders, public safety partners, critical facilities and infrastructure, operators of telecommunications infrastructure, and water utilities/agencies that are often prioritized in power restoration in order to protect public safety and welfare.

**Public Safety Power Shutoff (PSPS):** When electric companies preemptively turn off the power to specific areas of the system to reduce the risk of wildfires and to help keep customers and infrastructure safe. These events differ from typical outages because they are based on a prediction of risk rather than the occurrence of an actual event.

**PSPS Event:** Defined as the time from when the first public safety partner is notified of a planned public safety de-energization to the final customer being re-energized.

**PSPS Risk:** The potential for the occurrence of a PSPS event expressed in terms of a combination of various outcomes of the event and their associated probabilities.

**Rate of Spread:** The relative activity of a fire in extending its horizontal dimensions. It is expressed as the rate the total perimeter of the fire is growing, as rate of forward spread of the fire front, or as rate of increase in area, depending on the intended use of the information. Usually, it is expressed in acres per hour for a specific period in the fire's history.

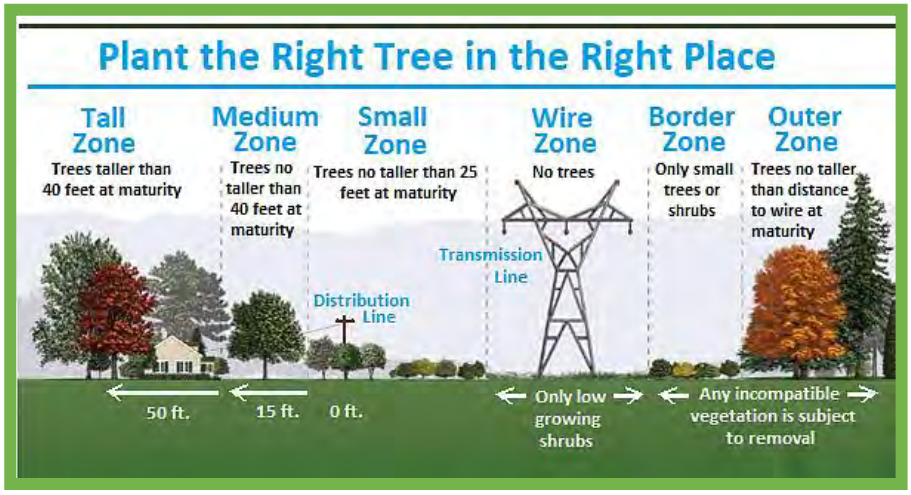
**Reburn:** The burning of an area that has been previously burned but that contains flammable fuel that ignites when burning conditions are more favorable.

**Red Flag Warning (RFW):** A term used by fire weather forecasters to alert the public to an ongoing or imminent critical fire weather pattern.

**Relative Humidity:** The ratio of the amount of moisture in the air to the maximum amount of moisture that air would contain if it were saturated.

**Reliability:** Maintaining customer service continuity.

**Right Tree Right Place:** At Avista this has been renamed the "Safe Tree Program." It is a partnership with private landowners to remove risk trees on their private property that are at risk of coming into contact with powerlines and creating fire potential or loss of reliability and replacing these trees, if the customer desires, with a lower growing variety.




**Risk Based:** Making decisions based upon how much risk is involved. Typically, a utility identifies specific risks to safety elements, financial well-being, customer reliability impacts, probability of occurrence, and consequence of occurrence in order to develop programs and plans which seek to reduce those risks.

**Risk-Based Vegetation Inspections:** A new goal based on the Company's Wildfire Plan that requires 100% of non-urban areas to be inspected for vegetation issues each year.

**Risk Event:** An event with probability of ignition, including wires down, contacts with objects, line slap, events with evidence of heat generation, and other events that cause sparking or have the potential to cause sparks or fire.

**Risk Tree:** At Avista, a "risk tree" is a dead, dying, or diseased tree or one with obvious structural defects that has the potential of imminent fall-in hazard to energized facilities.


**Routine Vegetation Inspections:** As opposed to risk-based vegetation inspections, routine inspections consist of cycle-based tree trimming, focused on about 1,500 miles (20% of the system) annually.

**Right-of-Way (ROW) Work:** ROW work means re-clearing/reclaiming the right-of-way with planning and completion of work at the span (from one pole to the next) level as opposed to spot work planned and completed at the individual tree level.

**Run-to-Failure:** A maintenance approach that replaces equipment only when it fails.

**SAIDI:** SAIDI refers to "System Average Interruption Duration Index." It is calculated by multiplying the average duration of customer interruptions by their total number and then dividing by the total number of customers in the system. SAIDI describes the total duration of the average customer interruption.

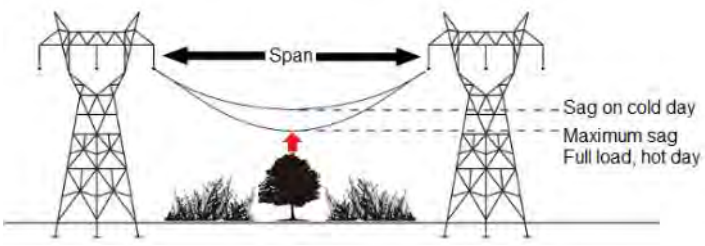
**Safe Tree Program:** This is a partnership with private landowners to remove risk trees to reduce the chances of their trees contacting powerlines and creating fire potential or loss of reliability. Avista will replace these trees, if the customer desires, with a low growing variety.

**Safety Hazard:** A condition that poses a significant threat to human life or property.

**Satellite Imaging:** In Avista's Wildfire Plan, this means using satellites to capture images of the distribution system to detect vegetation issues and changes in vegetation over time. Satellite-powered artificial intelligence systems such as that used by Avista's LiDAR and satellite contractors can predict vegetation growth years in advance. Satellite imaging works well for the distribution system, which is more widespread and convoluted than the transmission system and is located in a wide variety of environments not always accessible or visible from the aircraft used to collect LiDAR images.

**Situational Awareness**: Many of Avista's circuit breakers cannot be remotely operated and require manual intervention to make changes to settings or to identify an issue. This may take several hours depending on location and crew availability. Avista's Wildfire Situational Awareness Program funds communications and control equipment that will help us have "eyes" on critical equipment out in the field as well as be able to control it remotely in case of fire or high fire threat conditions.

**Span**: The space between adjacent supporting poles or structures on a circuit consisting of electric lines and equipment.




**Spark Ignition Event:** A situation when something such as equipment failure creates a spark that can potentially lead to a fire.

**Spark Ignition Potential:** The risk of heat (usually via spark or arc) creating the ability for a fire to start, spread, and do damage.

**Spark Ignition Source:** Something that creates a spark that may lead to a fire under the right circumstances, such as a failed piece of equipment, blown fuse, or conductor that touches dried vegetation on the ground.

**Steel Conversion:** One of Avista's wildfire resiliency strategies is to replace wood transmission poles in areas at an elevated risk of fire with steel, as steel is less likely to be damaged and fail when exposed to fire.


**Substation SCADA / Substation Dry Land Mode Automation:** Provides automation that allows remote control and operation of substation equipment to allow it to respond more quickly if fire conditions indicate elevated risk. In Avista's Wildfire Plan, fifteen remote substations located in high fire risk areas will be upgraded with communications equipment and hardware/software that allows them to support fully automated Dry Land Mode operations.

**Supervisory Control & Data Acquisition**: SCADA systems are used to monitor and control a variety of critical infrastructure in manufacturing, power generation, and other complex circuit infrastructure. It provides the ability, for example, to monitor and control reclosers to isolate and/or reroute power during outages or fire events. SCADA provides insights for operators into the operation of the system in addition to helping them remotely control it.

**Surface Fuels:** Loose surface litter on the soil surface, normally consisting of fallen leaves or needles, twigs, bark, cones, and small branches; also grasses, forbs, low and medium shrubs, tree seedlings, heavier branches, downed logs, and stumps interspersed with or partially replacing the litter. These elements can feed a fire.

**Sustained Outage:** The IEEE defines a sustained outage as a disruption in power supply lasting more than five minutes.

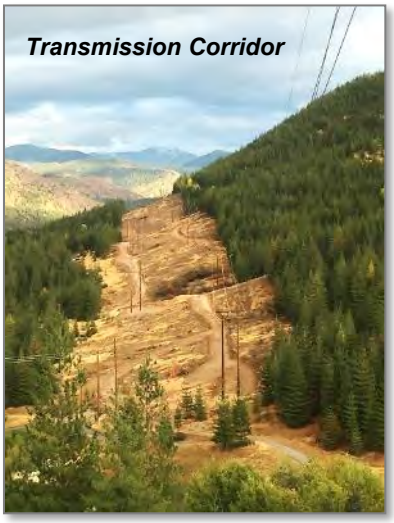
**System Average Interruption Duration Index (SAIDI):** SAIDI is a system-wide tally of the total number of minutes per year of sustained outage per customer served.

**System Average Interruption Frequency Index (SAIFI):** SAIFI is the average number of sustained interruptions per customer during the year.

**Third-party Contact:** Contact between a piece of electrical equipment and another object, whether natural (such as a tree branch) or human (such as a vehicle).

**Tiers:** In Avista's Wildland Urban Interface, the power system is divided into sections based upon the risk of a fire occurring and having impact. These are called Tiers and include: Tier 0 (Low or no risk), Tier 1 (Moderate), Tier 2 (Elevated), and Tier 3 (Extreme).

**Transmission:** Electric facilities that have a voltage that is 60 kV or above.




**Transmission Corridor:** The right-of-way associated with a transmission line in which the utility has the right to remove vegetation that may interfere with the line.

**Transmission Line Inspection:** Avista uses ground patrols, aerial inspections, and LiDAR data to inspect their transmission lines and structures each year.

**Transmission Steel Conversion:** Avista's effort to replace wood poles specifically in areas with elevated fire risk with steel poles to protect both infrastructure and customer reliability. The Company has experienced wildfire burning through steel pole lines with no impact from the fire.

*Tree Fall-In*

**Tree Fall-In:** Trees (or limbs) that are dead, dying, or damaged by illness, trees impacted by storms, lumberjacks, etc. that fall and come into contact with powerlines, often causing an outage.

**Tree Grow-In:** Trees planted under powerlines that over time grow into and contact those lines.

*Tree Grow-In*

**TX:** Short for Transmission.

**Undergrounding:** In Avista's Grid Hardening efforts, select portions of overhead line will be converted to underground facilities where feasible and cost justified. Converting facilities to underground fully mitigates potential spark-ignition risk.

**Unplanned Outage:** Electric outage that occurs with no advance notice from the utility.

**Utility-Related Ignitions:** Ignitions involving utility infrastructure or utility employees as determined by official investigation to have originated from utility infrastructure.

**Vegetation Issues**: This typically means trees and other vegetation that has the potential to or has contacted powerlines.

**Vegetation Management, Routine**: Trimming, removal, and other remediations of vegetation used to maintain utility rights-of-way and reduce the risk of outages, ignitions, or other disruption and danger.

At Avista, routine vegetation management is done on a five-year cycle with 20% of the system completed each year.

**Vegetation Management, Risk-Based**: Under Avista's Wildfire Plan, risk tree inspections are increased to 100% of non-urban polygons in an effort to mitigate the potential for vegetation to contact powerlines and create an outage or spark event.

**Vegetation Risk Index:** Risk index indicating the probability of vegetation- caused outages and/or ignitions along a particular circuit, based on the vegetation species, density, height, growth rate, etc.

**Wedge Connected Stirrups:** The traditional hot line tap is attached via a bolt. Over time this type of connection can come loose, arc and spark, and melt through the conductor, dropping it to the ground. The wedge connected stirrup device prevents the hot tap from being directly connected to the conductor. The stirrup attaches in such a way that if the connection loosens and if the stirrup melts, the conductor is still intact and does not fall to the ground. A wedge connected stirrup is a more permanent connection to the powerline than a hot tap.


***Wedge Stirrup***

**Wildfire Impact/Consequence:** The effect or outcome of a wildfire affecting, although not limited to, health, safety, reliability, economic and/or environmental damage.

**Wildfire Mitigation Plan:** A thoughtful approach to addressing the utility's responsibility in helping prevent their equipment from starting a wildfire, while at the same time protecting assets paid for by customer and designed to provide them with reliable service from the impacts of wildfire.

**Wildfire Programs**: Activities, practices, and strategies that are only necessitated by wildfire risk, unrelated to or beyond that required by minimum reliability and/or safety requirements. Such programs are not indicated or in common use in areas where wildfire risk is minimal (e.g., territory with no vegetation or fuel) or under conditions where wildfires are unlikely to ignite or spread (e.g., when rain is falling).

**Wildfire Risk:** The potential for the occurrence of a wildfire event expressed in terms of ignition probability and wildfire impact/consequence, and the likelihood that an ignition will grow to become a large or rapidly growing wildfire due to dry vegetation and weather conditions.

**Wildfire Risk Reduction**: The average percentage difference between the current state of risk and future state risk levels as wildfire measures are implemented.

**Wildland Urban Interface:** Or WUI, is the zone of transition between wilderness (unoccupied land) and land developed by human activity; basically, where the natural environment (typically forested areas) meets the built environment. Homes and businesses located in WUI zones are most at-risk from the impact of wildfires, as they are often located in rural areas lacking adequate fire suppression resources. The WUI map helps to identify and prioritize these areas of greatest risk and serves to inform the recommendations and operational decisions related to wildfire resiliency. Using this map, programs can be targeted where they have the potential to reduce the most risk and have the greatest positive impact in the safety and protection of customers and infrastructure.

*Fire Mesh Wood Pole Wrap*

**Wire Down:** Instance where an electric transmission or distribution conductor is broken and falls from its intended position to rest on the ground or a foreign object. If the conductor contacts dry materials on the ground and is live, the sparks created can lead to a fire.

**Wood Pole Wraps:** Avista uses Genics Fire Mesh, a wire mesh treated with an intumescent material that, when exposed to extreme heat, rapidly expands to form a barrier between the fire and the wood pole. These wraps help prevent low-burning fires from accessing wood poles, protecting them from damage or destruction.