BEFORE THE IDAHO PUBLIC UTILITIES COMMISSION

IN THE MATTER OF THE APPLICATION OF IDAHO POWER COMPANY FOR AUTHORITY TO INCREASE ITS RATES AND CHARGES FOR ELECTRIC SERVICE IN THE STATE OF IDAHO AND FOR ASSOCIATED REGULATORY ACCOUNTING TREATMENT.	))))))))	CASE NO. IPC-E-23-11

IDAHO POWER COMPANY

DIRECT TESTIMONY

OF

MITCH COLBURN

Q. Please state your name, business address, and present position with Idaho Power Company ("Idaho Power" or "Company").

A. My name is Mitch Colburn. My business address is 1221 West Idaho Street, Boise, Idaho 83702. I am employed by Idaho Power as the Vice President of Planning, Engineering, and Construction.

Q. Please describe your educational and professional experience.

A. I graduated from the University of Idaho in 2006 with a Bachelor of Science degree in Electrical Engineering, Summa Cum Laude. Thereafter, I obtained a Master of Engineering degree in Electrical Engineering from the University of Idaho in 2010 and a Master of Business Administration from Boise State University in 2015. I am a licensed Professional Engineer in the State of Idaho.

I have worked at Idaho Power since 2007. Prior to my current role, I served as Director of Engineering and Construction, Director of Resource Planning and Operations, Senior Manager of Transmission & Distribution Strategic Projects, Engineering Leader over 500 kilovolt ("kV") and Joint Projects. I held several engineering roles prior to these leadership roles.

Q. What are your duties as Vice President of Planning, Engineering, and Construction?

A. I am responsible for an organization of more than 380 employees focused on multiple areas:

1) Identifying future electric grid infrastructure requirements,

2) Operating and maintaining the electric grid, including the wildfire mitigation program and vegetation management, and

3) Designing, engineering, and constructing grid infrastructure projects.

Q. What is the purpose of your testimony in this matter?

A. The purpose of my testimony is to discuss the investments the Company has made in the electrical grid to ensure the provision of safe, reliable service to customers. My testimony will begin with a discussion of Idaho Power's recent history of reliability and performance that demonstrates a thoughtful approach to grid construction and maintenance. Next, I will detail specific investments included in the Company's 2023 test year that demonstrate the Company's prudent investment in the electrical grid at the transmission and distribution ("T&D") levels. Finally, my testimony will review the Company's wildfire mitigation efforts and associated capital and operation and maintenance ("O&M") expenditures proposed for recovery in this case.

Q. What exhibits are you sponsoring?

A. I am sponsoring Exhibit Nos. 4 and 5.

I. <u>Reliability and Performance</u>

Q. How is reliability typically measured on the Company's system?

A. As discussed in the Direct Testimony of Company Witness Ms. Lisa Grow, Idaho Power primarily uses four indices to measure reliability of the system. To summarize the information provided by Ms. Grow, these four measurements are:

SAIFI: System Average Interruption Frequency Index

SAIDI: System Average Interruption Duration Index

CEMI: Customers Experiencing Multiple Interruptions

MAIFI: Momentary Average Interruption Frequency Index

Q. Please provide a brief description of each of these measures.

A. SAIFI, SAIDI, and CEMI are indices that measure sustained outages. A sustained outage is defined as customers out of power for five minutes or longer. CEMI is typically referred to as "CEMI-1" through "CEMI-6," where CEMI-1 indicates the percentage of customers who had one or more outage, CEMI-2 indicates the percentage of customers who had two or more outages, and so on. MAIFI is an index that measures momentary interruptions. Momentary interruptions are when customers are out of power for fewer than five minutes.

Q. Based on these metrics, has Idaho Power demonstrated prudent and reliable operation of the electrical grid?

A. Yes. As detailed in Ms. Grow's testimony, Idaho Power's SAIFI metric has improved substantially since 2007. On a relative basis, a comparison of Idaho Power's rolling five-year average SAIFI compared to a peer utility group demonstrates that the Company outperformed its peers in each year since 2017.

Q. Has Idaho Power shown similar improvement in MAIFI, SAIDI, and CEMI?

A. Yes. Each of these metrics has improved across Idaho Power's system for the prior 10-year period, as demonstrated in Figures 1 through 3.

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FIGURE 1

SAIDI, 2007 THROUGH 2022

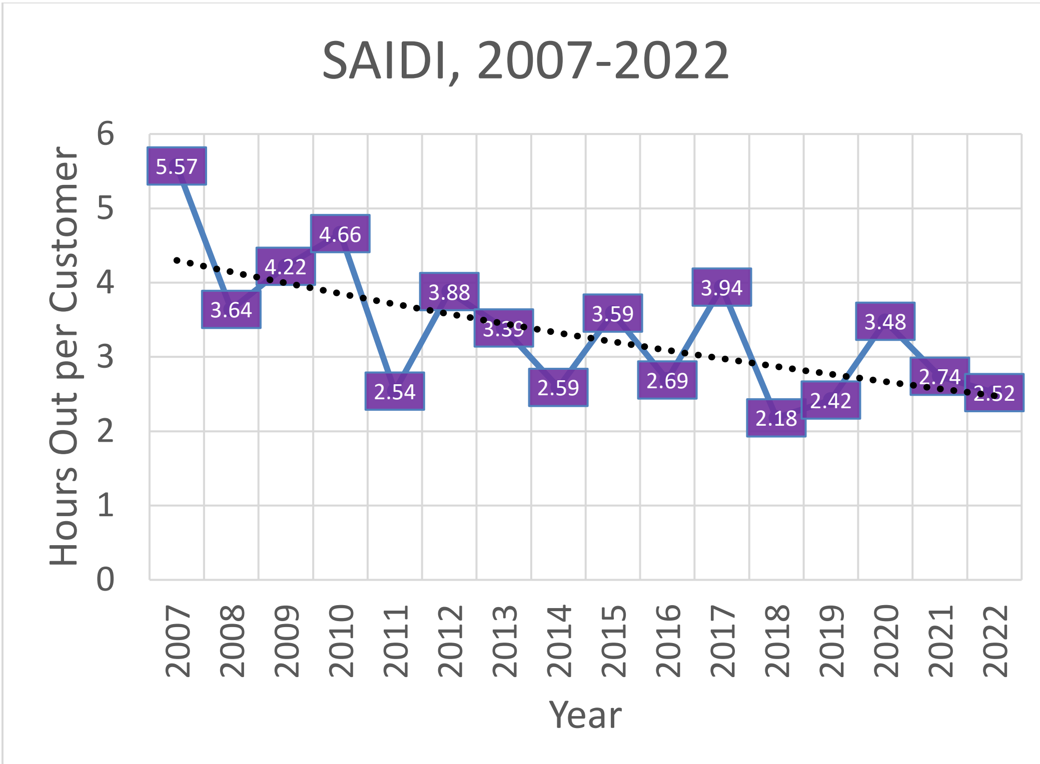


FIGURE 2

MAIFI, 2007 THROUGH 2022

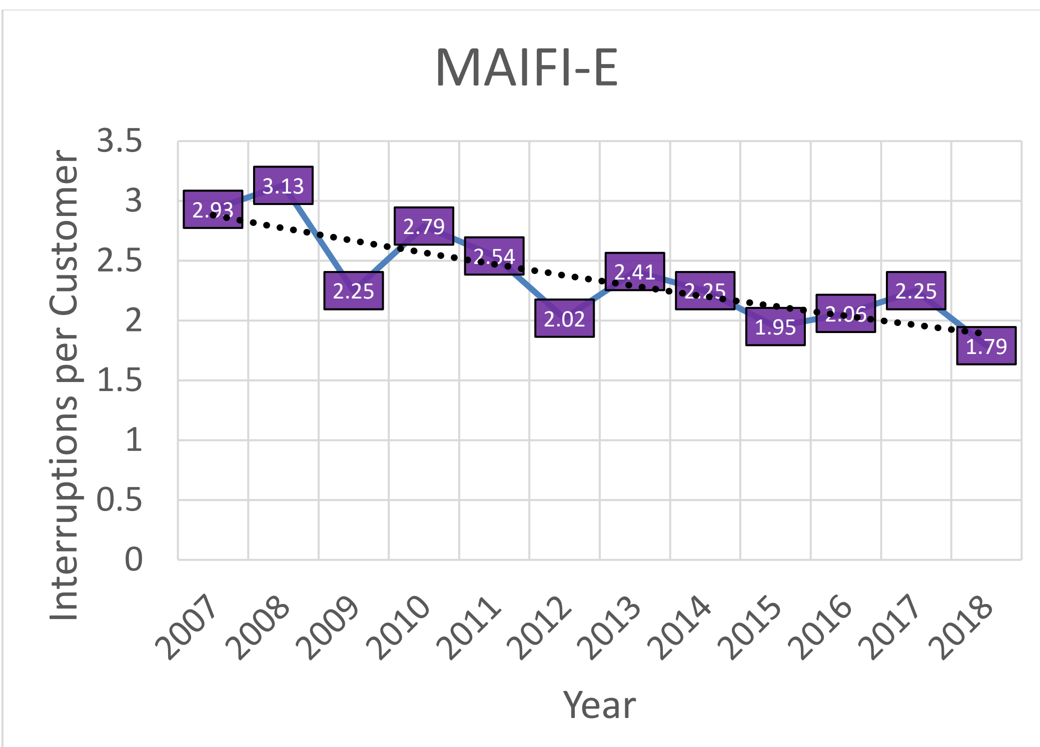


FIGURE 3

CEMI 3 AND CEMI 6, 2007 THROUGH 2022

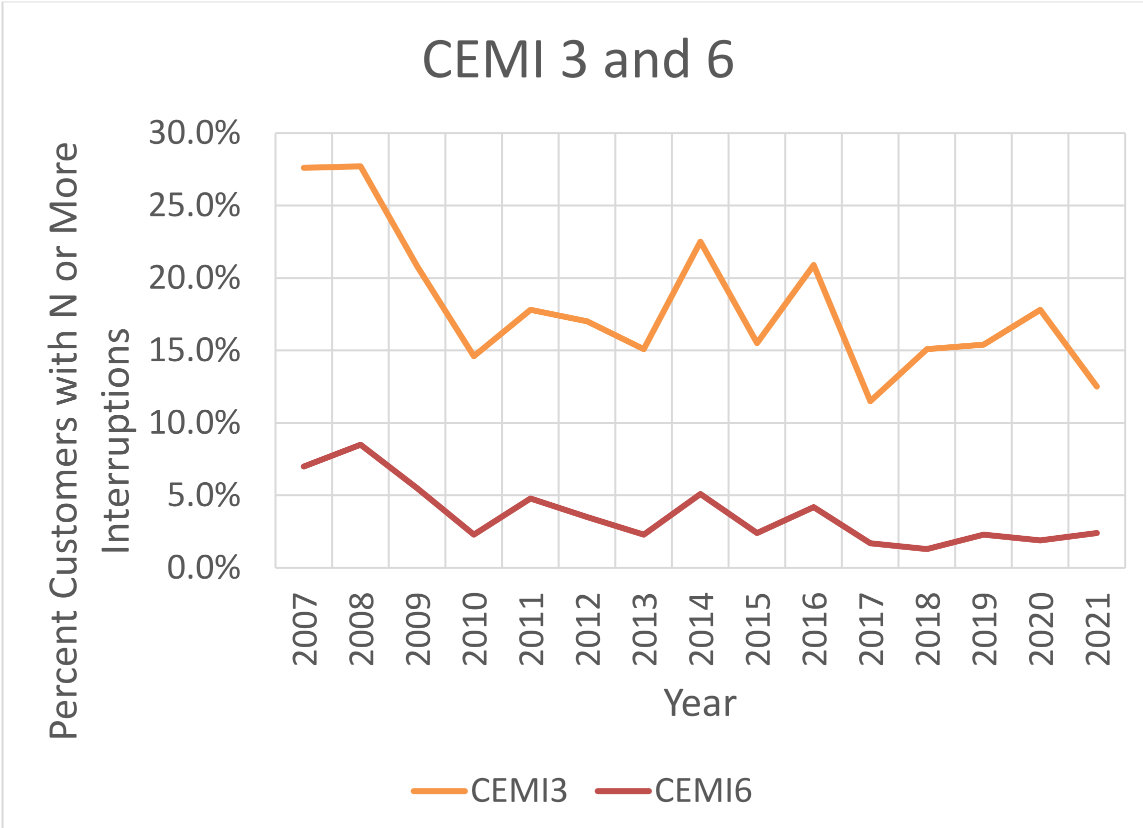
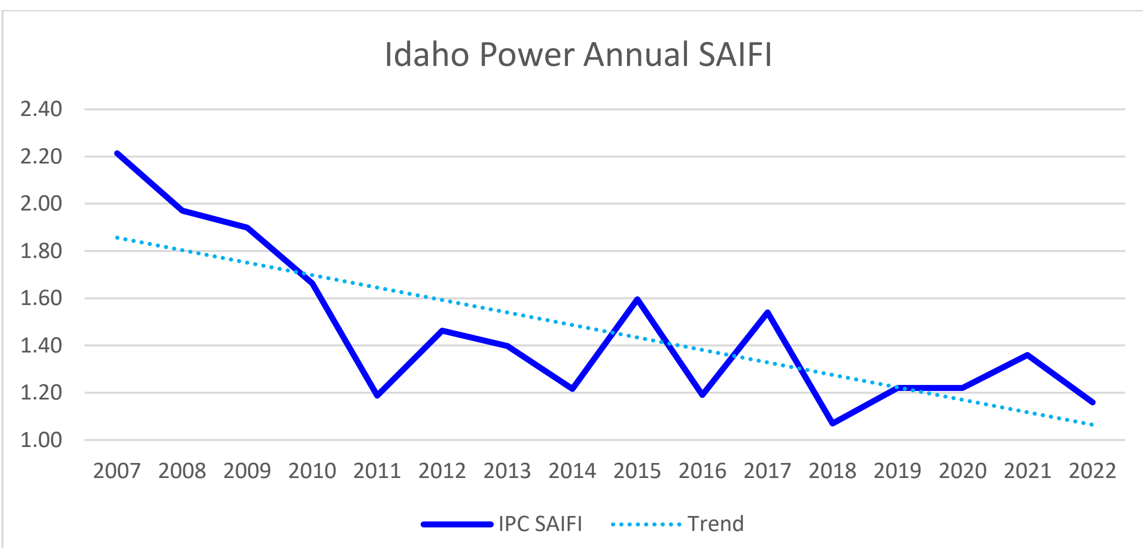


FIGURE 4

SAIFI, 2007 THROUGH 2022



Q. Do these metrics indicate prudent construction and maintenance of the Company's distribution and transmission systems?

A. Yes. Idaho Power's reliability metrics reflect a thoughtful approach to construction and maintenance of its T&D systems. Since the completion of the Company's last general rate case ("GRC") in 2011 in Case No. IPC-E-11-08, the Company has placed in service over $3.3 billion in infrastructure. As I will discuss in my testimony, approximately $1.6 billion of this total reflects prudent investment in the T&D systems. The corresponding improvement in the Company's reliability metrics over this same period indicates that this investment was prudent to ensure the safe, reliable provision of electric service.

II. Transmission Investments

Q. Please describe how the Company defines the transmission-related portion of the electrical grid.

A. Transmission generally describes the bulk or high voltage components of the electrical grid, including stations and high voltage lines typically utilized to transmit large volumes of electricity closer to load centers. On Idaho Power's system, transmission equipment is considered to be facilities at or above 138 kV, with an additional sub-transmission component comprised of facilities at 46 kV and 69 kV.

Q. How has transmission-related investment grown since the completion of the 2011 GRC?

A. Of the $3.3 billion in infrastructure placed in service over this period, approximately $553 million reflects investment in the Company’s transmission system.

Q. What drives investment in the transmission system?

A. Growth and reliability are the primary drivers of the transmission investments reflected in the Company’s 2023 test year. Growth-related projects typically include either the construction of new transmission facilities or the expanded capacity of existing facilities. Reliability projects typically include the proactive reconstruction or replacement of aging facilities.

Q. Please provide examples of growth and reliability needs driving investment in the Company’s transmission system between 2012 and 2022.

Q. Based on the growth experienced by Idaho Power over this period, investment has been required to ensure reliability on the Company’s transmission system. Two projects that demonstrate how growth drives transmission investment are the rebuild of the 59-mile transmission line between the King Substation and the Wood River Substation in the Wood River Valley ("King-Wood River Rebuild") and the upgrade of the 6.8-mile transmission line between the Cloverdale Substation and the Hubbard Substation in the Treasure Valley ("Cloverdale Line Rebuild").

Q. What factors led to the King-Wood River Rebuild?

A. Growth in the Wood River Valley was causing strain on the regional grid. Specifically, transmission planning studies required[1] by the North American Electric Reliability Corporation ("NERC") and dating back to 2009 demonstrated the need for transmission system upgrades to maintain adequate system voltage in the future and avoid needing to shed load for certain system conditions. To comply with NERC standards and to ensure the Company's reliability metrics provided earlier in my testimony did not degrade, investment in the local area transmission system was necessary.

Q. What actions did Idaho Power take to ensure the reliability of its transmission system?

A. In response to the identified need, Idaho Power rebuilt the line between the King and Wood River substations, upgrading the capacity of the line. Additionally, for enhanced reliability the Company replaced

[1] NERC TPL-001 Reliability Standard (Table 1 – Steady State & Stability Performance).

the existing wood structures with steel components. This investment was required to ensure that system reliability was maintained while accommodating growth in the area.

Q. Did similar factors lead to the Cloverdale Line Rebuild in the Treasure Valley?

A. Yes. Similar factors led to the Cloverdale Line Rebuild, further exemplifying how growth drives the need for investment to maintain a robust, reliable transmission system. In 2015, NERC-required transmission planning studies demonstrated the need for a 230-kV connection between the Hubbard and Cloverdale substations, whereas the existing line was 138 kV. The study showed that growth in the area had resulted in expected loads under certain conditions exceeding emergency equipment rating limits.

Q. What actions did Idaho Power take to address the reliability needs identified by this study?

A. In response to the growth-driven reliability requirements in the area, Idaho Power upgraded the local-area capacity by replacing the existing 138-kV line with a 230-kV circuit, as well as constructing distribution circuits located on the same structures as the 230-kV transmission line. This upgrade reflected a cost-effective solution to meet the requirements of growing load in the

Treasure Valley, enhancing and maintaining reliability of the local transmission system.

Q. Can you provide an example of transmission investment driven by the Company's proactive approach to aging infrastructure?

A. Yes. The Company's work on the Midpoint-to-Borah 345-kV transmission line demonstrates the need to invest in maturing longer-lived assets to ensure ongoing safe and reliable operation of the grid.

Q. Please describe the Midpoint-to-Borah transmission line.

A. The Midpoint-to-Borah 345-kV transmission line serves as a major component of the Company's bulk transmission system. This line was originally constructed in 1948 and operated at 138 kV, and over the next several decades was modified and improved to its current operating capacity of 345kV. Enhancements to the line over this period included an increase in capacity due to the addition of the Jim Bridger Power Plant, which included the addition of a second conductor, conductor re-configuration on the structures, and adding additional insulation to operate at a higher voltage. However, as the transmission line aged, issues began to arise related to ground clearance and leaning structures.

Q. What action was required to address this aging and important component of the Company's bulk transmission system?

A. The age and importance of this line warranted complete replacement of the structures from the Midpoint Substation to the Borah Substation. The existing wood-pole structures were replaced with steel-pole structures, remedying the potential structural issues by installing resilient, long-life steel poles.

Q. Do the projects you have discussed demonstrate a prudent approach to investment in the Company's transmission system over the last decade, and support the Company's transmission-related rate base included in this case?

A. Yes. Over the last decade Idaho Power has invested over $553 million in its transmission system. As evidenced by the King-Wood River Rebuild and Cloverdale Line Rebuild projects, Idaho Power is constantly evaluating the capacity needs and reliability of its transmission systems, ensuring that the electrical grid is stable and in compliance with NERC standards. As further evidenced by the Midpoint-to-Borah Rebuild, Idaho Power's investments in the transmission system over the last decade reflect a thoughtful, proactive approach to ensuring bulk system reliability. As evidenced by the improving reliability metrics experienced over this same period, these investments were prudently made and in the public interest.

III. **Distribution Investments**

Q. Please describe how the Company defines the distribution-related portion of the electrical grid.

A. Distribution refers to equipment at 34.5 kV and below, including lower voltage lines, substations, and transformers that are typically utilized to provide electricity at the lower voltages required by the majority of end-use customers.

Q. How much has distribution-related investment grown since the completion of the 2011 GRC?

A. Of the $3.3 billion in plant placed in service referenced previously in my testimony, approximately $1.0 billion is comprised of investments in the distribution system.

Q. What factors contributed to investment in Idaho Power’s distribution system over this period?

A. Growth in the distribution system can be directly tied to the addition of new customers, as every new customer, regardless of service level, requires some form of additional equipment. In addition, similar to certain components of the Company’s generation and transmission systems, Idaho Power has also undertaken a number of key projects to proactively harden its distribution system to maintain and improve reliability in light of aging infrastructure. These investments not only include the proactive replacement of aging infrastructure, but also the improvement of the distribution system through the installation of modern technology.

Q. How does growth impact the need for investment on the distribution system?

A. Growth impacts the distribution system in several ways. First, the addition of new customers requires new investment – from new service transformers and service drops for every new customer to, once demand reaches certain levels, new substations and lines. Additionally, construction and growth within the Company’s service area also result in the need for investment related to facility relocations for road construction and other civil projects.

Q. What were the primary growth-related components of distribution investment made over the last decade?

A. Growth-related investment in the Company’s distribution system consisted primarily of meters, transformers, and other distribution infrastructure in each of the Company’s operating regions. In addition to new facilities, Idaho Power spent approximately $25 million related to the relocation of facilities as the result of road projects in the Company’s service area.

Q. In addition to serving growth, has Idaho Power undertaken any major initiatives to maintain or improve the reliability of its distribution system?

A. Yes. There are two notable initiatives Idaho Power has undertaken to improve the reliability of its distribution system: 1) the replacement of direct-buried underground cable and 2) a grid modernization initiative that encompasses multiple projects.

Q. Please describe what is meant by "direct-buried cable."

A. Direct-buried cable describes underground distribution cable that was directly buried in the soil with no conduit. The use of direct-buried cable was standard practice in the industry and for Idaho Power up until the mid-1990s.

Q. What are the benefits of replacing direct-buried cable with new cable in conduit?

A. Replacing the existing direct-buried cable with new cable in conduit improves reliability and lowers future expenses when the cable needs to be replaced.

Q. How does the installation of cable with conduit improve reliability?

A. Cable in conduit is better protected from impacts related to direct contact with soil and moisture.

Consequently, faults are less frequent and cable in conduit is expected to last longer than direct-buried cable.

Q. How does the installation of cable in conduit help to lower future expenses when the cable needs to be replaced?

A. The installation of conduit allows the Company to replace the cable within the conduit more effectively and cheaply. With conduit in place, the cable can be removed from the conduit and new cable can be installed more efficiently. This will help to eliminate fees and expenses associated with permitting, flagging, landscaping and repaving roads and sidewalks.

Q. How far has Idaho Power’s underground cable replacement project progressed?

A. The underground cable replacement program began in 2012 with completion forecasted for 2035, targeting the replacement of approximately 350,000 feet of direct-buried cable each year until all 7 million feet of direct-buried cable have been replaced. To date, the Company has completed approximately 4 million feet of cable replacement.

Q. Please describe the grid modernization initiative.

A. The grid modernization initiative is a set of multi-year projects designed to maintain and improve reliability on the Company's electrical grid. This suite of projects replaces and modernizes equipment nearing its end of life and updates the Company's distribution system with modern technology to enhance reliability while keeping costs low.

Q. What notable projects comprise grid modernization efforts included in the 2023 test year?

A. Two notable projects under the Company's grid modernization initiative are the implementation of a new 700-megahertz ("MHz") Field Area Network ("FAN") and replacement of an Automated Capacitor Control ("ACC") system with the development of a new integrated volt-var control ("IVVC") system. The IVVC system and FAN became operational in 2019 and were built out across Idaho Power's service area by 2022.

Q. What are the FAN and the IVVC system, and how do they interrelate?

A. The 700-MHz FAN serves as the communication backbone for the IVVC system. The 700-MHz FAN is utilized to send and receive secure, reliable wireless communications to and from line devices on Idaho Power's distribution system. This communication supports the gathering of data and control of distribution system devices within the IVVC.

Q. How does the IVVC system benefit customers?

A. The IVVC system replaced a 22-year-old DOS-based system that was nearing its end of life and was unable to provide for direct and coordinated voltage control offered by more modern systems such as the IVVC system. Replacing the ACC with the IVVC provides the Company with the ability to better control devices and gather data in real-time, allowing the Company to improve power quality and voltage levels, optimize efficiency, and provide visibility and control to engineers and operators to better manage the distribution system.

At a high level, the IVVC system provides direct feedback on the status of devices through two-way communication, which reduces the need for seasonal inspections, instead allowing for inspections to focus on alarmed devices. This system is also the foundation for a future fault location, isolation, and service restoration ("FLISR") system. Idaho Power is in the process of installing fault location devices on the distribution system, which is prevalent in the industry.

Q. Do these projects demonstrate a prudent approach to investment in the Company's distribution system over the last decade and support the Company's distribution-related rate base included in this case?

A. Yes. Idaho Power's thoughtful and proactive approach to investing in its distribution system has resulted in improved reliability metrics over the past decade as detailed earlier in my testimony. In addition to investing to accommodate growth within the Company's service area, Idaho Power invested in initiatives such as underground cable replacement and grid modernization that ensure the distribution system is equipped to provide safe, reliable service to customers now and in the future.

IV. <u>Idaho Power's Wildfire Mitigation Efforts</u>

Q. What total system costs did the Company incur related to wildfire mitigation in 2022?

A. As outlined below in Table 1 of my testimony, Idaho Power incurred a systemwide total of $26,408,743 in wildfire mitigation-related O&M costs in 2022. This amount excludes insurance, which is discussed in the Direct Testimony of Company Witness Mr. Brian Buckham.

Regarding capital expenditure, Idaho Power placed in service $12,059,451 in capital projects to support wildfire mitigation in 2021 and 2022. This amount does not include capital depreciation, which is addressed in the Direct Testimony of Company Witness Mr. Matthew Larkin.

Capital placed in service for 2021 and 2022 and O&M expenditure for 2022 is detailed in Exhibit No. 4 to my testimony.

Q. Are the Company's actual 2022 costs related to wildfire mitigation reflected in the Company's revenue requirement in this case?

A. Yes. The costs identified in my testimony are factored into the Company's 2023 test year revenue requirement, as addressed in Mr. Larkin's testimony. Additionally, the treatment and accounting of the Commission's authorized wildfire deferrals are addressed in the Direct Testimony of Company Witness Ms. Paula Jeppsen.

The remainder of my testimony in this section will present the Company's implementation of its Wildfire Mitigation Plan ("WMP") and will demonstrate the prudence of the associated costs proposed for recovery in this case. I will focus on costs incurred during 2022, as those costs represent previously deferred amounts proposed for amortization into rates in this case and form the basis for the test year values addressed by Mr. Larkin.

Q. Why did Idaho Power develop a WMP?

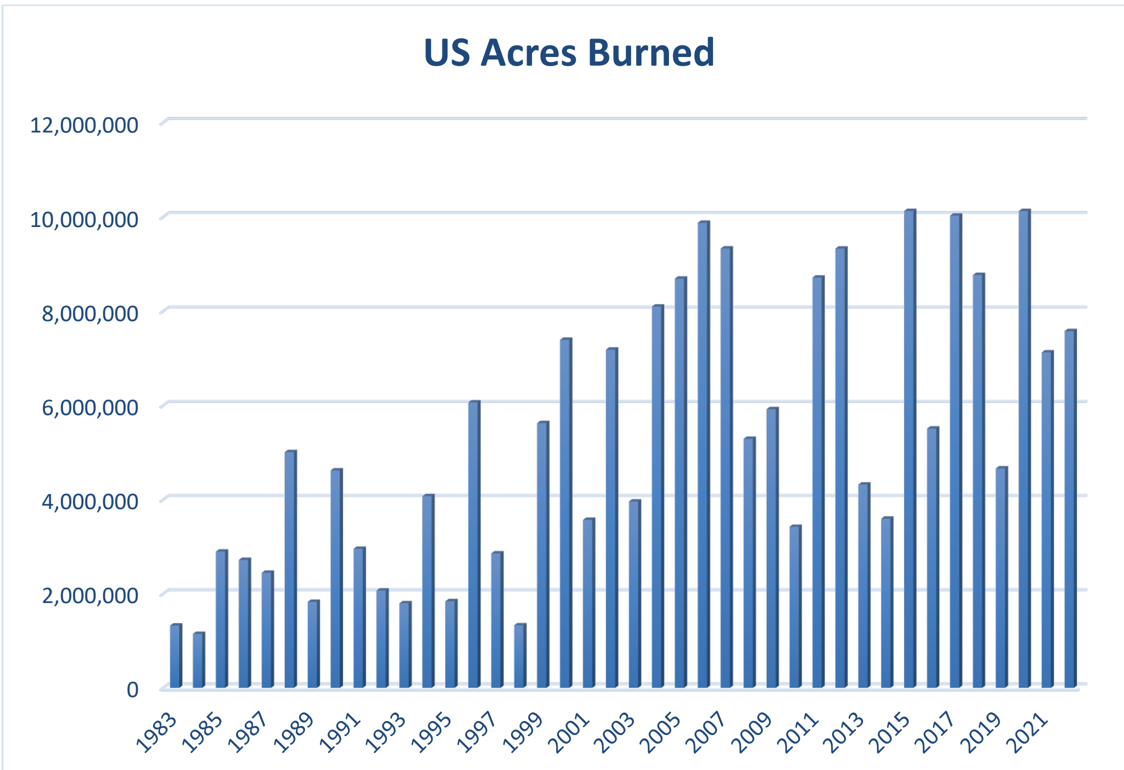
A. Idaho Power is dedicated to safely delivering reliable, affordable energy to its customers. In pursuit of that mission, the Company developed a WMP in response to the increase in frequency and intensity of wildfires seen across the western United States ("US") in recent years.

Q. To what extent has wildfire activity increased in the West?

A. Since the 1980s, wildfire activity in the US, as measured by acres burned, has more than tripled and, according to the National Interagency Fire Center, western states account for upwards of 95 percent of the acres burned in recent years.[2] Since 1983, the 10 years with the largest acreage burned have all occurred in the period of 2004 through 2022.[3]

FIGURE 5

TOTAL US ACRES BURNED (1983-2002)



Q. What has contributed to the growth of western wildfires in recent years?

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[2] Based on the National Interagency Fire Center historical year-end fire statistics by state. https://www.nifc.gov/fire-information/statistics

[3] Based on the National Interagency Fire Center total wildland fires and acres (1983-2022). https://www.nifc.gov/fire-information/statistics https://www.nifc.gov/fire-information/statistics/wildfires

A. A variety of factors have contributed to a greater number of destructive wildfires, including climate change, increased human encroachment in wildland areas, historical land management practices, and changes in wildland and forest health, among other factors.

Q. How has Idaho Power been affected by the increase of wildfires in the West?

A. While Idaho Power has not experienced catastrophic wildfires within its service area at the same level experienced in other western states, such as California and Oregon, millions of acres of rangeland and southern Idaho forests have burned in the last 30 years.[4]

In 2022, Idaho had fewer wildfires and acres burned during wildfire season than the previous 20-year average.[5] However, 436,733 acres burned in Idaho during the 2022 fire season, a larger amount than the combined acres burned in Arizona, Colorado, Montana, Nevada, Utah, and Wyoming in 2022.[6]

Q. What impacts could Idaho Power face because of wildfire?

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[4] Rocky Barker, *70% of S. Idaho's Forests Burned in the Last 30 Years. Think That Will Change? Think Again.*, Idaho Statesman, Oct 4, 2020.

[5] Based on the National Interagency Fire Center historical year-end fire statistics by state. https://www.nifc.gov/fire-information/statistics

[6] National Interagency Coordination Center Wildland Fire Summary and Statistics Annual Report, 2022. https://www.predictiveservices.nifc.gov/intelligence/2022_statssumm/annual_report_2022.pdf

A. Wildfire can create myriad and costly environmental, social, and economic impacts. The magnitude and duration of these impacts depends on a fire's size, severity, and location. Generally, though, wildfire impacts are considered in terms of lives threatened, structures or homes lost or damaged, and damage to natural resources.

Specific to Idaho Power, wildfires have the potential to damage or destroy the Company's facilities, impact personnel, and cause significant harm to Idaho Power's customers and the communities in which the Company serves.

Q. How has Idaho Power responded to growing wildfire risk?

A. As a result of growing and more frequent wildfires in the West, Idaho Power began a proactive effort in 2019 to develop a guiding wildfire mitigation document — the WMP — that would use robust risk analysis to identify areas within the Company's service area exposed to higher levels of wildfire risk. As an action plan for Company operations, the WMP includes best practices for mitigating wildfire risk that guide operational, personnel, and communication practices before, during, and after wildfire season.

Q. What are the objectives of the WMP?

A. Idaho Power developed the WMP to accomplish two critical objectives: (1) reduce wildfire risk associated with Idaho Power's T&D facilities and associated field operations and (2) improve the resiliency of the Company's T&D system impacted by wildfire events.

Q. How many WMPs has the Company developed?

A. In December 2022, the Company published its 2023 WMP (Exhibit No. 5), the Company’s fifth version of the WMP since 2021.

Q. Please describe the prior versions of the WMP.

A. Version 1 of the WMP was filed with the Commission in January 2021 in Idaho Power’s initial wildfire-related cost deferral Application in Case No. IPC-E-21-02. Version 2, dated December 21, 2021, included an expanded cost-benefit analysis discussion, WMP progress and updates, and an introduction to the Company’s newly developed Public Safety Power Shutoff (“PSPS”) program. Version 3, dated June 28, 2022, included information added to comply with the Public Utility Commission of Oregon’s conditions of approval of the Company’s 2022 WMP. Version 4, filed with the Company’s cost deferral Application in Case No. IPC-E-22-27, added Idaho and Oregon specific information and state-specific forecasts of incremental mitigation expenditure. Version 5, the current WMP for the 2023 fire season, includes a new executive summary, a review of the 2022 fire season with lessons learned, a forecast of condition for the upcoming fire season, and provides a detailed discussion of 2023 fire season mitigation measures.

Q. How will the WMP change from year to year?

A. Each year, the Company strives to improve upon previous versions by incorporating new learnings, methods, and feedback from stakeholders, customers, communities, fire experts, and the Company's regulators. Going forward, the Company will file its annual WMP with the Commission, as specified in Order No. 35717.[7] Moving forward and to reduce confusion, the Company will endeavor to avoid multiple versions of the WMP and, instead, release one plan in advance of each fire season.

Q. Please summarize the key elements of the WMP that help meet the Company's wildfire mitigation objectives.

A. Idaho Power's WMP includes comprehensive and multi-faceted strategies that are effective at reducing wildfire risk. Key elements of the plan include:

- Risk analysis and mapping: Utilizing a risk-based approach for decision making and quantifying wildfire risk throughout the Company's service area.

[7] Case No. IPC-E-22-27, Order No. 35717, pp. 8-9 (Mar 23, 2023).

- Situational awareness: Informing Company operations and practices by incorporating new methods of visual, geographical, and contextual awareness of the environments in which Idaho Power operates, specifically during wildfire season.
- Mitigation activities: Expanding and/or enhancing many of the same programs that the Company has carried out over the course of its operating history to mitigate wildfire risk, decrease the likelihood of ignition events, and protect infrastructure from wildfire regardless of where it starts.
- Communication: Communicating with and educating customers and the public about wildfire and outage preparedness.
- Monitoring and tracking performance: Routine analysis of wildfire mitigation activities to gauge their effectiveness and build continuous improvement and risk reduction over time.

Q. How does Idaho Power ensure its WMP is informed by industry best practices?

A. Idaho Power recognizes the importance of engaging with federal, state, and local governments as an integral part of deciding on and implementing wildfire mitigation measures. The WMP documents specific activities and forums to engage with key stakeholders to share information, gain feedback, and incorporate lessons learned.

Much of Idaho Power's service area extends over land managed by the US Bureau of Land Management ("BLM") and the US Forest Service. As such, the Company engaged with these agencies in the development of the WMP and continues to hold meetings and workshops with them to share information and identify geographic areas and specific mitigation activities that are mutually beneficial.

Idaho Power is also a member of the Idaho Fire Board, which was initiated by the US Forest Service. Membership is voluntary and currently includes the Forest Service, BLM, the Federal Emergency Management Agency, Idaho State Lands Department, Idaho Department of Insurance, Idaho Military Division, City of Lewiston, the Nature Conservancy of Idaho, and Idaho Power. This group, like the efforts listed above, is also focused on sharing Idaho wildfire knowledge and best practices for wildfire mitigation.

Q. Did Idaho Power consult with other utilities to develop and inform its WMP?

A. Yes. Peer utility engagement was crucial in developing the WMP to ensure the Company's efforts are consistent with best practices and aligned with its peers in the region. To inform the initial development of the

WMP, Idaho Power participated in multiple workshops with San Diego Gas and Electric, Southern California Edison, Pacific Gas and Electric, Sacramento Municipal Utility District, and PacifiCorp. The Company continues to engage with these utilities to learn about California's evolving practices.

In the Pacific Northwest, many utilities work collaboratively to understand and ensure commonality of their respective wildfire plans, while also accounting for the variation in each utility's unique service area. These utilities include Idaho Power, Avista Utilities, Portland General Electric, Rocky Mountain Power, Pacific Power, Chelan County Public Utility District, Puget Sound Energy, NV Energy, Bonneville Power Administration, and NorthWestern Energy.

Q. Does Idaho Power participate in any other collaborative efforts to inform and evolve its WMP?

A. Yes. Idaho Power is a member of both the Edison Electric Institute ("EEI") and the Western Electric Institute, both of which host workshops and conferences to help members discuss and compare their wildfire plans and mitigation efforts.

Additionally, Idaho Power's President and Chief Executive Officer Lisa Grow is an active member of EEI's Electricity Subsector Coordinating Council Wildfire Working

Group. This working group partners with the US Department of Energy and other government agencies to collectively minimize wildfire threats and potential impacts nationwide.

These industry collaboratives continue to prove valuable for sharing wildfire mitigation best practices and discussing new and existing technology related to wildfire mitigation.

Wildfire Risk Analysis & Selection of Mitigation Practices

Q. Was a risk-based approach used to determine the type and level of wildfire mitigation needed for Idaho Power’s service area?

A. Yes. The Company followed a risk-based approach in identifying, analyzing, and selecting wildfire mitigation measures. The Company has integrated the practices and principles detailed in the International Standard ISO 31000, Risk Management Guidelines, to manage wildfire risk and meet the goals and objectives of the WMP.

Wildfire risk mitigation is an enterprise-wide effort, and risk reduction practices are integrated into normal business activities and decision making across the Company - from field personnel to executive officers.

Q. Please describe the Company’s wildfire-based risk framework.

A. The Company takes a structured and effective approach to managing wildfire-related risk that includes the following:

- Identify risk – Recognize new and evolving threats and associated risk;
- Analyze – Understand new and evolving risk, including likelihood and consequence and any existing controls;
- Evaluate – Determine whether risk levels can be accepted or should have additional controls in place;
- Mitigate – Select appropriate risk treatment;
- Monitor – Continually check and review to determine effectiveness of mitigation practices and protocols; and
- Communicate and consult- Communicate, educate, and engage with stakeholders, customers, communities, and regulators about the Company’s risk-based wildfire mitigation work.

Q. What methodology was used to quantify wildfire risk?

A. Idaho Power leveraged an external consultant — Reax Engineering — that specializes in assessing and quantifying wildfire risk to determine where wildfire risk is elevated within the Company’s service area. The consultant used a risk-based methodology that incorporates weather modeling, wildfire spread modeling, and Monte Carlo simulations, among other modeling techniques.

This approach to modeling wildfire risk is not unique to Idaho Power. The California Public Utilities Commission("CPUC") used the same modeling approach — and the same consultant — as part of its development of the CPUC Fire Threat Map. Other utilities in Oregon, Idaho, Nevada, and Utah have utilized similar modeling approaches to identify and quantify wildfire risk.

Q. What calculation does the Company use to determine elevated risk areas?

A. The Company's wildfire consultant modeled wildfire risk considering a wildfire event's probability multiplied by its potential negative consequences or impacts, should that event occur. Expressed as a formula:

Wildfire Risk = Fire Probability x Consequence

The first term, Fire Probability, is based on fire volume (i.e., spatial integral of fire area and flame length) because rapidly spreading fires are more likely to escape initial containment efforts and become extended fires rather than slowly developing fires. The second term, Consequence, reflects the number of structures (i.e., homes, businesses, and other man-made structures) that could be impacted by a wildfire.

Q. How does this equation translate to elevated risk areas?

A. Using the formula noted above, areas of highest wildfire risk will be those in which both Fire Probability and Consequence are elevated. Conversely, combinations of low Fire Probability and elevated Consequence (or elevated Fire Probability but low Consequence) will not typically be areas with highest risk.

Detailed discussion of the risk formula, including modeling and model inputs, is provided in Exhibit No. 5.

Q. What are the results of the wildfire risk modeling?

A. Using the above methodology and risk formula, Idaho Power and its consultant identified specific geographic areas across its service area and transmission corridors. The Company then sorted these areas into tiers — Yellow Risk Zones, reflecting increased risk, and Red Risk Zones, reflecting highest risk. Red Risk Zones — such as those in the Boise foothills and around Payette Lake in McCall — were determined to have the greatest wildfire risk based on the combination of Fire Probability and Consequence, while Yellow Risk Zones have elevated risk but may have reduced Fire Probability and/or Consequence relative to Red Risk Zones.

These risk zones are the foundation of Idaho Power's wildfire risk mitigation strategies and are used to prioritize targeted investments, vegetation management work, inspection activities, and situational awareness.

Q. How much of the Company's service area is in elevated wildfire risk zones?

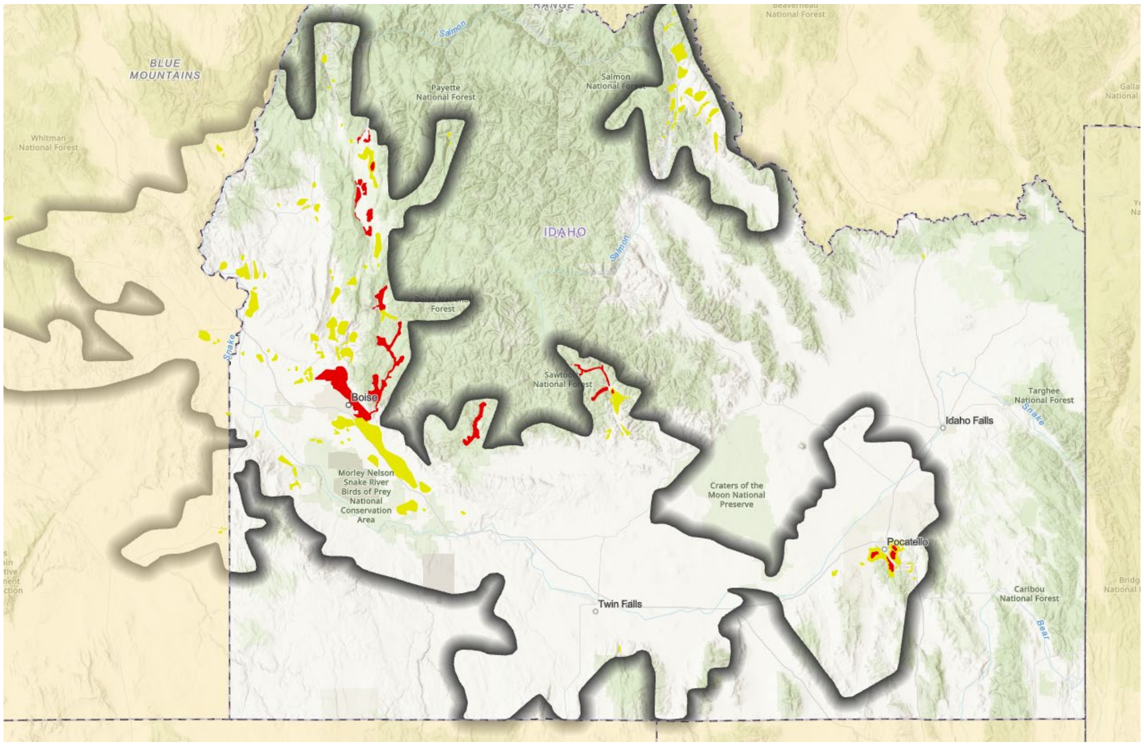
A. Approximately 7 percent of the Company's overhead distribution and 11 percent of transmission lines are located within wildfire risk zones. These geographical areas include approximately 47,000 customers.

Q. Does the Company visualize its elevated risk areas?

A. Yes. Based on the wildfire risk analysis, Idaho Power developed a risk map, shown below, that reflects the two tiers of increased wildfire risk within the Company's service area. The map — provided on Idaho Power's website — is available publicly and accessible to Public Safety Partners to educate and inform them about the Company's elevated risk areas.

FIGURE 6

IDAHO POWER WILDFIRE RISK MAP



Q. How have these wildfire risk zones informed the Company’s wildfire mitigation projects?

A. The Company’s wildfire mitigation activities are specifically targeted at reducing wildfire risk in elevated risk areas, with Red Risk Zones given priority due to the increased level of risk associated with higher fire probability and potential impact to structures.

Q. What types of mitigation activities is the Company pursuing?

A. Based on the risk identified in the Company’s risk assessment, Idaho Power developed and grouped its wildfire mitigation work into the following categories: A) quantifying wildland fire risk; B) situational awareness; C) mitigation associated with field personnel practices; D) mitigation activities within Idaho Power's T&D programs; E) enhanced vegetation management; F) communication; and G) information technology. Idaho Power's specific activities in these categories, as well as actual 2022 O&M and capital expenditures, are described in the sections below.

Wildfire Mitigation O&M Expense

Q. Please describe Idaho Power's system O&M expenses for wildfire mitigation in 2022.

A. The table below summarizes Idaho Power's total systemwide O&M expenses by wildfire mitigation category for 2022:

TABLE 1

WILDFIRE MITIGATION O&M IN 2022

Wildfire Mitigation Category	Program Activity	2022 Actuals
Quantifying Wildland Fire Risk	Risk Analysis and Map Updates	$4,125
Situational Awareness	Weather Forecasting - System Development, Support, and Personnel	$156,201
Mitigation - Field Personnel Practices	Tools/Equipment	$10,720

Mitigation - Transmission & Distribution Programs	O&M Component of Capital Work	$898,966
	Annual O&M T&D Patrol Maintenance Repairs	
	Environmental Management Practices	
	T&D Thermography Inspection Mitigation & Personnel	
	Transmission Wood Pole Fire Resistant Wraps - Red Risk Zone	
	Transmission Wood Pole Fire Resistant Wraps - Yellow Risk Zone	
	Wildfire Mitigation Program Manager	
	Covered Wire Evaluation - Pilot Program in PSPS Zones	
Enhanced Vegetation Management	Transition to/Maintain 3-Year Vegetation Management Cycle	$25,151,422
	Enhanced Practices for Distribution Red & Yellow Risk Zones (Pre-Season Patrols/Mitigation, Pole Clearing, Removals, Work, QA)	
	Line Clearing Personnel	
	Vegetation Management Satellite and Aerial Patrols	
Communications	Wildfire/Wildfire Mitigation Communications - Advertisements/Meetings/Other	$106,779
	PSPS Customer Education/Communication - Advertisements, Bill Inserts/Other	
Information Technology	Communication/Alert Tool development (System set up, outage maps, critical facilities identification)	$80,531

O&M: Quantifying Wildfire Risk

Q. Why did the Company choose to use a consultant to quantify wildfire risk in its service area?

A. The Company selected Reax Engineering for its recognized expertise in wildfire risk modeling and fire science. Hiring an outside consultant helped ensure Idaho Power’s risk analysis would be developed in a manner consistent with and comparable to peer utilities.

Q. Was it prudent for the Company to hire an external consultant to develop the wildfire risk analysis?

A. Yes. Hiring an external consultant was a prudent Company decision for two reasons. First, it was more cost effective than hiring additional internal resources with specialized experience in wildland fire behavioral modeling. Second, hiring a nationally recognized consultant provides confidence that the Company’s risk areas — the basis for all its wildfire mitigation work—were determined using the best and latest wildfire modeling techniques.

Q. How much did the Company spend to quantify wildfire risk in 2022?

A. The Company’s wildfire risk analysis was first conducted in 2020. Every two years the Company intends to work with Reax Engineering to refine the risk analysis, adjust as warranted, and update its risk maps. In 2022, the Company spent $4,125 on external consultant activities to update and refine its wildfire risk map.

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O&M: Situational Awareness

Q. What efforts and activities did the Company conduct in 2022 to enhance situational awareness during wildfire season?

A. The Company's situational awareness activities in 2022 included refining its weather forecasting tools, installing weather stations, training new personnel to assist in the development and analysis of fire-season weather forecasts, and initial efforts to install wildfire detection cameras. Each of these activities is described in more detail below.

Q. How much did Idaho Power's situational awareness efforts cost in 2022?

A. The Company spent $156,201 on situational awareness in 2022.

Q. What is the Fire Potential Index ("FPI") and how does it reduce wildfire risk?

A. An essential component of Idaho Power's fire season work involves enhancing situational awareness by forecasting the FPI. This tool, which forecasts a wildfire risk level on a daily basis during fire season, supports operational decision-making to reduce wildfire threats and risks. For example, on days with a high FPI, automatic reclosing device settings are adjusted and field personnel modify work activities in Red Risk Zones.

The FPI tool accounts for weather, prevalence of fuel (i.e., trees, shrubs, grasses), and topography, and converts that data into an easily understood forecast of the short-term fire threat for different geographic regions in Idaho Power's service area. Additionally, the tool is used to help determine when a PSPS may be necessary in Idaho Power's service area.

The benefits of developing the FPI and enhancing the Company's meteorological forecasting capabilities is greater situational awareness of Idaho Power's system during critical peak summer months.

Q. How has Idaho Power enhanced its ability to forecast weather and fire conditions during wildfire season?

A. The Company has expanded and enhanced situational awareness by incorporating a new weather forecasting system that leverages an ensemble of weather models to improve accuracy and reduce forecast-to-forecast variability. The ensemble approach also provides a measure of certainty to better inform up-to-the-minute decision-making for the FPI and PSPS events. As such, the new system provides greater confidence in severe weather conditions and will allow Idaho Power to provide early PSPS notification to Public Safety Partners, operators of critical facilities, and affected customers. Additional personnel were leveraged to assist in the development and launch of this ensemble tool.

O&M: Field Personnel Practices

Q. Please describe the Company's wildfire mitigation efforts related to field personnel and associated spending in 2022.

A. In 2022, the Company trained its personnel in fire season conditions, practices, and operational modifications. The Company equipped its field crews with fire prevention tools and leveraged field observers to assess on-the-ground conditions.

In total, the Company spent $10,720 on mitigation efforts related to field personnel in 2022.

Q. Why are field personnel practices vital to wildfire risk reduction?

A. Idaho Power's field personnel and contractors work across the Company's service area, including in elevated risk areas. During wildfire season, the basic work, routines, preparatory activities, and preparedness of employees and contractors is paramount to minimizing the risk of ignition events.

Q. What field practices did Idaho Power establish for its employees and contractors during wildfire season?

A. Idaho Power developed a Wildland Fire Preparedness and Prevention Plan to provide guidance to

Idaho Power employees and contractors specifically for operating during wildfire season. The plan includes information regarding fire season tools and equipment available on the job site; daily situational awareness relative to areas with heightened fire conditions; expected actions and mechanisms for reducing on-the-job wildfire risk as well as reporting requirements in the event of an ignition; and training and compliance requirements.

All Idaho Power crews, and certain field personnel and contractors, performing work on or near Company facilities are required to operate in accordance with the provisions of the Wildland Fire Preparedness and Prevention Plan and expected to conduct themselves in a fire-safe manner. They are also equipped for potential wildfire events by carrying specific tools, including, but not limited to, shovels, Pulaskis, and water for initial suppression.

Q. What is the role of field observers during wildfire season?

A. In its benchmarking with other utilities, Idaho Power found that most utilities use field observers in some capacity as part of the de-energization decision-making process. The Company currently has 24 trained field observers made up of Line Operations Technicians, Distribution Designers, Patrolmen, and other technician roles. In 2022, a PSPS event in Pocatello, Idaho was not executed due to reports from field observers that rain had preceded high winds. This information was not immediately evident through weather stations nor available radar at the time. This situation highlighted the importance of having field observers equipped with mobile weather kits to inform de-energization decision making.

O&M: Mitigation Efforts in the Company's T&D Programs

Q. Please summarize Idaho Power's mitigation activities within its T&D programs and associated O&M spending in 2022.

A. Executing the Company's WMP relies on leveraging its asset management programs to maintain safe and reliable operation of T&D facilities. Specific to wildfire mitigation, these efforts include: performing visual and infrared thermography inspections, performing maintenance based on the findings of those inspections, and utilizing innovative and cost-effective approaches to reduce wildfire risk, such as wrapping wood poles with a fire-resistant mesh and evaluating the cost effectiveness of covered conductor for potential future implementation.

In 2022, the Company spent $898,966 on T&D program-related wildfire mitigation efforts.

Q. What are the notable wildfire mitigation expenses associated with Idaho Power's T&D programs?

A. The largest wildfire mitigation expense in the Company’s T&D mitigation programs is the installation of fire-resistant mesh wraps. In 2022, Idaho Power spent $364,075 – or 40 percent of the total system actuals in the T&D mitigation category – on fire-resistant mesh wraps. The mesh, which is applied to wood transmission poles in Red and Yellow Risk Zones, is an effective and widely used tool to increase the resilience of the pole and improve reliability for customers.

Q. What other T&D program activities did the Company pursue in 2022 to reduce wildfire risk?

A. In addition to the installation of fire-resistant mesh wraps, the Company conducted work associated with a new Program Manager function, conducted more annual inspections of its facilities in elevated risk zones, expanded the use of infrared thermography inspections in Red Risk Zones, launched a covered conductor pilot program, and performed a variety of capital projects for which there was an O&M component. Specific capital projects are described in detail in the section below.

Q. Please describe the value and purpose of thermography inspections with respect to wildfire mitigation.

A. Infrared thermography inspections are conducted using hand-held and drone-mounted cameras with thermal-sensing technology and can help identify defects associated with the overheating of equipment, connections, splices, or conductors.

Thermography inspections are uniquely valuable in that they can uncover problems undetectable to the naked eye. From the Company’s perspective, there is not a viable alternative to this practice. The technology enables more proactive identification of potential issues than would otherwise be possible.

In 2022, the Company used additional personnel to evaluate the annual use of thermography inspections in Red Risk Zones, as opposed to the Company’s historical approach of periodic use of the technology across its system.

Q. Please explain the purpose of the covered conductor pilot program.

A. In 2022, Idaho Power began a pilot of covered conductor that will run through 2024 to explore the benefits, tooling requirements for field personnel, and design parameters associated with this potential mitigation practice. While covered conductor may reduce the risk of wildfire, the Company will analyze any other potential concerns or co-benefits, including improved reliability outside of wildfire season, other safety considerations, and reduced outage restoration costs. Upon completion of the pilot, the Company will determine whether installation of covered conductor is a cost-effective risk mitigation practice.

O&M: Enhanced Vegetation Management

Q. What is vegetation management?

A. Vegetation management is the practice of trimming or pruning vegetation away from the Company's facilities to reduce the likelihood of vegetation coming into contact with T&D lines and causing damage or an outage.

Idaho Power has more than 400,000 trees within its system that are inspected and pruned on an ongoing basis. The lines are inspected periodically, and trees and vegetation are cleared from the line while other trees are removed entirely.

Q. Why is vegetation management a key part of the Company's wildfire mitigation efforts?

A. In terms of time, expense, and overall risk reduction, enhanced vegetation management is the most critical aspect of executing Idaho Power's WMP. If vegetation comes in contact with energized powerlines there is potential that it could result in an outage or ignition. Historical outage data from across Idaho Power's service area shows that vegetation contact is one of the most likely sources of faults and possible ignition on the power system.

Q. What strategies has the Company employed to reduce wildfire risk associated with vegetation?

A. Idaho Power employs an enhanced vegetation management strategy in wildfire risk zones that includes transitioning to a sustainable three-year pruning cycle for all distribution circuits and transmission lines in valley locations. In addition to achieving a three-year pruning cycle, the Company conducts mid-cycle patrols and pruning in the second year of the cycle to address "cycle buster" trees and annual "hotspot" patrols to address any new hazard trees or unexpected vegetative growth that poses an immediate threat of contact with energized facilities.

Additionally, the Company strives to complete audits for all pruning work performed in wildfire risk zones, regardless of reason for the pruning. The audits confirm that pruning cuts meet the specification and that the proper clearance (i.e., the distance between vegetation and the Company's T&D lines) was obtained.

Q. When developing the WMP, did the Company consider different pruning cycle lengths?

A. Yes. The Company considered other vegetation management cycle alternatives, including shorter trimming cycles, longer trimming cycles, and strategies that evaluate each tree individually and only trim it once it has nearly grown back to the power line (known as "just-in-time trimming”). Each alternative presented challenges or resulted in negative impacts that undermined any potential benefits. While shorter trimming cycles result in less vegetation being removed during each trimming cycle, this practice costs more due to the need for more resources and more frequent trimming of trees near the power lines.

In contrast, longer cycles result in less frequent trimming of each tree but larger amounts of vegetation that must be removed to maintain larger clearance envelopes around the power lines to accommodate additional years of vegetative growth. Further, longer trimming cycles create logistical challenges that are exacerbated by tree biology. Some trees simply grow faster than a given trimming cycle and the longer the trimming cycle, the more pervasive this issue becomes. Longer cycles that call for heavy pruning also lead to hormonal imbalances between a tree’s canopy and its root system. To correct this imbalance, the tree aggressively re-grows new sprouts to quickly replace its lost canopy. In this regard, heavier pruning results in a faster rate of tree regrowth than normal, making it even more difficult to consistently maintain longer trimming cycles.

Finally, “just-in-time trimming” is primarily a reactive strategy that ultimately leads to challenges associated with securing qualified tree-trimming crews, as this ad hoc approach involves hiring crews on an as-needed basis rather than on a consistent schedule.

After evaluating these alternative approaches, Idaho Power concluded that maintaining a three-year trimming cycle is the most cost-effective and sustainable strategy to keep vegetation away from power lines in a proactive manner.

Q. How has shifting to a three-year cycle and implementing other enhanced vegetation management activities affected costs?

A. Moving to a three-year vegetation management cycle and performing enhanced vegetation activities — including pre-season patrols, additional inspections, pole clearing, tree and shrub removal, and quality assurance in Red and Yellow Risk Zones — has resulted in a sizeable increase in O&M expenditure. In 2022, Idaho Power spent $25,151,422 on vegetation management — more than double the $10.7 million of vegetation management expense in 2019 — and representing the single largest source of the Company’s wildfire-related expenditure. The Company’s second largest source of wildfire-related expenditure is insurance, which is addressed in Mr. Buckham’s testimony.

Q. Why has the Company experienced such substantial growth in the cost of vegetation management?

A. A variety of factors help explain the cost increases Idaho Power has experienced to perform vegetation management. Most notably, the availability of qualified labor has diminished while demand for vegetation management services has grown across the western US among other utilities, other industries, and government agencies that also recognize vegetation management is a critical component of wildfire risk mitigation.

Importantly, the vegetation management companies hired by Idaho Power and other utilities are not simple arborists or landscapers. Rather, vegetation management companies qualified to work near electrical lines and equipment require special certifications and training. The limited number of companies offering such qualified services are in high demand in many western states and especially in California, where labor rates are higher for the work itself and the labor that provides it. Idaho Power has felt the effect of out-of-state competition in the form of double-digit cost increases and qualified labor shortages.

Another exacerbating factor of vegetation management cost is Idaho's growth. Greater population density and expansion of homes into more vegetation-dense areas has made it harder to maintain a consistent vegetation management cycle. New development is routinely built with frontage trees and other vegetation. The growth in newly planted trees certainly leads to more work, but an associated problem is that these trees are often inappropriate for their location and environment. Trees that grow wide and tall and/or mature quickly are poor candidates for planting near or beneath electrical lines, and yet tree selection is more often made based on aesthetics rather than safety. This problem persists despite Idaho Power making significant efforts to communicate and educate on appropriate tree selection in several ways, including the "Right Tree, Right Place" tree planting guide, which offers detailed information on selecting appropriate trees and planting them at safe distances from power lines.

Finally, climate change is a factor contributing to escalating vegetation management costs. ln recent years, Idaho has experienced wetter springs followed by more temperate summers and falls, leading to longer vegetation growing seasons.

Another climate-related issue is the spread of pests such as the bark beetle that leave dead trees in their wake. Failure to remove dead or dying vegetation - a problem felt most acutely on government land - complicates vegetation management work and makes adhering to a routine clearing cycle more challenging, time consuming, and, thereby, more costly.

Q. Has the Company explored any alternatives to vegetation management?

A. Yes. The primary alternative to vegetation management is converting overhead distribution circuits to underground. However, undergrounding is consistently more expensive than enhanced vegetation management. The Company continues to evaluate and implement underground solutions, as appropriate and cost-effective based on risk, as part of its WMP hardening efforts, as described in the section below.

Q. Has the Company identified benefits other than risk reduction from enhanced vegetation management practices?

A. Yes. Although vegetation management is a sizeable increased wildfire mitigation expense, performing this work is expected to have notable co-benefits, including reduced vegetation-caused outages, thereby enhanced reliability, in Red and Yellow Risk Zones. Idaho Power plans to monitor performance and outage metrics to confirm the success of the enhanced program. Decreasing vegetation outages was considered one of the most important, cost-effective measures Idaho Power could take to reduce the likelihood of an ignition event and protect utility infrastructure.

Q. Is Idaho Power’s enhanced vegetation management program prudent and in customers’ best interest?

A. Yes. Shifting to enhanced vegetation management practices, including the move to a three-year pruning cycle, was deemed a prudent course of action based on the reduction of risk in wildfire risk zones and the number of potential outages or ignition sources that may be eliminated. A vegetation management-focused wildfire mitigation program is also the approach adopted by many of Idaho Power’s peer utilities.

Q. Has the Company evaluated new technology to help in vegetation management efforts and reduce vegetation-related risks?

A. Yes. Vegetation monitoring tools have come to market in recent years that have the potential to help Idaho Power apply a more targeted approach to vegetation management. The Company conducted a pilot effort in 2022 that involved combining artificial intelligence (“AI”) with satellite and aerial imagery surveys of overhead powerlines to detect vegetation encroachment and hazard trees.

The surveys have the potential to identify problem areas more quickly than conventional methods and provide less reliance on “eyes on the ground” to identify areas at risk of vegetation contact or trees in poor health that may fall into powerlines. In addition, the technology has the potential to allow Idaho Power to invest resources where they will be the most effective in mitigating the impact of wildfires.

Q. What were the results of the pilot?

A. Initial results of the pilot did not demonstrate sufficient accuracy needed to make risk-informed decisions for vegetation encroachment.

Q. Will the pilot shift Idaho Power's approach to vegetation management?

A. Perhaps. The Company plans to reassess the technology in 3 to 5 years as improvements in machine learning and AI are made.

Q. What is Idaho Power's assessment of the need for ongoing enhanced vegetation management?

A. Based on comparison to underground conversions and the insufficiency of current technology to allow a more targeted approach to vegetation management, Idaho Power considers its strategy of achieving and maintaining a three-year pruning cycling, along with enhanced practices in Red and Yellow Risk Zones, the most prudent approach for reducing wildfire risk associated with vegetation.

Considering the challenges noted above, the Company expects vegetation management expense may continue to rise.

A discussion of this concern, and the associated justification for ongoing vegetation management cost deferral at a new baseline level, is provided in the Direct Testimony of Company Witness Mr. Timothy Tatum.

O&M: Communications & Information Technology

Q. Please explain the Company's communication and information technology-related strategies in the WMP.

A. The Company conducts several education campaigns around wildfire each year, including promoting the Company's wildfire mitigation activities and work within communities, providing awareness and education on how to prepare for wildfire season. The following core messages are the foundation for all wildfire-related communications each year:

- How customers can prepare for wildfire-related outages, including where to find outage and PSPS information and how to sign up for alerts and update contact information;
- Ways customers can reduce wildfire risk; and
- Idaho Power's work to protect the grid from wildfire and reduce wildfire risk.

Idaho Power communicates with customers and the public before and throughout wildfire season to inform them of steps the Company is taking to reduce wildfire risk and ways they can help prevent wildfires and prepare for outages. Various communication mediums used to accomplish this include: newsletters, news media, website content and videos, social media, postcards, and paid advertising.

The Company also promotes ways that the public can reduce the potential to ignite fires. Customers in PSPS zones are targeted for expanded communication to promote an awareness of PSPS and outage preparation. PSPS-focused communication comes in the form of advertisements, bill inserts, postcards, and other awareness raising and educational campaigns.

Q. What efforts has the Company made to directly contact customers about emergency events and outages?

A. To help provide timely communication of emergency events — specifically, PSPS — to customers, the Company has implemented a communication tool called the Enterprise Omnichannel Notification System ("EONS"). Having advanced alerts prior to and during a PSPS is an important aspect of Idaho Power's PSPS program. A large component of the EONS tool is identifying critical customers and facilities that will automatically be contacted leading up to, during, and after a PSPS event.

Q. What did the Company spend in 2022 on customer communication and related information technology?

A. In 2022, Idaho Power spent $106,779 on communications to customers and communities before, during, and after wildfire season. This amount includes postcards sent to all customers in PSPS zones to educate them about the purpose of PSPS and how they can stay connected to the Company to learn about PSPS events.

Implementing the EONS system, a critical tool for more timely communication with customers, cost $80,531 in 2022.

Wildfire Mitigation Capital Investments

Q. In what capital projects has the Company invested related to wildfire mitigation?

A. The table below summarizes wildfire mitigation investments by mitigation program:

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TABLE 2

CAPITAL INVESTMENT BASED ON PLANT CLOSINGS IN 2021 AND 2022

Mitigation Program	**Description of the Program**	**Risk Reduction Benefit**	**Plant Closings in 2021 and 2022**
Overhead Primary Hardening Program	Systematic replacement of hardware, equipment, and materials, 113-line miles in Red Risk Zones	Reduced potential of equipment failure, utilizing material and equipment with less energy release and potential of ignition, increased resiliency	$9,869,070
Strategic Undergrounding	Select conversion of overhead to underground conversion in Red Risk Zones, 1.85 miles completed in 2022	Reduce exposure and potential of ignition by locating power lines underground	$1,822,482
Red Risk Zone Overcurrent Protection Segmentation	Installation, relocation, and expanded communication for Automatic Reclosing overcurrent protection devices	Isolate circuit segments and improve reliability for enhanced Fire Potential Index settings and PSPS	$367,899

Q. What is included in the Overhead Primary Hardening Program?

A. The Overhead Distribution Hardening program involves systematic replacement of hardware, equipment, and materials to improve safety and reliability and reduce ignition risk. The program is targeted for Red Risk Zones. Enhanced measures to mitigate wildfire are:

Wood Pole Replacement—The Company will replace wood poles if field evaluations determine that significant deterioration or damage has occurred since the last inspection or treatment. Furthermore, poles having wood stubs/structural reinforcements are changed out pursuant to current practices.

Spark Prevention Units—Porcelain arresters used for overvoltage protection will be changed out with arresters utilizing Spark Prevention Units ("SPU"). The SPU acts to eliminate the potential of catastrophic failure during arrester operation.

Fiberglass Crossarms—Replacing wood tangent and dead-end crossarms with fiberglass. Fiberglass crossarms provide decrease the likelihood of heating through a crossarms and cross-functional benefits of lower cost, ease of installation, strength, and supply availability.

Small Conductor—Replace copper conductor and conductor smaller than #4 Aluminum Conductor Steel Reinforced.

Porcelain Switches—All porcelain switches installed in Red Risk Zones will be changed out with cutouts featuring Ethylene Propylene Diene Monomer Rubber.

Avian Protection Coverings—Idaho Power employs several different protection measures to protect wildlife on existing structures, including but not limited to covers, insulated conductor, diverters, perches, nesting platforms, and structural modifications.

In addition to the enhanced hardening measures mentioned above, each location is inspected to ensure structures and equipment are brought up to current construction standards. All existing hardware that will remain in place is re-tightened, loose conductors are re-tensioned, and third-party pole attachments are checked for proper clearances.

Q. Does hardening work occur on the transmission system?

A. Yes. On the transmission side, the Company evaluates upcoming transmission line construction projects-such as new line construction and line rebuilds with the plan to use steel construction for all lines of 138 kV and above. For existing wood poles, a fire-resistant mesh wrap is applied to existing wood poles in designated wildfire risk zones, as discussed earlier in my testimony. The mesh wrap improves the resiliency of the pole and keeps it from catching fire if exposed to a surface fire.

Q. What steps did the Company take to determine what mitigation measures should be included in the hardening program?

A. Idaho Power researched historical faults on the T&D system to determine outage causes that may result in potential ignition. That analysis determined that tree/vegetation contact, equipment failure, loose hardware, corrosion, and animal contact are among the top causes of faults throughout the service area. Specific risk drivers were established and identified as part of the risk evaluation process.

In addition, the Company used the Cal Fire Powerline Fire Prevention Guide to help identify equipment and materials that may contribute or cause an ignition on the power system. This guide, combined with the Company's past root cause analysis and feedback from employees with line construction and maintenance experience, helped identify expulsion fuses, porcelain switches, deteriorated wood crossarms, expulsion arresters, and small conductor as being potential ignition sources.

Q. Does the hardening program offer any co-benefits for customers?

A. Yes. The Overhead Distribution Hardening program includes infrastructure upgrades and the replacement of several materials or equipment to reduce the likelihood of ignition on the distribution system. Each material or equipment selected was analyzed to determine its effectiveness at reducing risk, estimated near-term cost, potential co-benefits of the activity to Idaho Power and its customers, and costs between alternatives. At a foundational level, the program offers the co-benefit of improved reliability for customers and a decrease of ignition potential.

Q. Can reliability indices be used to measure the effectiveness of the hardening program?

A. Yes. Prior to developing the WMP, Idaho Power successfully implemented distribution hardening measures and, through outage data and analytics over that period (2010 through 2019), learned that customer outages were reduced by approximately 38 percent in areas where reliability hardening projects were carried out. This initial success of reducing outages for reliability purposes resulted in the Company selecting similar activities in the WMP to further increase reliability and help reduce ignition potential in Red Risk Zones. Idaho Power is tracking reliability performance in wildfire risk zones over time to assess effectiveness.

Q. What is the Strategic Undergrounding Program?

A. As part of Idaho Power’s effort to reduce wildfire risk and impacts associated with outages and PSPS, Idaho Power evaluates the cost-effectiveness of overhead-to-underground conversion of distribution lines on a case-by-case basis.

Areas selected for conversion will have increased reliability and resiliency to wildfire, and customers in the area will no longer be exposed to the potential of long outages associated with operational protection settings on high fire potential days or PSPS. Strategic Undergrounding, one effort of many the Company is taking to reduce wildfire risk, is selected in highest-risk areas when the cost-benefit analysis shows that underground construction is prudent.

Q. Has the Company completed any underground conversion projects for wildfire mitigation?

A. Yes. In 2022, overhead-to-underground conversion was performed on 1.85 miles of distribution lines in Idaho. The projects included four line segments on the Boise Bench and Cartwright feeders in Boise, Idaho. These were the first underground conversion projects that the Company has undertaken to reduce wildfire risk.

Q. Why were the locations selected for underground conversion?

A. The areas were chosen for underground conversion due to the results of risk quantification and work, summarized later in my testimony. That work identified the areas having a combination of high wildfire probability and impacts to structures.

Field assessments and feedback from local fire officials confirmed that the topography and surface fuels in the areas were conducive to rapid fire spread, which could lead to structure and human safety impacts.

Fire history was another factor considered for the project near Idaho Power's Boise Bench Substation, located off Amity Road in East Boise. Another consideration was that the undergrounding of these line segments would decrease the overall risk profile of each feeder due to most of the feeders already having underground distribution.

Q. What criteria did the Company use to select the underground conversion projects?

A. The Overhead Distribution Hardening program is the primary program used to decrease the likelihood of ignition on the distribution system. Underground conversion projects are undertaken for locations where outage data and risk assessments show the need for increased risk reduction beyond what the hardening program provides.

Idaho Power's approach to selecting underground conversion projects involves the ISO 31000 risk management framework. Established criteria used in the assessment for optimal underground conversion locations is as follows:

- Wildfire risk modeling scores, having high wildfire probability and impacts to structures;
- Fire history where distribution overhead circuits may be susceptible to repeat wildfire events over their lifetime;
- Areas having a high likelihood of ignition due to risk drivers such as vegetation contact, contact from objects, lightning, and equipment failure;
- PSPS zones having high likelihood of proactive de-energization due to historic weather patterns, vegetation, or ignition risk;
- Areas of high wildfire risk that present challenges to patrol due to access issues, terrain, or inability to perform aerial inspections after a PSPS or outages on days with high FPI; and
- Areas where PSPS and enhanced protection settings may impact critical infrastructure.

The underground conversion projects in 2022 were analyzed by their expected risk-reduction benefit to overall project cost. And, for the projects in question, underground conversion was deemed cost-effective based on the level of risk reduction and type of risk driver that was mitigated.

Q. How do the costs of overhead distribution hardening compare to underground conversions?

A. The cost of converting overhead distribution lines to underground can vary significantly based on the voltage level, equipment, and terrain to be worked. The 2022 underground conversion projects cost $1,822,482 – or an average cost of $985,125 per line mile. The benefit of the projects are increased wildfire resiliency and decreased potential of ignition. Based on wildfire modeling and property values[8] in the area, Idaho Power estimates that the project is protecting structures that could cost upwards of $45 million to replace in the event of a destructive wildfire.

Q. What is the Overcurrent Protection Segmentation program?

A. The Overcurrent Protection Segmentation program involves the installation of automatic reclosing equipment ("reclosers") at the edge of Red Risk and PSPS zones. By strategically locating reclosers at the edge of a zone, the Company can limit the impact on customers outside of those zones from increased outages due to enhanced protection settings on days with high fire potential and PSPS. The program also includes adding communication capabilities to recloser so they can be remotely operated through the Company's dispatch group. The remote operation

[8] 2022 median home prices as reported by the Ada County Assessor's Office.

provides the benefit of being able to change protection settings remotely on days when the FPI is high. It also gives Reliability Engineers the ability to assess waveforms and fault characteristics immediately after a fault occurs, eliminating the need for a technician to travel and download the event record.

2022 WMP Performance

Q. What metrics is the Company tracking to gauge the effectiveness of the WMP?

A. Idaho Power tracks several metrics to measure the performance of the WMP and its effectiveness over time. Each year, work plans are established at the beginning of the year and items are tracked throughout the year to identify areas needing corrective action or attention. This includes monitoring vegetation management activities, inspections, and circuit hardening. Idaho Power’s goal is to complete 100 percent of the work plan each year; however, emergencies or other unplanned events can occur and disrupt the annual work plan.

Q. How did Idaho Power perform on its WMP wildfire mitigation objectives in 2022?

A. As is demonstrated in the table below, the Company met or exceeded its wildfire mitigation objectives in 2022, in all but two instances.

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TABLE 3

2022 WMP PERFORMANCE METRICS

Plan Area	Wildfire Mitigation Plan Activities	2022 Goal	Completed	% Complete	2023 Goal
System Hardening	**Distribution System Hardening**				
	System Hardening Line Miles	48	48.91*	102%	69
	Overhead Line Miles Converted to Underground	1.85	1.85	100%	1
	Expulsion Fuse Replacement	930	942	101%	1319
	Surge Arrester Replacement	830	839	101%	1175
Feeder Segmentation	**Segmentation Devices**				
	Installation or Relocation of Automatic Reclosing Devices	17	17	100%	8
Fire Mesh Installation	**Transmission Fire Mesh Installation**				
	Red Risk Zone Poles	492	492	100%	-
	Yellow Risk Zone Poles	406	585	144%	870
Asset Inspections	**Transmission Inspections**				
	Wildfire Pre-Season Patrol - Red Risk Zones (Structures)	923	923	100%	923
	Infrared Thermography Patrol (Structures)	923	923	100%	923
	Distribution Inspections				
	Wildfire Pre-Season Patrol - Red Risk Zones (Structures)	20,192	20,192	100%	20,192
	Infrared Thermography Patrol - Red Risk Zones (Structures)	3,000	3,800	127%	4,000
Vegetation Management	**Pruning Cycle**				
	Transition to a 3-Year Pruning Cycle (circuits)	282	173	70%**	320
	Enhanced Vegetation Management				
	Annual Patrol - Red & Yellow Risk Zones (circuits)	65	65	100%	65
	Annual Mitigation - Red & Yellow Risk Zones (circuits)	65	65	100%	65
	Mid-Cycle Patrols - Red & Yellow Risk Zones (circuits)	47	47	100%	1
	Mid-Cycle Pruning - Red & Yellow Risk Zones (circuits)	47	47	100%	1
	Hazard Trees Identified and Pruned	-	77	100%	100% of All Identified
	Hazard Trees Identified and Removed	-	49	100%	100% of All Identified
	Audits of Pruning Activities - Red & Yellow Risk Zones (worksites)	6,324	977	15%**	100% of All Identified
Meteorology	**Idaho Power Weather Stations**				
	Weather Station Installations	5	5	100%	5

*Excludes hardening work outside of wildfire risk zones

**Estimated year end completion

The Company did not fully achieve its 2022 vegetation management production goal in the transition to a three-year vegetation management cycle and, similarly, fell below the goal with respect to pruning audits in high-risk zones. Both of these outcomes are the direct result of the vegetation management challenges discussed earlier in my testimony — namely, labor shortages that have made it difficult to hire enough qualified crews to perform the Company's needed vegetation management work.

Q. Please summarize your testimony in this case.

A. As evidenced by the Company's ongoing improvement in reliability metrics, Idaho Power has taken a thoughtful and prudent approach to construction and maintenance of its T&D systems.

Regarding wildfire mitigation, the Company made substantial and prudent 2022 investments in programs, personnel, infrastructure, system hardening, and vegetation management to ensure that Idaho Power can continue to safely and reliably serve customers and continue to make great strides to mitigate wildfire risk.

Q. Does this conclude your direct testimony in this case?

A. Yes, it does.

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DECLARATION OF MITCH COLBURN

I, Mitch Colburn, declare under penalty of perjury under the laws of the state of Idaho:

1. My name is Mitch Colburn. I am employed by Idaho Power Company as the Vice President of Planning, Engineering, and Construction.

2. On behalf of Idaho Power, I present this pre-filed direct testimony and Exhibit Nos. 4 through 5 in this matter.

3. To the best of my knowledge, my pre-filed direct testimony and exhibits are true and accurate.

I hereby declare that the above statement is true to the best of my knowledge and belief, and that I understand it is made for use as evidence before the Idaho Public Utilities Commission and is subject to penalty for perjury.

SIGNED this 1st day of June 2023, at Boise, Idaho.

Signed ______________________

MITCH COLBURN