Rocky Mountain Power
Docket No. 20-035-04
Witness: Curtis B. Mansfield

BEFORE THE PUBLIC SERVICE COMMISSION
OF THE STATE OF UTAH

ROCKY MOUNTAIN POWER

Direct Testimony of Curtis B. Mansfield

May 2020

I. INTRODUCTION AND QUALIFICATIONS

Q. Please state your name, business address, and present position with PacifiCorp d/b/a Rocky Mountain Power ("Rocky Mountain Power" or the "Company").

A. My name is Curtis B. Mansfield. My business address is 1407 W North Temple, Salt Lake City, Utah 84116. My present position is Vice President of Transmission and Distribution Operations for the Company's Rocky Mountain Power division. I am responsible for the operations, maintenance, construction, safety, and support organizations for transmission and distribution systems in Idaho, Utah, and Wyoming.

Q. Briefly describe your education and professional experience.

A. I am a graduate of the University of Idaho's Utility Executive Course with 38 years of experience in the electric utility sector. I have held my current position since November 2017. Previous to that, I was the Vice President of Transmission and Distribution, and assumed that role in March 2015. I have held entry, craft, staff, and senior leadership positions in customer service, project management, and operations at the Company, a previously Utah Power & Light, since April 1981. I presently sit on Edison Electric Institute's National Response Executive Committee.

II. PURPOSE OF TESTIMONY

Q. What is the purpose of your testimony?

A. The purpose of my testimony is to describe Rocky Mountain Power's incremental investment in wildland fire mitigation to address the increased risks to customers, employees, and Company facilities posed by more frequent and severe wildfires. I also support the Utah Advanced Meter Infrastructure ("AMI") Project, which consists of the construction of an AMI field area network to enable remote reading of 790,000 existing automatic meter reading ("AMR") meters, and on-site replacement of approximately 175,000 existing meters to smart meters.

Q. How does the new Utah legislation on wildfire mitigation impact Rocky Mountain Power's plans for rate recovery of its mitigation efforts in this case?

A. During the 2020 Utah legislative session, the Wildland Fire Planning and Cost Recovery Amendments (H.B. 66 3rd Sub) were passed by the Utah Legislature and signed by Governor Herbert into law. This legislation requires the Company to file for approval a wildland fire protection plan with the Public Service Commission of Utah ("Commission") by June 1, 2020. The legislation also allows the Company to defer and recover the incremental revenue requirement for capital investments needed to implement its wildland fire protection plan, to the extent those investments are not included in base rates. Accordingly, the Company is proposing a recovery mechanism for the costs associated with wildfire mitigation projects consistent with this legislation.

Given the timing of this rate case, 2019 and 2020 wildfire mitigation costs and portions of 2021 costs, all based on the Company's current wildfire mitigation plan, are included in the rates requested by the Company in this proceeding. Mr. Steven R. McDougal provides the details of how the current costs have been included in the requested revenue requirement. However, in anticipation of the June 1, 2020 filing, the Company is in the process of updating its wildfire mitigation plan. As the Company revises its plan, it has become clear that the COVID-19 public health emergency and resource constraints will result in some differences between the June 1, 2020 filing, and what is included in this initial rate filing. The Company will true-up any differences in this case after it submits its wildland fire protection plan on June 1, 2020, under the new legislation.

III. WILDFIRE MITIGATION PROJECTS

Q. Have the risks associated with wildfires changed within the Company's service territories?

A. Yes. While there has always been some degree of wildfire risk of operating an electric utility across the Company's service territories, , the risk is growing. In the Western United States, where the Company operates, the risk has always been somewhat elevated due to climates tending to be more arid than in other parts of the country. Considerable data related to wildfires in the Western United States over the past several decades demonstrates that the frequency, severity, and costs of catastrophic wildfires are increasing across the West, including in Utah. This is partly due to larger and more frequent wildfires. It is also due to increased development in areas known as the Wildland Urban Interface ("WUI"), which has been common in Utah. The recent catastrophic wildfires of 2017 and 2018 across the West, and especially the California wildfires resulting in a great loss of life and property, have brought even greater focus on the prudence in completing additional wildfire risk mitigation by public utilities. Utah's Catastrophic Wildfire Reduction Strategy, published following the difficult 2012 wildfire season, illustrates how wildfire mitigation has been a long-term priority for Utah. While the worst wildfires, in terms of the impact on human health and the amount of property loss, may have taken place in California, the problem is not constrained to that state. It is felt throughout the West, including in Utah. Notably, the increased risk associated with wildfire has impacted the insurance market for electric utilities, as "insurers have become concerned about the growing liability risks to utilities, and prices have increased substantially."[1]

Q. How is Rocky Mountain Power addressing the increased risk of wildfire in Utah?

A. Rocky Mountain Power is adapting to the changes in wildfire risk through adoption of accelerated and enhanced wildfire mitigation measures that meet new industry best practices for utility wildfire mitigation. Rocky Mountain Power identified key goals to help inform its wildfire mitigation approach: (1) a reduction in the risk of wildfires originating from Rocky Mountain Power equipment; (2) maintaining the best possible service when a wildfire is threatening an area, at the same time actively coordinating with government stakeholders, emergency services, customers and fire suppression agencies to de-energize lines if necessary; and, (3) protecting Company assets from wildfire damage and the resulting costs. To advance these goals, Rocky Mountain Power engaged in an extensive risk-modeling process to develop a risk-based approach to wildfire mitigation. This risk-based approach allows the Company to make investments where they will have the most impact; it also guides the deployment of field personnel where they can be most effective. These targeted investments are incremental to Rocky Mountain Power's investment in the ordinary course of its business and will meaningfully reduce the wildfire risk on the Company's system.

Q. Are the Company's wildfire mitigation efforts limited to Utah?

A. No. While Utah's geography, and the location of some of its population centers make it one of the more critical of the states where the Company operates from a wildfire risk

[1] Carolyn Kousky, Katherine Greig & Brett Lingle, *Financing Third Party Wildfire Damages: Options for California's Electric Utilities*, Wharton Risk Management and Decision Process Center (Feb. 2019) *available at* https://riskcenter.wharton.upenn.edu/wp-content/uploads/2019/02/Financing-Third-Party-Wildfire-Damages-1.pdf.

perspective, the Company is approaching its wildfire mitigation efforts on a system-wide basis with plans and targeted projects at both the transmission and distribution levels company-wide.

Q. Please describe how Rocky Mountain Power conducted its wildfire risk analysis.

A. If certain weather and fuel conditions are present, a disruption of normal operations on the electrical network, often called a "fault" in the electric industry, can result in the ignition of a fire. Likewise, if weather and fuel conditions favor fire spread, any ignition can grow into a harmful, potentially even catastrophic, wildfire, causing damage to people and property. In doing a risk analysis, Rocky Mountain Power's first objective was to map the geographic areas where the risk of an ignition posed the greatest risk of the fire spreading into a catastrophic wildfire. To this end, Rocky Mountain Power engaged REAX Engineering Inc. ("REAX"), a fire-science engineering firm, to identify areas of elevated wildfire risk. REAX had already performed similar services with respect to the Company's service territory in northern California. Applying the same methodology to Rocky Mountain Power's service territory in Utah, REAX modeled the potential spread of a wildfire from any given ignition point to determine the geographic areas of greatest risk. Using the same methodology is helpful for many reasons; not only was Rocky Mountain Power able to complete mapping faster and more cost-efficiently, the product also facilitates better comparisons with the state-wide mapping results published in California. The data and processes used by REAX included land topography, fuel data, weather modeling, historic fire weather days, estimated live fuel moisture, ignition modeling, and fire spread modeling. Importantly, the fire spread modeling tool used census tract data to incorporate anticipated impacts of any particular spread pattern to structures and people. Impacts to people and property resulted in a greater risk score for any potential ignition point. After final vetting and confirmation by Rocky Mountain Power of REAX's mapping product, the areas of highest risk were designated as Fire High Consequence Area ("FHCA").

Q. Based on this wildfire risk modeling, what sections of Rocky Mountain Power's system have been identified as in the FHCA?

A. Based on the wildfire risk modeling conducted in Rocky Mountain Power's service area, the sections of Rocky Mountain Power's service territory in the FHCA are depicted in the map on Exhibit RMP___(CBM-1).

Q. What are the projected costs for the wildfire mitigation capital projects in 2020, 2021, and 2022?

A. As shown in Table 1, in 2020, Rocky Mountain Power will make capital expenditures on system hardening of approximately $28.9 million in its Utah distribution system and $24 million in its transmission system. Rocky Mountain Power expenditures on system hardening will further accelerate into 2021, when approximately $24.4 million will be spent on system hardening the Utah distribution system and $24.5 million on hardening the transmission system. Table 1 below describes the specific wildfire mitigation costs by breakdown of activity.

Table 1: Wildfire Mitigation Program Capital Costs

Mitigation Program	Description	Purpose/ Risk Being Mitigated	Category	2020 Capital Costs	2021 Capital Costs	2022 Capital Costs
System Hardening	Distribution line rebuilds including all or parts of the following: installation of covered conductor, pole replacements, wrapping wood poles in fire proof mesh, and conductor replacements	Reduce equipment failure that may ignite a wildfire along with increased resiliency to a wildfire occurrence	Utah Distribution	$26,858,000	$22,577,875	$16,551,435
System Hardening	Transmission line rebuilds including all or parts of the following: installation of covered conductor, pole replacements, wrapping wood poles in fire proof mesh, and conductor replacements	Reduce equipment failure that may ignite a wildfire along with increased resiliency to a wildfire occurrence	Transmission	$13,800,000	$24,979,625	$31,306,399
Advanced Protection and Control	Replace electromechanical relays protecting distribution lines in FHCA with modern microprocessor relays that provide more accurate data and faster relaying	Increase ability to locate where a fault occurred on a line and reduce line patrol time	Utah Distribution	$1,300,000	$1,300,000	$1,300,000
Advanced Protection and Control	Replace electromechanical relays protecting transmission lines in FHCA with modern microprocessor relays that provide more accurate data and faster relaying	Increase ability to locate where a fault occurred on a line and reduce line patrol time	Transmission	$2,900,000	0	0
Condition Corrections	Prioritize corrections to any deficiencies found from inspections in the FHCA	Reduce equipment failure that may ignite a wildfire along with increased resiliency to a wildfire occurrence	Utah Distribution	$1,000,000	$1,000,000	$1,000,000
Operational Practices	Generators, as an integral power source, to be ready to use as part of our emergency response during or leading up to and during an event	Strategic electric network operations to maintain service to key sections of lines and customers during a wildfire event.	Utah Distribution	0	0	0
Operational Practices	Addition of new access roads and/or improvements along with increasing rights of way on transmission lines for access and forest service fuel breaks	Access roads and right-of-way transmission easements allow quicker response and utilization of the right-of-way as a fuel break	Transmission	0	0	0
Situational Awareness	Installation of weather stations and Alert Wildfire cameras throughout our FHCA will provide real time information/data to evaluate and coordinate responses	Installation of weather stations and cameras reduces our reliance on data provided by outside resources and improves the accuracy of the data and speed with which our response will be driven by	Utah Distribution	$400,000	0	0
Total				**$46,258,000**	**$49,857,500**	**$50,157,834**

*Transmission costs are provided on a total-company basis. Utah distribution costs are situs assigned to Utah.

I discuss these wildfire mitigation capital projects in more in the sections that follow.

Q. In addition to the capital projects in Table 1, what annual incremental operations management, administrative and general ("OMAG") spend does the Company incur to mitigate wildfire risks?

A. Beginning in 2019, the Company began incurring operating expenses to mitigate wildfire risk in its FHCA areas. The $3.6 million of incremental expense was spent on vegetation management efforts ($2.2 million), FHCA line inspections ($700,000), and non-capital condition corrections ($700,000).

Q. What annual incremental OMAG spend does the Company forecast for the 2021 test period to mitigate wildfire risks?

A. The Company forecasts $3.4 million of incremental expense to be spent, which includes vegetation management efforts ($1.6 million), FHCA line inspections ($600,000), and non-capital condition corrections ($1.2 million).

Q. Please describe the Company's vegetation management process as it relates to wildfire mitigation efforts

A. In 2019, the Company began annual vegetation inspections of all of the FHCAs. These inspections identify the location of high-risk trees at the earliest stage possible. Based on the inspections, trees are removed before they can fall into the lines. These inspections are done by a qualified arborist who will also look for vegetation which is likely to violate minimum clearance distances prior to the subsequent annual inspection. Also, clearance specifications in the fire areas now require pruning to a minimum of 12 feet in all directions. This further minimizes the potential of vegetation making contact with a power line. Finally, the company now performs pole clearing on subject equipment poles in the fire areas. Pole clearing removes all vegetation within a ten-foot radius cylinder of clear space around the subject pole. In addition, herbicides and soil sterilants are applied to prevent regrowth (unless prohibited by law or the property owner). This strategy is designed to reduce the risk of fire ignition if sparks are emitted from the electrical equipment above.

System Hardening

Q. Please explain what system hardening is in the context of the Company's wildfire mitigation efforts.

A. System hardening is an engineered response to an identified risk to the electrical system. System hardening might involve retrofitting specific devices or components within the system to make the system more resilient; alternatively, system hardening might involve the wholesale replacement of legacy equipment. In this section, I describe some of the system hardening that Rocky Mountain Power will utilize to mitigate wildfire risks in the FHCA.

Q. How do these system hardening projects reduce the threat of wildfire?

A. Rocky Mountain Power's system hardening projects focus on (1) reducing the potential of a fire starting, by reducing the number of fault events on the power system, especially those events which may cause a spark; and (2) reducing the impact of a fault, by installing equipment that limits the energy released during particular fault conditions or prevents the emission of a spark as a result of the fault. As a first priority, system hardening is often focused on reducing the potential of contact from foreign objects (trees, wildlife, mylar balloons, etc.), which can result in high-energy and high-temperature arcing between two conductors or between one conductor and the ground.

Q. What system hardening efforts does Rocky Mountain Power plan to implement on its distribution system in Utah?

A. Rocky Mountain Power's program to convert certain lines to covered conductor is a key system hardening initiative. Historically, because of multiple design advantages, Rocky Mountain Power's overhead system is almost exclusively composed of bare metal conductor (other than the end-of-the-line insulated service drops to residential and small business customers). With the increasing risks associated with wildfire, however, Rocky Mountain Power is planning to replace the bare conductor on specific lines with covered conductor. Covered conductor is wire that is enclosed by multiple layers of plastic sheathing, and its design significantly mitigates the risk of contact related faults. Unlike bare conductor, covered conductor is designed to withstand incidental contact with vegetation, other debris, and even the ground in a wire down event. Other important system hardening programs include the change-out of non-expulsion fuses and the replacement of certain power poles. In addition, Rocky Mountain Power plans to entirely rebuild targeted sections of distribution lines.

Q. How is a line converted to covered conductor?

A. While the installation of new covered conductor is obviously a key component of the covered conductor program, converting a line to covered conductor involves more than replacing existing bare conductor with covered conductor. Covered conductor is heavier and larger in diameter than bare conductor, which results in additional pole loading. Poles will be replaced as necessary, based on loading assessments of existing poles. New line routes may be selected based on density of tree vegetation, permitting and/or environmental concerns. If conditions warrant, the Company may, as an alternative to installing overhead covered conductor, convert the line to an underground design.

Q. Does covered conductor have benefits beyond wildfire mitigation?

A. A secondary benefit to covered conductor is an improvement in reliability.

Q. What is Rocky Mountain Power doing with fuses to mitigate fires?

A. In certain applications, standard overhead fuses will be replaced with non-expulsion fuses. A standard overhead fuse will emit sparks by design, and the melted fuse material may fall to the ground as part of the fuse's normal operation. A non-expulsion fuse element operates in an enclosed sand bed, meaning that the fuse does not emit sparks or drop melted fuse material to the ground. Existing expulsion fuses in the FHCA will be replaced with non-expulsion fuses, unless there is an impervious surface (i.e. an asphalt parking lot) located under the existing standard fuse.

Q. What is Rocky Mountain Power doing with poles to mitigate fire risk?

A. Distribution poles within the FHCA will be evaluated based on location, age, and intrusive pole testing results. If replacing a pole is warranted, the existing pole may be replaced with a new wood, steel, or composite material pole. Depending on site conditions, a new wood or composite pole may be treated with fire wrap, to increase resiliency and reduce wildfire risk due to pole failures as wildfires burn through an area.

Q. Is it standard practice for Rocky Mountain Power to install covered conductor, non-expulsion fuses?

A. No. Standard overhead circuit construction uses bare conductor and standard industry spacing. These traditional approaches balance safety, reliability, and cost. The installation of covered conductor and non-expulsion fuses, together with the targeted replacement of certain poles, are strategies being implemented in direct response to the increased wildfire risk. These strategies are specifically designed to mitigate against the potential of any catastrophic wildfire associated with Rocky Mountain Power's system.

Q. Why is targeted pole replacement part of this strategy?

A. There are a couple of reasons the Company will use targeted pole replacements, combined with covered conductor and non-expulsion fuses, as a part of its system hardening efforts. The first reason is that covered conductor is heavier than non-covered conductor. The additional loading on the poles will, in some cases, require replacement with stronger poles, or the addition of poles to shorten spans. Another reason is that composite or steel poles may be used in certain areas where the risk of a wildfire damaging the pole is greater, or where wooden poles will not work to address the greater loading of the covered conductor.

Q. How do transmission line rebuilds help mitigate and protect against wildfire risk?

A. Due to the cross-country nature of many portions of the Company's transmission system, the fuels under and around such lines present certain concerns. In addition, while built consistent with industry design criteria, lower-voltage transmission lines have less clearance from vegetation than higher-voltage lines. Consequently, Rocky Mountain Power has placed emphasis on evaluating the local transmission system and identified certain sections of such lines for rebuild. As part of a rebuild, covered conductor may be employed on system voltages up to 69 kV, to further improve the strength and resiliency of the rebuilt line. Covered conductor is currently only available up to 69 kV.

Q. Are there measurements or metrics the Company can use to determine how successful the use of covered conductor is in mitigating wildfire risks over time?

A. Yes. Over time, the Company anticipates that comparisons of fault rates, especially those resulting from foreign object contacts, for the areas where covered conductor is employed versus the fault rates in the same areas before covered conductor was installed will demonstrate the effectiveness of this measure. The Company recognizes that such comparisons will not be absolutely conclusive. For example, rebuilding with new bare conductor might also reduce certain faults. To better understand the effectiveness of covered conductor lines, Rocky Mountain Power will also compare the performance of covered conductor lines with new construction bare conductor in similar landscapes. Such comparisons will become more and more meaningful as time passes and additional fault data is compiled.

Q. How do pole replacements help mitigate and protect against wildfire risk?

A. As discussed above, certain older wood poles may be replaced with either a new wooden pole, a composite pole, or a steel pole. Simply put, a stronger pole reduces the risk of a pole failure, which could cause an ignition if the pole failure resulted in a wire down. In addition, treating wood pole structures with fire wrapping at the base of the wood pole and/or using steel or composite materials increases the structure's resistance to wildfires in the area. Not only does this help to protect the assets themselves, it helps prevent energized electrical equipment falling and adding to the fire.

Q. What criteria is the Company using to identify the poles that should be replaced?

A. The Company has developed several criteria to determine which poles to replace, including condition-based information, pole class, age of the pole, its location, right-of-way clearances, and the existence of wildfire fuel (i.e., vegetation) in the area.

Q. Please describe fireproof mesh wrapping for wooden poles and how it works.

A. The fireproof mesh wrapping is intumescent, meaning that it swells in the event of a fire. That swelling protects the underlying wood. The companies that manufacture the wrapping have tested the material at labs to demonstrate the material's effectiveness at protecting wooden poles from fire damage.

Q. How will the Company determine which poles to wrap with fireproof mesh?

A. As discussed above, certain new poles will be wrapped as part of a pole replacement program. In addition, some existing wood poles will be wrapped to protect those assets. Rocky Mountain Power will focus on poles in the FHCA. The poles that will be covered with the mesh wrap are those that are relatively young, structurally sound, have no outstanding observed maintenance needs affecting the strength of the pole. Additionally, if the pole location has a history of fire damage from third parties performing controlled burns, fire wrap may be considered as an alternative where line relocation is not practical.

Q. What criteria will the Company use to measure the success of its pole wrapping efforts?

A. When and if fires occur near facilities that have received the pole wrapping, Rocky Mountain Power will be able to observe the success of its efforts. To monitor this, the Company will perform an inspection of the wrap and assess any damage to the pole after the fire has been suppressed. The Company already records pole damage during the normal inspection cycle but a new criteria will be added to track and record any damage to fire wrapping.

Advanced Protection and Control

Q. Please explain what advanced protection and control measures are in the context of wildfire mitigation.

A. Advanced protection involves the deployment of sophisticated protection control strategies, particularly advanced relay technologies, on distribution and transmission lines. In the context of wildfire risk mitigation, these protection control strategies involve the device operations that take place when fault events occur. While other wildfire mitigation strategies limit the number of fault events, advanced protection and control strategies limit the length and magnitude of fault events. After a fault occurs, energy is released, posing a risk of ignition, until the fault is cleared. Reducing the duration of a fault event reduces the risk that the fault might result in a fire.

Q. Please describe the differences between legacy electro-mechanical relays and modern microprocessor relays.

A. Microprocessor relays are able to exercise programmed functions much faster than an electro-mechanical relay. Microprocessor relays also allow for greater customization to address environmental conditions through a variety of settings; they are also better able to incorporate complex logic to execute specific operations. Finally, in contrast to electro-mechanical relays, microprocessor relays retain event logs that provide data for fault location and later analysis.

Q. Will these modern microprocessor relays provide the Company more data regarding line contacts and other faults on the system than the electro-mechanical relays currently used on Rocky Mountain Power's system?

A. Yes. These new relays will capture a variety of event logs, including waveforms during fault events.

Q. How will the additional data provided by these new relays help the Company in its wildfire mitigation efforts?

A. In addition to faster fault clearing schemes, these relays improve response times because they can identify locations where disturbances occurred. Personnel in the field can use this information to quickly narrow the area for patrol, and office teams are able to better assess the situation and make decisions. Rocky Mountain Power will also use this data during investigations of events to ensure that the devices performed consistent with the programmed settings and to evaluate other wildfire mitigation technologies.

Condition Corrections

Q. Please describe the Company's condition correction process as it relates to wildfire mitigation efforts.

A. When the Company inspects its system infrastructure, it documents "conditions" which reflect observed characteristics, including wear or damage, of a given element of Rocky Mountain Power's system. These conditions are reported in Rocky Mountain Power's Facility Point Inspection ("FPI") system, and ranked for priority. Based on condition type and priority, work is assigned to personnel to correct and repair certain conditions.

Q. Has the Company modified its inspection process to address increased wildfire risks in the FHCA?

A. Yes. Rocky Mountain Power categorized types of conditions that reflect a higher potential of ever causing an ignition. To better track these types of conditions, Rocky Mountain Power created a classification in FPI called "fire threat conditions." This designation allows the Company to accelerate correction of these conditions in the FHCA.

Q. Is the Company modifying its inspection process outside of the FHCA?

A. Yes. The Company will increase the frequency of inspections and use the same fire threat condition categorization as described previously. The fire threat conditions will be corrected on an accelerated schedule.

Q. Will the company be modifying the condition correction schedule for any non-fire conditions?

A. Yes. The company has also categorized conditions that could result in an impact to reliability. These conditions have two priority levels. The "A" category designation is the highest priority and will be corrected under the existing schedule of 120 days on average. "B" conditions are lower priority, but certain conditions can result in an impact to reliability.

Q. In Mr. McDougal's testimony he references using the property insurance regulatory liability balance to address these reliability conditions. Can you expand on that?

A. Yes. The Company system has experienced less severe storms resulting in damage to company facilities over the past few years and as a result the current Utah-allocated property insurance reserve regulatory liability balance was approximately $8.1 million as of December 31, 2019. It is not to say that Utah has not experienced storms or damage but the damage severity of the storm was not enough to exceed the thresholds to drawn upon this fund. This approach to addressing conditions after a severe storm event is reactive in nature. New modeling tools have allowed us to review the location of these "reliability" impacting conditions and start targeting the corrections in a proactive manner to avoid the impact of storm events. While the damage of these storms can vary, the damage is more severe where the company had deteriorated facilities or existing damage. The proposal is to draw on the balance of the property insurance regulatory liability account as of December 31, 2019, and address these conditions. As referenced in Mr. McDougal's testimony, the accrued amount after December 31, 2019, would remain in the liability account.

Q. How does the Company plan to measure the success of this modified inspection process?

A. The Company will track the number of conditions found during the inspections and number of corrections to be reported in the annual status update filing.

Operational Practices

Q. Please describe the Company's operational practices as they relate to wildfire mitigation efforts.

A. The Company employs two separate operational practices when it comes to wildfire mitigation efforts: (1) gaining and improving rights-of-way to improve response time and act as a fire breaker; and (2) maintaining a reserve of generators to be used during a wildfire event.

Q. Please explain how the addition of new access roads and other improvements, and increasing rights-of-way on transmission lines support the Company's wildfire mitigation efforts?

A. Increasing access roads help to reduce the likelihood of equipment loss when wildfires occur by increasing accessibility for wildfire suppression personnel. In addition, increasing access creates improved potential for using such areas as fire breaks. While of course deferring to wildfire suppression professionals on such use, an improved or widened right-of-way might facilitate use as a fire break. More importantly from a utility perspective, improving access may open up possibilities for future collaboration with fire suppression personnel regarding the fire break potential of such areas in future projects. Beyond the direct and immediate benefits to wildfire response, improved access also generally affords better access for utility personnel at all times and can be valuable in improving the utility corridor and the resiliency of assets located there. Improved access makes inspection and correction work easier to accomplish; it also facilitates more aggressive vegetation management activities, including effective pole-clearing around certain equipment poles. Moreover, better access makes it easier to patrol lines during times of heightened wildfire conditions, which facilitates effective system control operations geared for wildfire mitigation (i.e., more sensitive recloser settings), while still promoting reliability objectives.

Q. How does the Company plan to evaluate and improve upon its access roads and rights-of-way efforts over time?

A. Rocky Mountain Power will continue to take feedback from firefighters and patrol personnel regarding access roads and rights-of-way to monitor its efforts over time.

Additionally, Rocky Mountain Power will continue to incorporate insight into priority ranking from asset inspectors and vegetation management personnel.

Q. Please explain how the backup of Company-owned generators supports the Company's wildfire mitigation efforts?

A. As explained in the situational awareness section that follows, the generators help maintain critical electrical infrastructure in the event of a wildfire.

Situational Awareness

Q. You have discussed what you are doing to harden your system. What are you doing to forecast and monitor wildfire conditions?

A. In addition to regularly tracking the reports and information made available by governmental weather monitoring agencies, Rocky Mountain Power is increasing its situational awareness of wildfire conditions by deploying its own fleet of weather stations (both fixed and mobile) to monitor local weather conditions in the immediate vicinity of certain Company assets in the FHCA. These weather stations monitor climate conditions, including temperature, wind speed, humidity, and rainfall; they also have a fuel sensor to measure fuel temperature and moisture. The Company has contracted with a meteorological consulting firm, Western Weather, to monitor weather conditions in the FHCA, using data from both Rocky Mountain Power's weather stations and from publicly available resources in the Remote Automatic Weather Stations ("RAWS") system. Western Weather provides a daily forecast based on key wildfire weather indicators. It also provides real-time assessment and feedback when Rocky Mountain Power closely evaluates whether de-energization of any lines might be appropriate during times of extreme wildfire conditions. The Company has also contracted with the University of Utah to establish a weather fire condition index customized around the fuel conditions found in Utah, ranging from desert to a dense forest landscape.

Q. In addition to monitoring weather conditions, what is Rocky Mountain Power doing to improve its situational awareness?

A. The Company is also in the process of deploying and assessing cameras to monitor certain Company assets within high risk and hard-to-access regions. The Company has contracted with Alert Wildfire Systems to install, host and maintain the cameras. The cameras are primarily used to spot a wildfire at the earliest stage possible and then assist with suppression efforts in the event of a wildfire. If an ignition occurs, these high definition cameras are effective tools to spot a plume of smoke well before the fire might be spotted through other means. Early spotting is extremely advantageous to fire suppression authorities, as containment efforts are most effective when a wildfire is small in area. In addition, the cameras can zoom in and monitor the fire status from the time when the first smoke plume is spotted through the end of the suppression effort. The cameras purchased by the Company will become part of the Alert Wildfire network.[2] Additional cameras increase the value of the network. If two or more cameras can see the fire, the cameras system can best pinpoint the location of the fire. Especially considering Utah's impressive mountain ranges, the ability to more accurately estimate a location can save valuable time by putting resources at the correct spot on the mountain.

[2] Viewing is publicly available at alertwildfire.org.

Q. Have you changed your operating procedures with this new equipment which enhances situational awareness?

A. Yes, above all, situational awareness tools are critical to the Company's evaluation of whether to de-energize power lines as part of Rocky Mountain Power's Public Safety Power Shutoff ("PSPS") program. During fire season the weather forecast provided by Western Weather is reviewed at least daily and even hourly depending on the conditions that day. The Company has established two PSPS watch levels based on fire fuel conditions and weather. If the forecast warrants a PSPS Watch Level 1, the Company will activate key personnel to monitor the situation on a 24/7 continual basis. If the forecast warrants a PSPS Watch Level 2, the Company will activate the Emergency Operation Center ("EOC"). The EOC will monitor wildfire weather conditions and start regular patrols of the system where extreme conditions are present. During this period, the EOC will, in consultation with Western Weather, continually monitor wildfire weather conditions, referring to real-time data from fixed weather stations and direct input from field observations, including use of a mobile weather station. If wildfire conditions warrant a PSPS, the EOC may implement a de-energization. Once wildfire conditions subside to a point that the EOC determines re-energization can occur, patrol activities will begin. Throughout this process, external communications are made to customers, using telephone, text, email and social media. Accurate, real-time weather data is critical to every stage of this process. The more closely correlated such weather data can be to actual assets on the ground, the better Rocky Mountain Power's PSPS program will be. Consistent with its long-term commitment to provide reliable service to customers, Rocky Mountain Power will use

PSPS as an option of last resort. Effective situational awareness helps the Company limit PSPS to where and when it is absolutely warranted.

Q. Please explain how generators will be used as part of your emergency response leading up to and during an event.

A. Small portable generators may be used during a PSPS to keep power on to critical facilities such as fire and police stations or pump houses. The use of these generators will be directed by the emergency operations center working in coordination with local emergency response personnel.

Wildfire Mitigation Program Compatibility with Other Company Programs

Q. How do Rocky Mountain Power's wildfire mitigation efforts relate to the Company's standard safety and compliance activities?

A. Many of the wildfire mitigation strategies I discuss above go beyond standard utility practice. For example, Rocky Mountain Power does not, in the normal course, install covered conductor or wrap poles in fireproof mesh. These measures are in direct response to changing best practices for mitigating wildfire and are incremental to work Rocky Mountain Power would do in the ordinary course of its business. Similarly, activities such as replacement of existing equipment (replacing distribution poles with composite material poles, replacing electro mechanical relays, etc.) are now informed by the potential for the replacement to mitigate wildfire risk. Certain activities, such as conditions corrections, are a standard part of Rocky Mountain Power's safety operations. Prioritizing and accelerating conditions corrections that are identified as potentially increasing wildfire risk, however, is a new feature of Rocky

Mountain Power's conditions corrections protocols which will improve the wildfire mitigation impact of existing programs.

Q. Please summarize the benefits of Rocky Mountain Power's wildfire mitigation investments.

A. Proactively investing in wildfire mitigation training, system hardening, monitoring, situation awareness tools and projects in the FHCA reduces the risk of catastrophic fire ever being caused by Rocky Mountain Power's facilities, directly benefiting Rocky Mountain Power customers. In addition, reducing the risk of catastrophic fire benefits fire response agencies, preserves customer property and Company facilities, and minimizes the cost of rebuilding.

IV. UTAH AMI PROJECT

Q. Please briefly describe the Utah AMI Project.

A. The Utah Advanced Meter Infrastructure Project began in 2018 and is scheduled to be completed December 2022. The project consists of the construction of an AMI field area network, including devices which enables remote reading of 790,000 existing AMR[3] meters, and on-site replacement of approximately 175,000 existing meters to Itron smart meters.

The Utah AMI Project will leverage the existing information technology infrastructure that is currently being used for the Company's California and Oregon AMI projects. This infrastructure will be modified and expanded to support Utah-specific functionality. Upon completion, the Utah AMI project will fully automate and retrieve hourly meter reading data on a daily basis, allow Utah customers to access their

[3] AMR is a system where aggregated kilowatt-hour usage, and in some cases demand, is retrieved via a drive-by vehicle or walk-by handheld system.

usage data on Rocky Mountain Power's website (www.rockymountainpower.net) and improve outage management. In addition, the AMI project will enable Rocky Mountain Power to remotely connect and disconnect electric service through the Itron smart meters where installed.

This project will lay the foundation for future smart grid investments including distribution automation systems, more advanced outage management and customer facing energy efficiency applications and rate design.

Q. Please describe the specific components of the AMI system that Rocky Mountain Power will be investing in as part of the Utah AMI Project.

A. The Utah AMI project will establish wireless connectivity between the utility and the customer that eliminates the need to physically visit meters to gather consumption data. Meters will send interval meter data to a central collection point, which will in turn be backhauled to the utility for billing, customer presentation purposes, outage management, remote meter operations and analytics. The project consists of the following components and work streams:

- A field area network will be constructed that will allow communication with the existing AMR and new Itron smart meters. This network will also be available for more advanced smart grid applications. The installation of smart meters in strategic locations will optimize the field area network.
- The existing, centralized head-end meter data collections management system will be extended and configured to allow for collecting reads and metered data from the meters in Utah. Additionally, the existing meter data management system will be upgraded to store meter data gathered by the head-end system.

- The customer facing website (www.rockymountainpower.net) will be enhanced to accommodate Utah rate schedules and provide more detailed usage information for customers.
- An outage detection system will be created to manage meter power outage and power restoration messaging and provide enhanced outage response. The project will work directly with the Utah Sustainable Transportation and Energy Policy Act Advanced Resiliency Management System project to ensure that existing AMR meters in Utah can report outages and restoration notices through the AMI system to improve outage management for those customers.

Benefits of AMI Deployment

Q. Why does the Company plan to deploy AMI in Utah?

A. Rocky Mountain Power plans to deploy AMI to provide customer benefits ranging from lower operating costs (i.e., by reducing manual metering reading operations) and improving reliability, to providing customers with information and tools to better understand and derive greater value from their energy service. The Company identified AMI as a key technology to enable the Company to achieve long-term customer service and smart grid objectives. Specifically, AMI functionality allows the Company to:

- Provide customers access to data regarding their hourly energy consumption, which will enable them to make more informed energy decisions;
- Provide better customer service by giving the Company's customer service representatives information necessary to provide accurate responses to customer inquiries and facilitate customer complaint resolution;

- Reduce the number of estimated bills by providing the Company with actual meter data regardless of physical access barriers, bad weather delays, or other factors that can impede physical meter reading and give rise to estimated billing;
- Perform remote connect and disconnect at sites with smart meters that will enable service to be turned on and off on a near real-time basis without deploying employees to customers' premises;
- Detect, react, and troubleshoot power outages in a more timely manner, without the need to wait for an outage notification directly from the customer;
- Obtain analytic information at sites with smart meters, such as temperature, voltage, and power quality data, which can be used to assess system performance and improve service to customers;
- Introduce efficiencies related to automation that reduce the cost to obtain meter reads and perform service connects and disconnects; and
- Enhance safety and reduce carbon dioxide emissions through the reduction of vehicles used for drive-by meter reading operations.

Q. Please describe the planned schedule to complete the project.

A. The project started in 2018 with the completion of the contract with Itron. The Information Technology team prepared the system to accept the reads from the new AMI meters. During this time, cybersecurity design changes required corrections, which resulted in a delay to the original schedule. The revised project schedule provides for the installation of the field area network starting in 2021 and will provide the ability to begin reading the existing AMR meters shortly thereafter. Installation of AMI meters will begin in late 2021 and will be completed by the end of 2022.

Financial Analysis of Utah AMI Project

Q. Please describe the costs associated with the Utah AMI Project.

A. The total project cost of the Utah AMI Project is projected to be $77.9 million in capital costs and $4.3 million in operation and maintenance costs. Capital costs are broken down into the following components in support of the Utah AMI Project: meters ($30.1 million), information technology and telecommunications ($35.2 million), and customer service and project management ($12.6 million). Expected operations and maintenance ("O&M") costs include the following: information technology and telecommunications ($3.5 million) and customer service and project management ($0.8 million). Going forward, new O&M costs will be incurred in order to run and support the AMI system, with annual operating costs estimated at $2.8 million following the first full year of implementation (year 2023). These costs include new call handling costs, data management, field network hardware maintenance, and information technology maintenance and support. These added costs are offset by an annual savings of $7.8 million.

Q. Please describe the savings associated with the Utah AMI Project.

A. While minor in scope, the installation of AMI meters in Utah will reduce costs related to reading meters with the current drive-by system. Except for costs related to select meters, including opt-out customers, the AMI system eliminates the need for employees to drive to select customer locations to perform manual reads and connect and disconnect functions. For after-hours reconnect functions, this will reduce the amount of overtime required. Rocky Mountain Power will further reduce the number of handheld devices in Utah used for manual reading and the cost of maintenance fees required to support those devices.

Q. Is Rocky Mountain Power's investment in Utah AMI Project prudent and cost effective?

A. Yes. Rocky Mountain Power's investment in Utah AMI Project is prudent and cost effective because of the many advantages it affords Rocky Mountain Power's customers. It will also result in reductions to Rocky Mountain Power's annual operating costs as discussed above.

Q. Is the inclusion of the Utah AMI Project in rates beneficial to customers and otherwise in the public interest?

A. Yes. As a result of the Utah AMI Project, Rocky Mountain Power will be able to improve customer service levels and introduce a greater level of transparency into the costs associated with energy usage decisions. The implementation of AMI creates a platform for smart grid modernization allowing Rocky Mountain Power increased visibility into the electrical network and customer interface to assist in future programs and investments. The Utah AMI Project also results in benefits to the public generally, including reduced outage times and a reduction in vehicle emissions due to the decrease in vehicles used for meter reading.

This project provides a better approach to AMI installations as opposed to traditional installations that replace all existing meters in a short period of time. Replacing all meters at the same time increases the overall project costs because a substantial portion of the existing meters would not be fully depreciated. By installing an efficient field area network that reads the existing AMR meters, the company can avoid those costs and provide customers with the same level of data as a full AMI system. The remaining 790,000 AMR meters will be replaced over a period of time that allows them to be fully depreciated before replacement.

Q. Please summarize how AMI would support a more customer driven energy delivery strategy.

A. AMI will position Rocky Mountain Power to develop and deliver a business strategy that is driven by what the customer wants/expects, including the following.

- Establish new rate structures designed with the new granular level of data and customer transparency.
- Enable creation and participation in enhanced energy conservation programs.
- Improve the quality of communication with customers with particular emphasis on outage restoration efforts/conditions.
- Reduce the frequency and length of outages, thereby reducing the financial impact to customer operations and improve the reliability metrics.
- Shorten service connection times, thereby freeing up customer wait time and enhancing receipt of service.
- Proactively addressing aging equipment versus reactively addressing it, therefore improving the customer experience. We fix it before it breaks.
- Allows proper equipment sizing which ultimately saves ratepayer money.
- Establishes a real time utility to customer meter foundation, from which new and yet to be created smart grid technology can be delivered.

Q. Please describe benefits that will allow customers to manage their energy costs.

- Customers will have access to energy usage information and graphs once they login to their account on the Rockymountainpower.net website. The graphs depict near real-time hourly, daily, weekly and monthly consumption, thus enabling customers to make informed energy decision and manage their costs.
- Customers will also have the ability to establish a billing threshold by entering a target dollar amount that they do not wish to exceed for the month. If a billing projection exceeds the target amount, the customer is notified via text or email. Subsequent communications continue to occur weekly in order for the customer to see if their energy consumption decisions are moving their bill projection downward.

V. CONCLUSION

Q. Please summarize your testimony.

A. My testimony presents and explains the significant costs and impacts to the Company and its customers associated with wildfires. Rocky Mountain Power is prudently proposing to mitigate these risks through incremental investments in wildfire mitigation tools, communication avenues, engineering benefits, and operation projects to reduce the risk of wildfires caused by its facilities in its service territories, especially as wildfires have grown in frequency and severity in the West.

My testimony outlines the methodology and project plan that Rocky Mountain Power has used to identify locations and specific tasks and projects to help mitigate the risk of catastrophic wildfires in the FHCA.

My testimony also describes the benefits to customers of the implementation of the Utah AMI project, including enhanced customer service and visibility into the costs associated with their energy usage decisions. Given the significant benefits discussed in my testimony, the Utah AMI project should be approved by the Commission.

Q. Does this conclude your direct testimony?

A. Yes.

Rocky Mountain Power
Exhibit RMP___(CBM-1)
Docket No. 20-035-04
Witness: Curtis B. Mansfield

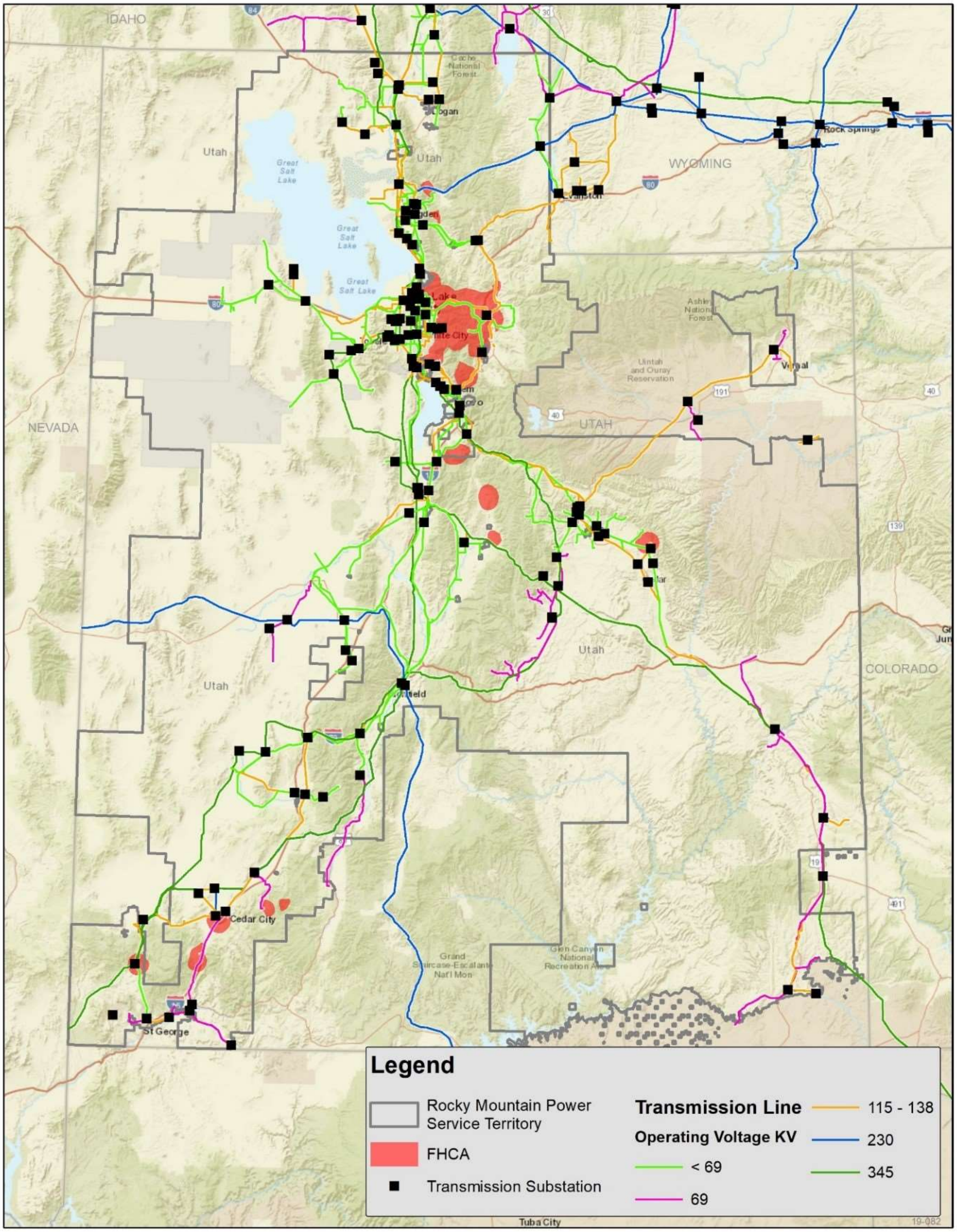
BEFORE THE PUBLIC SERVICE COMMISSION
OF THE STATE OF UTAH

ROCKY MOUNTAIN POWER

Exhibit Accompanying Direct Testimony of Curtis B. Mansfield

Map of Fire High Consequence Area

May 2020


IDAHO
WYOMING
NEVADA
UTAH
COLORADO
Utah
Great Salt Lake
Logan
Rock Springs
Evanston
Ogden
Salt Lake City
Provo
Vernal
Richfield
Cedar City
St George
Grand Staircase-Escalante Nat'l Mon
Glen Canyon National Recreation Area
Uintah and Ouray Reservation
Ashley National Forest
Cache National Forest
Tuba City
Legend
Rocky Mountain Power Service Territory
FHCA
Transmission Substation
Transmission Line
Operating Voltage KV
< 69
69
115 - 138
230
345
19-082