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BEFORE THE IDAHO PUBLIC UTILITIES COMMISSION

IN THE MATTER OF IDAHO POWER COMPANY'S APPLICATION FOR CERTIFICATE OF PUBLIC CONVENIENCE AND NECESSITY FOR WOOD RIVER VALLEY	CASE NO. IPC-E-16-28

IDAHO SIERRA CLUB

DIRECT TESTIMONY

OF

MICHAEL HECKLER

Q. What is the Idaho Sierra Club's interest in this proceeding?

A. While this docket raises substantial issues related to land use and scenic values, the interest of the Idaho Sierra Club ("Sierra Club") primarily focuses on the technical and financial aspects of the Idaho Power Company ("Company") proposal. We chose to intervene and testify because the Company has not provided an adequate review of relevant costs and technical alternatives to their proposed redundant transmission line, and as such the proposal is not consistent with what the Sierra Club sees as the public interest.

We believe that a more robust consideration of alternatives is in the public interest and that a combination of a rebuilt line along the existing right-of-way with some grid edge resource alternatives can provide excellent resiliency at a lower cost than the proposed redundant transmission solution. Such resiliency in the North Wood River Valley ("NWRV") may help facilitate the City of Ketchum's ability to realize their clean energy objectives, which are in alignment with Sierra Club's efforts to promote the decarbonization of the electric sector.

Q. Please summarize Sierra Club's concerns with the proposal.

A. The Company seeks an order to "construct improvements to its electric transmission system to secure

adequate service to its customers."[1] We agree some improvements to the NWRV transmission system are likely warranted, but the Company has failed to show that building an additional transmission line is the most cost-effective solution available.

The Company has been working, at least intermittently, on building an additional transmission line from Hailey to Ketchum for 44 years. Technology has changed radically during the last four decades, yet the Company has continued to push ahead with their same preferred solution from 1973. We believe there are now alternatives that could provide a higher level of benefits for all customers of the Company while ensuring adequate and reliable service in the NWRV, but those have not yet been properly analyzed.

While the Sierra Club is willing to concede that the existing line is "aging and now requires complete reconstruction"[2], we do not think the information in this docket is adequate to support the Company's proposal to build an additional transmission line. Further, we do not believe that building a redundant transmission line, with a 70 to 80-year useful life, is a cost-effective technical solution or a solution that addresses more than a narrow portion of the NWRV delivery system.

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[1] Application at 1.

[2] Application at 16.

Q. Why do you think the proposal does not include adequate information?

A. The proposal does not contain enough relevant information about alternative solutions to reliability problems in this relatively remote and mountainous portion of the Company's service territory. As such, it precludes an informed decision on how to best ensure reliable and adequate service to the NWRV. Sierra Club acknowledges that on technical questions like reliability, the Commission often defers to the Company, but we are operating in a time of rapid technological change in the electric utility industry. A thorough analysis of alternatives is more important now than it was even a decade ago, and because the proposal does not include an adequately completed analysis, such deference is not appropriate at this time.

Q. Please describe your role with the Sierra Club and a summary of your relevant experience with the issues in this proceeding.

A. I am the Chair of the Idaho Sierra Club's Energy Committee. Prior to my retirement in 2012, I had multiple professional roles. While I realize that the decisions made by a public body such as this Commission must balance far more than the primarily commercial values I addressed in the private sector, during my career I helped resolve many matters with cost and technical complexity similar to the issues raised in this docket.

At SeaFirst Bank, I administered budgeting and profit plan performance measurement for the bank. At Boeing, among other things, I managed budgeting, installation and operation of computing hardware in a large-scale scientific data center. I have managed multiple procurements and projects with contract values measured in tens and hundreds of millions of dollars.

My academic training includes bachelors, masters and doctoral level degrees in accounting, finance and law, respectively.

For approximately a decade beginning in 2002, I worked as a wind farm developer. I have been an active participant in every Idaho Power Company Integrated Resource Planning process from 2002 through 2017 and on multiple instances have provided comments/testimony before this Commission.

I appreciate the opportunity to submit testimony in this docket.

RELIABILITY

Q. Given the Company's duty to provide adequate and reliable service to customers in the NWRV, what concerns does Sierra Club have with how matters related to reliability have been addressed in this docket?

A. Sierra Club accepts and completely supports the need to provide reliable electric service to customers in the NWRV. We are concerned that errors and misrepresentations have occurred in the terminology the Company has employed and in the

scope of review they have conducted on matters related to continuing to provide reliable service. These errors and misrepresentations take three forms:

1. A confusion of the concepts related to reliable, redundant and proximate.

2. An insufficient review of the "reliability" of the existing WDRI-KCHM line.

3. A resultant proposal to over-build a portion of the NWRV delivery system.

Q. Can you explain your perspective on the relationship between "reliability" and "redundancy" as presented in the Application?

A. Mr. Angell characterizes the proposed redundant transmission line as a need, adding that it would also allow for load growth and facilitate rebuilding of the existing line.[3] Sierra Club is concerned with how the Company conflates "reliability" and "redundancy" and "redundancy" with "physical proximity".

Constructing redundant transmission lines is but one method for enhancing reliable service, but redundancy is not the need itself. Reliable service is the need. Transmission is one way to improve transmission reliability, and redundant transmission is one way to provide transmission. The Company's characterization

[3] *See* Angell at 2, 21-23.

of a redundant transmission line into the NWRV as a need mischaracterizes one potential solution for providing future reliable service with the need itself.

Q. Can you explain why it is problematic to mischaracterize redundancy as a need instead of one potential solution?

A. Mischaracterizing redundancy as a need has shifted the focus of analysis onto the details of designing and locating the redundant line instead of on a thorough and necessary review of the measure of reliable service needed in the NWRV. This shift has precluded an adequate analysis of alternative methods for meeting the reliability standard.

Q. Can you explain your concerns with how the Company conflated the concepts of physical proximity and redundancy?

A. When Mr. Angell explained why the Company had not proposed accessing the KCHM substation over the same route the existing line uses running from the EKHN substation, he faulted that route as failing the "need" for redundancy. He argued that where the proposed new line would run near the existing line their proximity would raise the risk that a single event could incapacitate both lines.[4] We have two major concerns that follow from this line of argument.

[4] Angell at 29.

First, the Company's proposed route is not free from the stated problem of having two lines being in close proximity of each other. The proposed line would cross the existing WDRI-KCHM line within a quarter mile of where both lines leave their common source at the WDRI substation. Moreover, there are never more than a few hundred yards separating the two lines for the first few miles of their routes north of WDRI (until they are some ways north of Ohio Gulch Road).[5]

Second, and perhaps more fundamentally, the WDRI substation is still a single point of failure. The proposed new redundant line would originate from the same substation as the existing line. Because both lines are dependent upon the operational integrity of that single substation, the proposed redundant line will not provide an independent source of energy as the Company purports.[6]

Q. Please elaborate on the issue of the WDRI substation being a single point of failure.

A. The Company's proposed redundant line could not provide any power to NWRV if an outage event affected the WDRI substation. The 700-minute outage on December 24, 2009 was due to

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[5] Angell, Exhibit 4.

[6] Direct Testimony of Michael J. Youngblood, Exhibit 1 at 2.

loss of electric supply to the WDRI substation.[7] That was one of two line outages the Company listed for the WDRI-KCHM line that were not caused by failures on any portion of the existing line and would not have been mitigated by redundant lines from WDRI because no power was getting to WDRI substation. The second was 46-minute outage that occurred on June 4, 2014 was caused by broken cross arms and affected 20,228 customers.[8] Given that there are approximately 9,100 customers in the NWRV[9], it follows that this outage must have impacted the system at the WDRI substation or south.

Q. If we re-characterize the proposed redundant line as just one potential solution to the need for reliability, as opposed to the need itself, can you please explain your concerns with selecting the redundant line as the solution?

A. Yes, but first I would like to put the second analysis deficiency - an insufficient review of the reliability of the existing WDRI-KCHM line into a new, clearer context.

Q. Please elaborate.

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[7] Idaho Power Company's Response to Tidwell's Request for Production No. 37, Exhibit No. 301.

[8] Idaho Power Company's Response to Staff's Request for Production No. 8, Exhibit 302.

[9] Angell at 3.

A. The history of the existing line's reliability suggests that a rebuilt line could also provide excellent reliability.

Prior to the Company requesting that its CPCN from 1973 be cancelled, they retained Engineering Data Management, Inc. ("EDM") to review the structural condition and electrical reliability of the WDRI-KCHM line and analyze its condition.[10] EDM's 1993 Electrical Reliability Study analyzed the total of three minutes of outages from 1980 to 1993 and concluded:

> "The outage records speak for themselves. Two outages in the past fourteen years for a total duration of three minutes include one weather related outage, attributed to heavy snow and one switching outage. The low incidence of lightning in this area combined with the line's proximity to the mountains and relatively good condition of the entire power line give the Wood River to Ketchum 138kV Transmission Line an operating record that is practically unsurpassable."[11]

Q. Can you show the sustained outage history graphically?

A. I created the following figure showing outage history with data provided by the Company:

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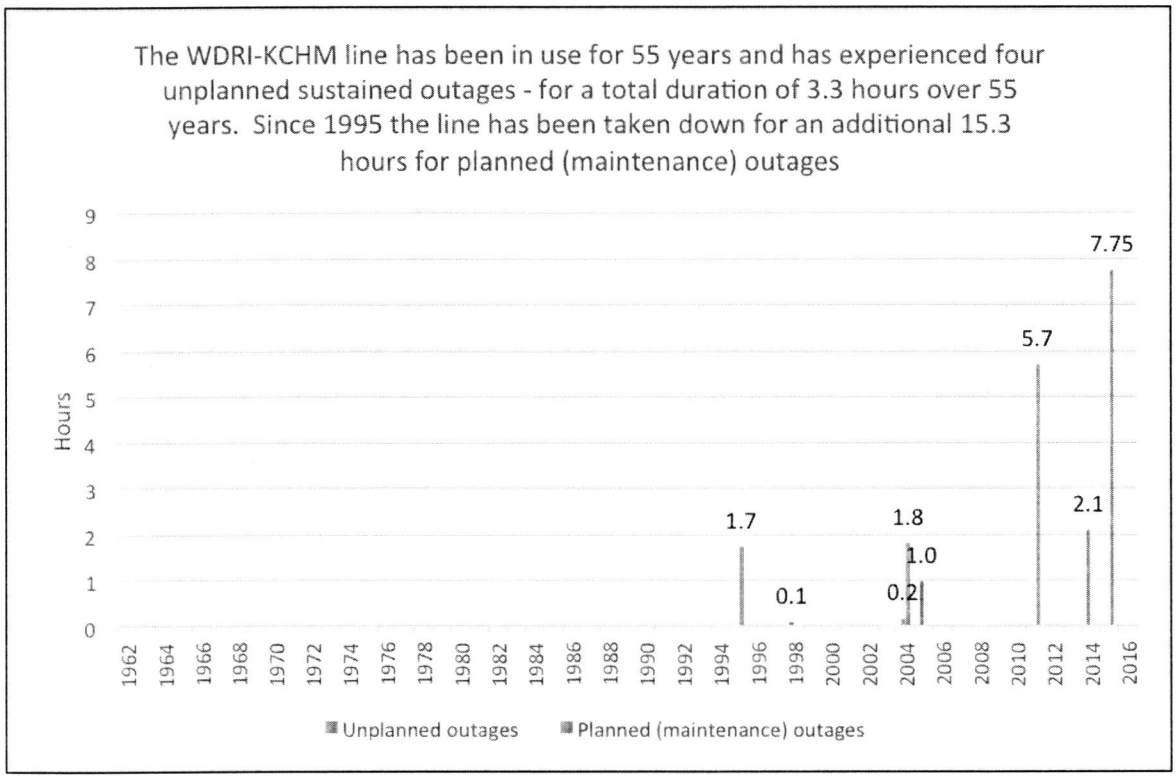
[10] Idaho Power Company's Response to Tidwell's Request for Production No. 18, Attachment 2 (the Electrical Data Management, Inc.'s Electrical Reliability Study), pages 1-3 as Exhibit 303.

[11] Electrical Data Management, Inc.'s Electrical Reliability Study at 3, Exhibit 303.



The Company was not able to document any outages before 1995, although EDM moved that record back to 1980. Based on the data provided, between 1980 and 2016 the line experienced only 3.3 hours of sustained unplanned outages.[12] *3.3 hours in 35 years*. If we divide 3.3 by the total number of hours in those 35 years it implies that over the three and half decades from the first Reagan election to the present, the line has not experienced an outage 99.999% of the time.

During that 35-year period, there were another 15.3 hours of planned outages for maintenance. The planned outages were done

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[12] Idaho Power Company's Response to Tidwell's Request for Production No. 13, Attachment 1, Exhibit 304.

during off-season (May, September, or October)[13] and at times when total KCHM and EKHN load were less than 15MWs.[14]

The Company's records show that outages in December or January have totaled only 10 minutes[15], which is far less than the 24-hour time period the Company used as a requirement in its analysis of alternatives.[16]

Given this history of relatively rare, short-duration unplanned outages that show no seasonal pattern, combined with an operating history the Company's contractor characterized as "practically unsurpassable"[17], there is no reason to believe that a newly rebuilt transmission line cannot provide the same exceptional reliability, if not better.

Exceptional reliability is even more likely given the Company's plans to reconstruct the existing line with steel poles that will have a better structural capacity and be able to

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[13] Exhibit 304.

[14] Idaho Power Company's Response to Idaho Sierra Club's First Request for Production No. 8, Exhibit 305.

[15] Exhibit 304.

[16] Angell at 14.

[17] Exhibit 303 at 2.

withstand some threats better than the wood poles currently in use.[18]

Q. Moving back to your concern with the redundant line option, you mentioned that the redundant line would lead to "over-building" a portion of the NWRV electric delivery system. What is the nature of your concern?

A. Let me respond first to the issues related to analyzing just a "portion" of the NWRV delivery system before covering concerns related to "over-building".

As I described above, all energy that would be available for transmission across the proposed redundant line comes via the WDRI substation. Similarly, all customers in the affected portion of the NWRV get their service via distribution lines running from the KCHM or EKHN substations. Upgrading the linkages between WDRI and KCHM/EKHN does not protect customers from outages arising on either end of those transmission links (those ends being at the WDRI substation or on a distribution line).

Regarding over-building a portion of the system, it was described above that the existing WDRI-KCHM line has proved 99.999% reliable against unplanned outages. In the Company's Response to Tidwell's Request for Production No. 51, Mr. Angell stated that should the proposed redundant line be built the

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[18] See Idaho Power Company's Response to Idaho Sierra Club's Request for Production No. 2, Exhibit 306.

probability of concurrent outages on two 138kV lines between the WDRI and KCHM substations would rise to one outage in 3,000 years.[19] It is not clear that there is much of a practical, significant difference between 99.999% reliable and one outage in 3,000 years, or that this supposed reliability "improvement" can justify the costs proposed by the Application.

ADEQUACY

Q. Please summarize your understanding of the Company's argument that a redundant line is needed to accommodate future load growth.

A. As I read the Company's application and supporting materials, I can summarize the argument as follows: One of the justifications for building a redundant line is based on assumptions about future load growth in the NWRV. Specifically, in both the 2007 and 2011 Wood River Valley electric plans, load growth is projected to grow to 80MW served from the Ketchum substation and 40MWs served from the Elkhorn substation[20]. Since the existing line has a capacity of 120MWs, it is said that such future load growth will require some safety margin in transmission capacity and the redundant line is partially justified as a source of additional capacity.

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[19] Idaho Power Company's Response to Tidwell's Request for Production No. 51, Exhibit 307.

[20] Angell Exhibit 2, Appendix C at 7-8.

Q. Do you agree with that assessment?

A. No.

Q. Please explain why not.

A. Currently, peak loads rise to about 50% of the existing line's 120MW capacity and average loads are, of course, lower. History doesn't support the Company's projections of future load growth and calls into question the methodology used to develop those projections.

Both the 2007 and 2011 versions of the Wood River Valley Electric Plan forecast that loads will more than triple over the lifespan of the proposed redundant transmission line. One of the methods used to forecast that growth was based on population growth projections provided by John Church, President of Idaho Economics.

Looking at the 2006 population of Blaine County north of Timmerman Hill up to SNRA headquarters (21,600 people using a winter peak of 99.5MWs), Church and the Company projected this population to grow at a compound annual rate of 1.8% per year. That growth rate implied that by 2080, the population of the area would be 76,161. Church then assumed that each of the 76,161 persons would demand an average of 4.2kW. Multiplying 76,161 people by 4.2kW per person yields "about 320MW for total Wood River Valley area buildout load"[21]. The Company subdivided that

[21] Angell Exhibit 2, Appendix B at 2.

projected 320MWs by substation, allocating 200MWs to substations further south and forecasting 80MWs for Ketchum and 40MWs for Elkhorn substation loads.[22]

Q. What is the flaw you see in this analysis?

A. Peak winter load in 1994-1995 was 55.5 MW.[23] This past winter it was 55.8MW. The following graph displays peak loads on the WDRI-KCHM line this century.[24] It clearly shows that in the last 10 years, growth is not compounding at the rate stated in the 2007 and 2011 plans:

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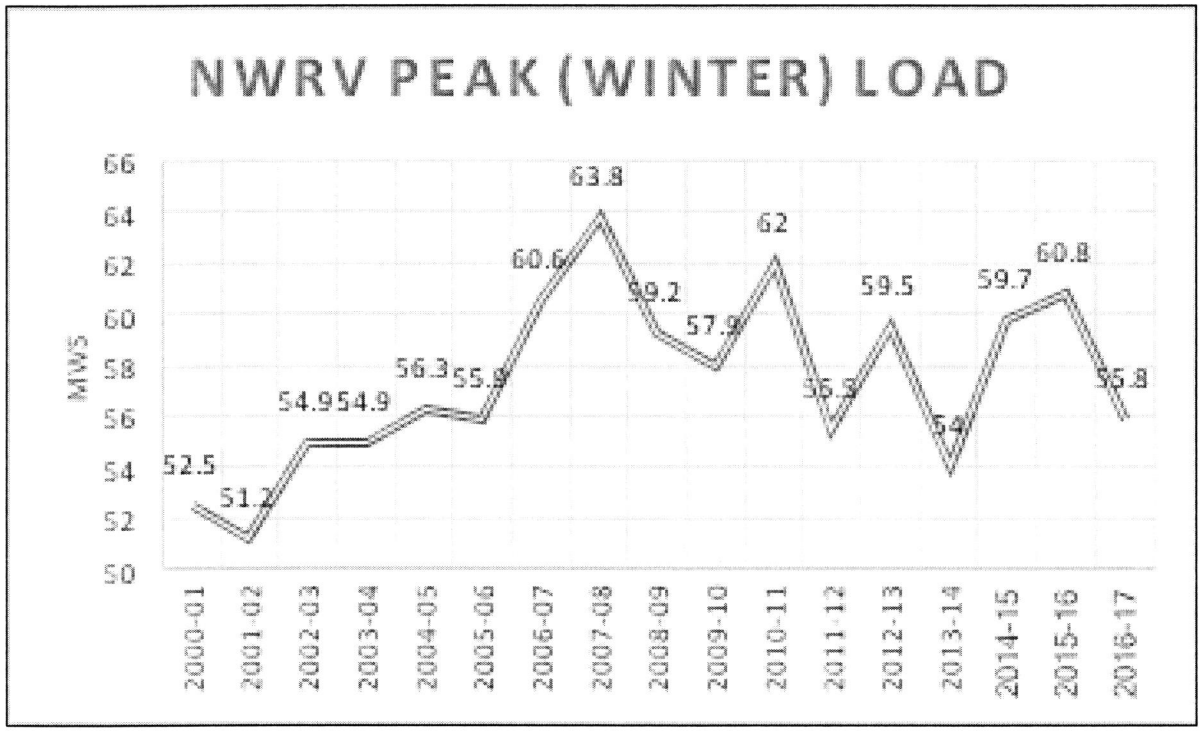
[22] *See* Angell Exhibit 2, Appendix C at 7-8.

[23] Staff's Request for Production to Idaho Power Company No. 16, Exhibit 308.

[24] The data in the graph were provided in Table 7.1 of Idaho Power Company's Response to Tidwell's Request for Production No. 7, Exhibit 309, and Idaho Power Company's Response to Idaho Sierra Club's Request for Production No. 18, Exhibit 310.



First, while load growth may have looked to be on an upward slope in 2006, load has been largely flat in the NWRV since the 2008 recession (as has been the case throughout most of the country). The Company's 2007/2011 analyses do not acknowledge that reality.

Second, just as more efficient electric-powered products (lights, motors, computers, etc.) have upset traditional trends in electricity load growth, policy decisions by states and localities limit the likelihood of rapid load growth in the future. For example, the City of Ketchum's 2015 Energy

Conservation Goals include a city-wide target of 50% per capita reductions in energy use by 2030.[25]

As Ketchum residents represent the majority of the electric load in the NWRV area[26], their actions in reducing energy consumption per capita are relevant to any projected future load growth analysis. Combining reduced consumption policies with high local property prices that constrain extensive new development in the area, the Company's high annual compound population growth estimates are unrealistic and make the Company's NWRV load projections suspect.

In sum, the 120MW capacity of the existing WDRI-KCHM line is likely to be adequate to serve local load into the foreseeable future.

Q. Even if there doesn't appear to be substantial NWRV load growth in the near future, what about the Company's projections out to 2080?

A. Projecting load growth over the next 60 years is speculative in and of itself, and is an inappropriate basis for justifying building an expensive, long-lived asset using today's

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[25] *See* City of Ketchum Resolution No. 15-012, Regarding Establishment of Energy Conservation Goals for the City of Ketchum (March 10, 2015), Exhibit 311.

[26] Idaho Power Company's Response to Idaho Sierra Club's Request for Production No. 13, Exhibit 312.

conventional transmission technology. The rapid technological development taking place in the utility sector, especially rapid advances in options for improving reliability with "grid edge" resources[27], makes it likely that even if the NWRV experiences substantial load growth later in this century, other alternative solutions will be available at that time to more cost effectively address those requirements.

Q. Putting aside the conversation about distributed resources for now, do you see any other near-term alternatives for increasing capacity on the system without building a redundant line?

A. Perhaps the rebuilt existing line could be constructed with a larger conductor that would increase its capacity.

ANALYSIS DEFICIENCIES

Q. Please describe your concerns with the Company's analysis of alternative generation resources.

A. My general concern is that the analysis was not conducted objectively. During my career, I witnessed multiple

[27] *See* Elaine Williams, "Knowledge Gained As Power Conserved", The Lewiston Tribune (April 9, 2017), *available at* http://www.spokesman.com/stories/2017/apr/09/knowledge-gained-as-power-conserved/, Exhibit 313.

instances where a technical group would attempt to justify selection of a particular computer hardware or software supplier by constructing their analysis in a way that only that one supplier could meet. This docket strikes me as another instance of justification substituting for analysis.

Additional information, beyond what the Company has provided to date, is necessary to conclude that a redundant line is needed or that redundancy is the lowest-cost or even a cost-effective method for supplying reliability requirements. To determine that an alternative provides the lowest-cost solution, multiple alternatives need to be properly evaluated without a predetermined outcome in mind. The analysis submitted with the Application is insufficient to support either conclusion.

Q. Please elaborate on the insufficiencies in the alternatives analysis.

A. The Company used multiple inappropriate techniques in their purported alternatives analysis including:

- Using their redundant line proposal as baseline against which alternatives were compared rather than comparing alternatives against a need for reliable service;
- Excluding relevant costs from their analysis;
- Over estimating costs for some alternatives;
- Failing to acknowledge potential synergies between alternatives; and

- Failing to evaluate benefits that some alternatives could provide, focusing solely on costs rather than the appropriate cost/benefit standard for measurement.

I will address the following flaws in turn: (i) wrong baseline; (ii) missing cost data; (iii) wrong cost estimates; (iv) ignored combinations; and (v) ignored benefits.

WRONG BASELINE. The hypothetical outage conditions that the Company used to test alternative resources (hereafter "distributed energy resources" or "DERs") against were (i) 24 hour outage (ii) at the peak of winter season (iii) with a heating load driven by temperatures staying at -21F for the entire period and (iv) an assumption of a requirement to serve all load rather than just critical load during outage periods.

These timing, load and duration conditions have never appeared in reported outage history, and assessment under these conditions leads to misleading conclusions about the DERs' ability to serve temporary system outages.

Since the WDRI-KCHM line was built back during the Kennedy presidency, the longest documented unplanned outage due to a failure on the line between WDRI and KCHM was 2 hours and 6 minutes.[28] The longest outage during the December - January peak

[28] Idaho Power Company's Attachment 1 submitted in Response to Tidwell's Request for Production No. 13, Exhibit 304.

tourist season was 10 minutes.[29] Planned maintenance outages lasted up to 8 hours, but those outages were scheduled in the shoulder season (May, September, or October) when load was less than 15MW and were largely conducted in the middle of the night.[30]

I am concerned with the adequacy of the results of the assessment of the DERs. We would have better information to analyze if the assessment was conducted using a baseline that more accurately reflected actual outage history, in duration, load, and seasonal timing.

MISSING COST DATA. The Company states that the existing line will need to be re-built but did not provide cost estimates for those activities when analyzing the cost of the redundant line and its alternatives. Each alternative generation source was

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[29] The December 24, 2009 outage was caused south of WDRI substation and still would have had the same effect on the NWRV regardless of how many transmission lines were installed between WDRI and KCHM substations.

[30] As noted above, the need for several of the maintenance outages (i.e. for wood decay and woodpecker damage) could be mitigated by rebuilding the existing line with steel structures, which should also reduce the potential threat associated with fire, avalanche or micro-burst winds.

compared to just the cost of the redundant line, but not the cost of the entire project, which includes the cost to rebuild the existing line. Because the rebuild cost data is missing, the study does not enable a true analysis of all the alternatives and eliminates some options from being considered.

For example, one basic alternatives analysis could have compared costs of (1) rebuilding the existing line and adding some back-up generation for low probability outages with (2) building the proposed redundant line and rebuilding the existing line. Such basic cost analysis could look like:[31]

	Proposed redundant line	Rebuild existing line without adding redundant line
Cost of redundant line	$30 million	Not applicable
Cost to rebuild existing line using redundant line during outages	$6.2 million	Not applicable
Cost to rebuild existing line including cost of temporary "shoo-fly" line	Not applicable	$9.4 million
Totals	$36.2 million	$9.4 million

The alternative that involves using "shoo-fly" temporary line saves more than $25 million that could be used for local

[31] Data from Idaho Power Company's Response to Idaho Sierra Club's Request for Production No. 1, Exhibit 314.

resources to cover for limited risk outages and provide benefits general to the Company customer base at other times.

Given that total load during maintenance periods was less than 15MWs, there should be enough out of the $25 million savings to pay for maintenance backup.[32]

WRONG COSTS. The cost estimates for some key alternatives are also inappropriate and overstated. The Company compares batteries that are priced at $800/kWh, but Tesla is currently offering them for around $250.[33] The gas turbines analyzed are sized greater than 50MWs, for which the Company says there is not enough fuel. The Company could have analyzed the smaller and lower cost reciprocating engine units that are analyzed in their Integrated Resource Plan (e.g. Wartsila).[34]

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[32] Idaho Power Company's Response to Idaho Sierra Club's First Request for Production No. 8, Exhibit 305.

[33] Tesla prices for batteries without installation. With installation, the cost would be about $450/kw and declining.

[34] January 12, 2017 Supply Side Resource Operating Inputs shows Reciprocating Gas Engine at $775/kw Plant Capital Cost (EPC and other Owner's Costs). At the April 13 IRPAC meeting, Philip DeVol said that Wartsila has been in to visit recently and suggested that some of their product line could be priced even lower.

Additionally, the Company could have considered some of the various modular diesel generators on the market that range in size up to 2MW, including mobile generators that can be transported throughout the service territory. Such generators can be utilized during maintenance of infrastructure and servicing unplanned outages, while also providing support for essential services throughout the Company's service territory in the event of emergencies.[35]

A 2013 FEMA press release highlights several of the benefits these modular diesel generators can provide to communities.[36] For example, the City of Seaside Heights, NJ, originally purchased and installed three 2MW diesel generators to provide services during periods of peak-power demand at a cost of $4 million. When superstorm Sandy caused massive disruptions to the grid, the city relied on these generators to power important services in the community for 3 weeks. Unlike a new redundant transmission that only would only benefit a small portion of

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[35] For example, a company with local distribution out of Pocatello can sell a range of unconsidered alternatives: http://www.generac.com/industrial/industrial-solutions/municipal#results. The graph provides a range of alternatives based on size of generator. Exhibit 315.

[36] https://www.fema.gov/news-release/2013/06/21/emergency-generators-power-town-after-sandy-comes-ashore. Exhibit 316.

Idaho Power customers during exceptionally rare events (assuming the line itself is powered), these diesel generators can provide numerous benefits across the service territory and increase resiliency in ways that duplicative transmission simply cannot.

IGNORED COMBINATIONS. The analysis of DERs also suffers from the false presumptions that only one source of alternative energy can serve a system at a time and that one source of energy needs to serve the entire load at any given time. These are artificially high standards of performance.

Because of the failure to analyze DERs in combination with each other, the analysis provides incomplete conclusions about DERs' potential to temporarily meet the need during rare outages. For example, a valuable combination that could have been analyzed but was not is some distributed battery storage and some limited amount of local generation. The Company also neglected to analyze the value of other reasonable combinations of distributed resources, including employing existing customer owned and new backup generation and targeted efficiency efforts in the NWRV area.

IGNORED BENEFITS. In the analysis the Company performed, they ignored system benefits that some of the alternatives could provide and just looked at capital costs. The comparison of benefits is necessary to understanding the full scope of options.

Some of the evaluated alternatives, such as battery storage or some amount of emergency generator capacity, could provide

benefits to a larger portion of the public than just residents of the NWRV, who would be the only beneficiaries of the redundant line.

Outages caused by icing, micro-burst winds, fire or avalanche are associated with specific relatively predictable conditions. When a heightened threat of such an outage is predicted, resources like storage could be charged and held ready for backup service. At all other times the storage could be used for purposes like load shifting that provide a benefit to the general Company customer community. Local emergency reserve generation could provide similar benefits to the general Company customer set. The Company's analysis failed to recognize these, or other, benefit streams in its evaluation.

In sum, the combined effect of these five major deficiencies is that the Company produced a record without adequate information upon which to determine whether the proposal is cost-effective, let alone the least cost alternative among the options for providing reliable and adequate service in the NWRV.

Q. Do you think the analysis of distributed energy resource alternatives ought to be redone?

A. Yes. A decision about the best way to provide reliable and adequate service to the NWRV cannot be made until we

have a true understanding of the costs and benefits for alternatives to a redundant transmission line.[37]

The Commission authorized a technical review committee in the recent solar integration case when the parties were having a challenging time seeing eye-to-eye on the technical details and value assessments. The issue of how to create local resilience with reliable service is complex and could benefit from a team of diverse stakeholders following a similar process.

Q. Would you consider such a technical review committee to be duplicative of the CAC process?

A. No, not at all. Sierra Club acknowledges that the Company and WRV citizens spent many hours participating in the CAC process. We further understand that in light of the December 24, 2009 outages, NWRV residents have an understandable concern regarding a reliable power supply. But the results of the CAC process should be put into appropriate context.

The CAC was not composed of members who were experts on the need for additional transmission; CAC members provided expertise on transmission line siting. The CAC process was limited in scope and focused on the details of siting a redundant line, and the

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[37] The Company itself acknowledges that the analysis was conceptual and high-level and insufficient to fully understand the costs and benefits of integrating DERs into the transmission system. Angell, Exhibit 3 at 3 of 56 and 9 of 56.

"need" for the redundant line was presumed as part of that process.

Q. What is your understanding about the CAC's presumption that the redundant line was "needed"?

A. While understandable in the aftermath of the 2004 Eagle case, from the very start of the CAC process members were encouraged to associate "new transmission" as needed for "reliable power". The 2007 Wood River Electrical Plan states, "The first step in developing the proposed solutions to the electrical needs of the Wood River Valley was to develop a Goals Document that could be used to guide the committee's efforts to develop and evaluate alternatives." The first and second of the six goal areas in that document were: (1)"Provide reliable power to the entire Wood River Valley" and (2) "Develop new transmission and delivery infrastructure as appropriate when providing for current and future power needs."[38]

A decade later, this direction by the Company that "redundant transmission is needed" was more clearly outlined in a letter to the CAC dated May 19, 2016. According to Idaho Power's letter:

> More importantly, to truly improve the reliability and the quality of service to the North Valley, a second, independent source for energy, - a second 138 kV transmission line - is required. The second line has been needed and in various stages of planning for approximately 30 years. For various reasons, primary

[38] 2007 Wood River Electrical Plan at 12, Exhibit 317.

> of which is lack of agreement upon siting a new line and the visual impacts of such, Idaho Power has been unable to site and construct this second line into the North Valley.[39]

The CAC's role was not to question the need for the redundant line but to agree on its route. As I stated above, the CAC members were potentially mislead by the assertion that a second 138kV transmission line would provide an "independent source of energy" rather than just providing a redundant method for getting energy from the single source (the WDRI substation) should a situation arise where the existing line would not be available.

Furthermore, statements from the Sun Valley government show that the Company had a pattern of asserting that the redundant line was needed, thus limiting the scope of analysis for NWRV customers. Ms. Tidwell, a party to this proceeding, made the following production request to the Company, which reads in part:

> The Company's Application states at page 11 that "Sun Valley stated that at the regular City Council meeting of September 1, 2016, the council unanimously agreed that the redundant line project was necessary and vital for its community. . ." The Mayor of the City of Sun Valley stated at the referenced meeting that, "It is not a vote, it is an expression of our wishes as far as how they will tackle this project that they are mandated to do to provide us with power. <u>They [Idaho Power] have decided that they need to do this [and]</u>

[39] Youngblood Exhibit 1 at 2.

they are asking us to think about how we want it done."[40]

Thus, it appears that this presumption of need significantly impacted the CAC process and limited the analysis of redundancy alternatives that could also provide reliable service to Sun Valley and the other NWRV residents.

LOCAL V. GENERAL BENEFIT

Q. Can you explain how the Company determined the costs associated with undergrounding a portion of the redundant line and how the Company justifies recovering those costs from all ratepayers?

A. As the Company notes in their Application, underground transmission lines usually cost a significant premium compared to overhead transmission, are more difficult to service, and have a shorter lifespan. The Company also explains that the NWRV community has long had significant concerns over viewshed impacts and that local opposition has been a challenge for moving forward with the proposed redundant line.

The various route options described in the Application presented alternative ways to site the redundant line and compare

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[40] Tidwell Request For Production to Idaho Power Company No. 19, citing City of Sun Valley audio transcript, September 1, 2016 at hour 1:45 (emphasis added). Exhibit 318.

undergrounding costs to a "base case" without undergrounding. However, it is less than clear to me how Idaho Power concludes that it is appropriate to charge all ratepayers for the costs associated with undergrounding. More specifically, it is not clear to me that the lowest cost "base case" was appropriately selected or that the true costs of undergrounding - and how those will be paid - are fully understood at this time.

Q. Given your answer above, what do you suggest in relation to the assessment of local benefits versus the general public interest?

A. As described above, the Sierra Club has real concerns about the presumption that redundancy is a "need" and that alternatives to address reliability were not properly analyzed. Both of these issues call into question the validity of the methodology used to ascertain the appropriate cost allocation between local and general ratepayers. As such, the cost analysis warrants further consideration prior to issuing the requested CPCN.

CONCLUSION

Q. Please summarize your testimony simply.

A. The Company may prefer to build a redundant transmission line (which will most likely go into rate base at some time), but it has not demonstrated its necessity or value to the public interest.

The Company has been pushing for this line for decades, with recent activity ramping up since publishing the 2007 Wood River Valley Electric Plan. Consider that 2007 is the same year the first iPhone came out and note the astounding change mobile internet access has provided in the last decade. The electric utility industry is also facing a period of dramatic technological change. Yet, the Application seeks approval to build a 70 to 80-year asset to accommodate statistically unlikely outages in a region that could benefit from technological advances in distributed energy resources. It is not in the public interest to move forward on this construction project without understanding what reliability requirements would exist with a rebuilt line along the existing route and thoroughly assessing how rapidly improving alternative technologies could compliment NWRV service.

Q. Does this conclude your testimony for now?

A. Yes.

*****

DATED this 5th day of May, 2017.

Respectfully submitted,

Kelsey Jae Nunez

Kelsey Jae Nunez
Attorney for Idaho Sierra Club

CERTIFICATE OF SERVICE

I hereby certify that on the 5th day of May, 2017, I caused to be served true and correct copies of the foregoing document upon:

Original and 9 copies to: Diane M. Hanian Commission Secretary Idaho Public Utilities Commission 472 W. Washington Boise, ID 83702	____ ____ __X__ ____ ____	U.S. Mail, Postage Prepaid Overnight Courier Hand Delivered Via Facsimile E-mail diane.hanian@puc.idaho.gov
Donovan E. Walker Tim Tatum Idaho Power Company PO Box 70 Boise, ID 83707	____ ____ ____ ____ __X__	U.S. Mail, Postage Prepaid Overnight Courier Hand Delivered Via Facsimile E-mail dwalker@idahopower.com dockets@idahopower.com ttatum@idahopower.com
Daphne Huang Camille Christen Deputy Attorneys General Idaho Public Utilities Commission 472 W. Washington (83702) PO Box 83720 Boise, ID 83720	____ ____ ____ ____ __X__	U.S. Mail, Postage Prepaid Overnight Courier Hand Delivered Via Facsimile E-mail daphne.huang@puc.idaho.gov camille.christen@puc.idaho.gov
Peter J. Richardson Richardson Adams, PLLC 515 N. 27th St. PO Box 7218 Boise, ID 83702	____ ____ ____ ____ __X__	U.S. Mail, Postage Prepaid Overnight Courier Hand Delivered Via Facsimile E-mail peter@richardsonadams.com
Kiki Leslie A. Tedwell 300 Let'er Buck Road Hailey, ID 83333	____ ____ ____ ____ __X__	U.S. Mail, Postage Prepaid Overnight Courier Hand Delivered Via Facsimile E-mail ktinsv@cox.net

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Matthew A. Johnson Wm. F. Gigray White Peterson Gigray & Nichols, PA 5700 E. Franklin Rd., Suite 200 Nampa, ID 83687	_____ U.S. Mail, Postage Prepaid _____ Overnight Courier _____ Hand Delivered _____ Via Facsimile __X__ E-mail mjohnson@whitepeterson.com
ComCox, LLC C. Tom Arkoosh ARKOOSH LAW OFFICES 802 West Bannock Street, Suite 900 P.O. Box 2900 Boise, Idaho 83701	____Hand Delivered __X__ U.S. Mail ____Overnight Mail ____FAX __X__ Email tom.arkoosh@arkoosh.com

Kelsey Jae Nunez

Kelsey Jae Nunez
Attorney for Idaho Sierra Club

BEFORE THE
IDAHO PUBLIC UTILITIES COMMISSION

CASE NO. IPC-E-16-28

IDAHO SIERRA CLUB

HECKLER, DI
TESTIMONY

EXHIBIT NO. 301

REQUEST FOR PRODUCTION NO. 37: In Request No. 2(C), Idaho Power was asked to provide a complete list of "experienced sustained outage line events" for the line referred to, which line was identified as "as a single-source radial line" that currently serves the North Valley. The response identifies, inter alia, a 700-minute outage on 12/24/2009. The response to Request No. 13 provides a list of "all recorded outages on the Wood River-Ketchum 138kV line 433 from 1995 to present". The referenced list does not include the 700-minute outage that was included in response to Request No. 2 (C). Please reconcile this apparent discrepancy.

RESPONSE TO REQUEST FOR PRODUCTION NO. 37: The 700-minute outage on December 24, 2009, was a sustained outage of the line due to the loss of electric supply when both transmission lines serving the Wood River substation were out of service due to inclement weather. This 700-minute outage was inadvertently not listed in the Company's response to Kiki Leslie A. Tidwell's Request for Production No. 13.

The response to this Request is sponsored by David Angell, Transmission and Distribution Planning Manager, Idaho Power Company.

BEFORE THE
IDAHO PUBLIC UTILITIES
COMMISSION

CASE NO. IPC-E-16-28

IDAHO SIERRA CLUB

HECKLER, DI
TESTIMONY

EXHIBIT NO. 302

REQUEST NO. 8: The Company's Application, at 16, states that the expected duration of sustained outages will be more than 209 minutes per year with the current transmission configuration. Please provide information on sustained outages occurring over the previous 36 months including duration, likely cause, and number of customers affected.

RESPONSE TO REQUEST NO. 8: The following table provides the requested outage information.

Date	Duration (minutes)	Customers Affected	Likely Cause
6/4/2014	46	20,228	Equipment Failure - Broken Cross-Arms
8/12/2014	126	9,016	Lightning
10/13/2015	465	7,731	Maintenance - Repair Woodpecker Damage

The response to this Request is sponsored by Dave Angell, Customer Operations Planning Manager, Idaho Power Company.

BEFORE THE
IDAHO PUBLIC UTILITIES COMMISSION

CASE NO. IPC-E-16-28

IDAHO SIERRA CLUB

HECKLER, DI
TESTIMONY

EXHIBIT NO. 303

REQUEST FOR PRODUCTION NO. 18: In Order No. 26107, granting Idaho Power's Application to amend Certificate No. 272 to delete the Commission's prior authorization to construct the second transmission line, the Commission stated at pages 1 and 2:

> Regarding reliability, Idaho Power reports that it has thoroughly reviewed the reliability of its electric service to the Ketchum/Sun Valley area. The Wood River/Ketchum 138 kV transmission line, the Company contends, has had an excellent record of reliability since its construction in 1962 (only two unplanned outages in the past 14 years, for a total duration of only three minutes). Nonetheless, the Company states that it has taken a number of steps to further improve the reliability of the line, including the following: structural assessment, electrical assessment, fire protection, avalanche study, conductor assessment, maintenance plan and emergency action plan.

Please provide the following, include work papers, back up documentation, memoranda and all other material related to the preparation of each:

(A) a copy of the thorough review of the reliability of the Company's electric service to the Ketchum/Sun Valley area referred to by the Commission in the above passage;

(B) a copy of the structural assessment;

(C) a copy of the electrical assessment;

D) a copy of the fire protection plan/assessment/review;

(E) a copy of the avalanche study;

(F) a copy of the conductor assessment;

(G) a copy of the maintenance plan; and

(H) a copy of the emergency action plan.

RESPONSE TO REQUEST FOR PRODUCTION NO. 18:

(A) No single document encompasses a "thorough review" as described. Attachments 1-8 provided on the enclosed CD, when taken together, would comprise a "thorough review."

(B) Please see the structural assessment and appendices provided as Attachments 1 and 3 on the enclosed CD.

(C) Please see the electrical assessment provided as Attachment 2 on the enclosed CD.

(D) A fire assessment was never done. Instead, Idaho Power chose to treat all the wood poles on the existing WDRI-KCHM Line 433 with a spray-on product called Fire-Guard from Osmose to protect the poles from wild land fires.

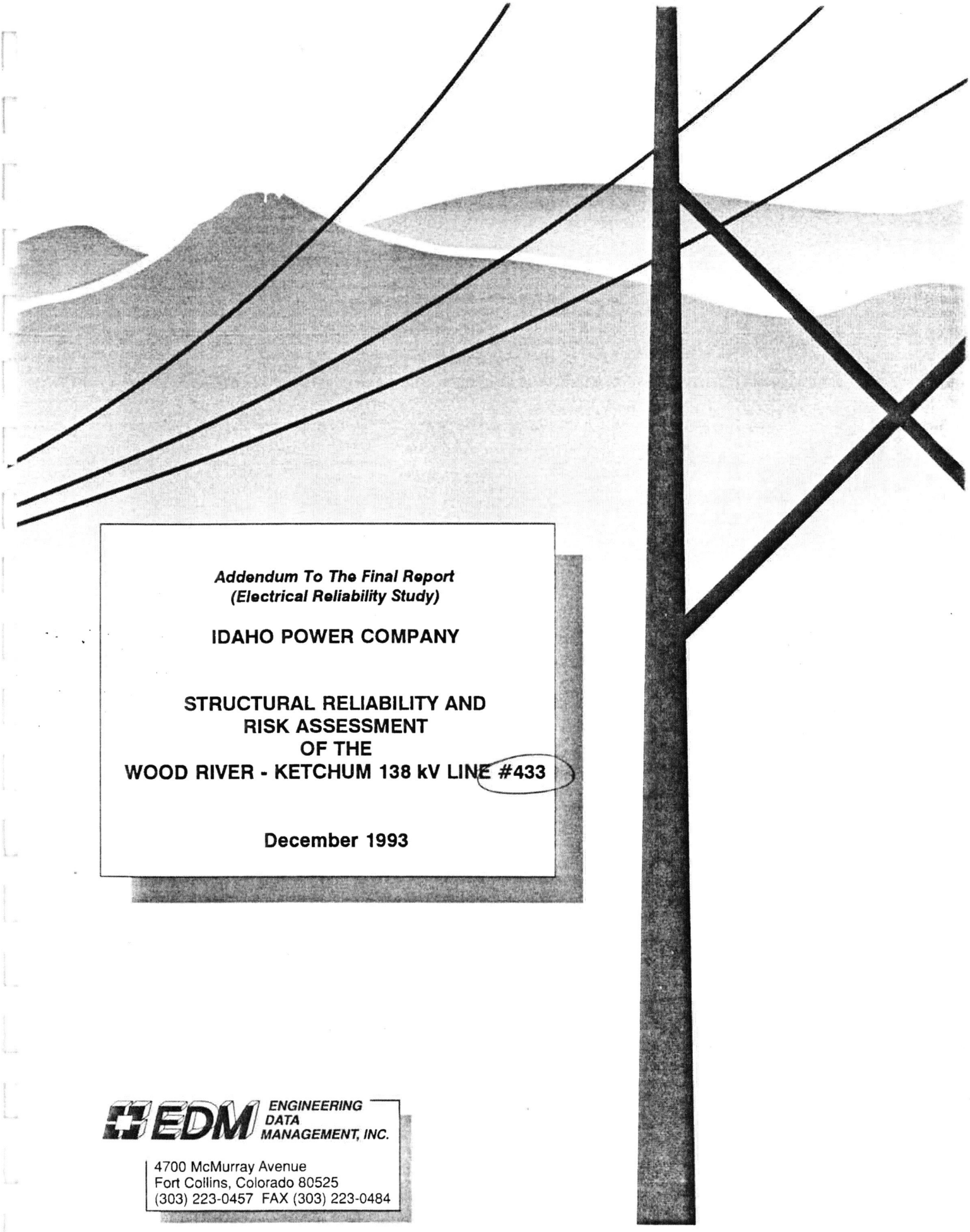
(E) Please see the avalanche study and avalanche maps attached as Attachments 4 and 5 on the enclosed CD.

(F) A conductor assessment study has not been prepared.

(G) The "maintenance plan" as referenced in this Request for Production no longer exists. A verbal historical account of the plan indicates that it reflects the current maintenance plan as described in the Transmission Maintenance and Inspection Plan (TMIP) provided as Attachment 6 on the enclosed CD.

(H) Please see the emergency action plans provided as Attachments 7 and 8 on the enclosed CD.

The response to this Request is sponsored by Tris Yerrington, Transmission Design Leader, Idaho Power Company.



Addendum To The Final Report
(Electrical Reliability Study)

IDAHO POWER COMPANY

STRUCTURAL RELIABILITY AND RISK ASSESSMENT OF THE WOOD RIVER - KETCHUM 138 kV LINE #433

December 1993

EDM ENGINEERING DATA MANAGEMENT, INC.

4700 McMurray Avenue
Fort Collins, Colorado 80525
(303) 223-0457 FAX (303) 223-0484

RELIABILITY AND RISK ASSESSMENT

Electrical Reliability

Idaho Power Company outage records for the Wood River to Ketchum 138kV Transmission Line were examined for the years 1980 through 1993. Only two outages were noted for this period. Of these two outages, one event was caused by weather (heavy snow) and one event by switching operations. No outages during the last 14 years were the result of lightning, an extraordinary record.

As a comparative study, in an effort to establish a baseline level of electrical reliability, outage performance data from the Mid-America Interconnected Network (MAIN) and Mid-Continental Power Pool (MAPP) was obtained. The available MAIN data is for 1986 only and the MAPP data is for 1977 through 1986. A brief summary of the outage rates (per 100 miles per year) for the MAPP and MAIN data follows:

- MAPP
  - Planned Outage Rate 3.80
  - Forced Outage Rate 3.11
  - Total 6.91
- MAIN
  - Planned Outage Rate 4.74
  - Forced Outage Rate 1.42
  - Total 6.16

The Wood River to Ketchum 138kV Transmission Line was also analyzed using EPRI MULTIFLASH software to estimate lightning performance. Table 1 illustrates the results of this analysis for a tangent H-frame structure, with unbonded crossarms, using 65' poles, the predominant structure type and pole height. The actual results are included in the appendix.

Table 1

PREDICTED LIGHTNING OUTAGE RATE
(Flashovers per 100 miles per year)

FOOTING RESISTANCE (1)		UNBONDED CROSSARM (2) KERAUNIC LEVEL (3)		
Resistance	Percentage	10	15	20
25 Ohms	15	2.16	3.2	4.24
50 Ohms	40			
100 Ohms	35			
200 Ohms	5			
400 Ohms	5			

Notes: (1) See Table 2 for measured resistivity.
(2) Backflashes occur across insulator strings and along crossarms to pole grounds.
(3) Thunderstorm days per year.

The following observations can be made by comparing the actual line outage performance to the MAPP and MAIN data, and the predicted lightning outage rates:

- The actual lightning rates are much lower than the predicted values.
- The geography of this particular line may account for the absence of lightning related outages.
- The unbonded crossarm increases the insulating value of the structure limiting the incidence of flashover.

The footing resistances used in the lightning outage performance analysis are from the measured resistivity values in Table 2 and Figure 1. These values illustrate a considerable range of resistances for the soil types encountered along the line.

Conclusion

The outage records speak for themselves. Two outages in the past fourteen years for a total duration of three minutes include one weather related outage, attributed to heavy snow, and one switching outage. The low incidence of lightning in this area combined with the line's proximity to the mountains and relatively good condition of the entire power line give the Wood River to Ketchum 138kV Transmission Line an operating record that is practically unsurpassable.

BEFORE THE
IDAHO PUBLIC UTILITIES COMMISSION

CASE NO. IPC-E-16-28

IDAHO SIERRA CLUB

HECKLER, DI
TESTIMONY

EXHIBIT NO. 304

REQUEST FOR PRODUCTION NO. 13: At page 4 of the Application the Company asserts that, "This line's access limitations may result in extended outages . . . caused by, among other things, vandalism, inclement weather, wood decay, woodpecker damage, avalanche, fire and micro-burst wind events." Please provide the duration, cost of response/repair and the date of each extended outage on this line caused by:

(a) vandalism

(b) inclement weather

(c) wood decay

(d) woodpecker damage

(e) avalanche

(f) fire

(g) micro-burst wind events

Please explain in detail, including itemized costs, and provide copies of all studies and documentation all of the measures the Company has taken to anticipate and prevent the above listed causes of outages on the identified line.

RESPONSE TO REQUEST FOR PRODUCTION NO. 13: The following table (Attachment 1) lists for a through g all recorded outages on the Wood River-Ketchum 138 kV Line 433 from 1995 to present.

Off	On	Duration_ Minutes	Type	Cause	Comments
5/31/1995 3:02:00 PM	5/31/1995 4:46:00 PM	104	Sustained	Maintenance	
6/17/1997 5:53:00 PM	6/17/1997 5:53:00 PM	0	Momentary	Weather	
7/30/1998 6:40:00 PM	7/30/1998 6:44:00 PM	4	Momentary	Weather	
8/14/1998 3:08:00 PM	8/14/1998 3:13:00 PM	5	Momentary	Unknown	
1/1/2004 5:44:00 PM	1/1/2004 5:54:00 PM	10	Sustained	Weather	
10/11/2004 12:04:00 AM	10/11/2004 1:52:00 AM	108	Sustained	Vandalism	
2/18/2005 6:58:00 PM	2/18/2005 7:56:00 PM	58	Sustained	Equipment Failure	
9/27/2011 12:04:00 AM	9/27/2011 5:53:00 AM	349	Sustained	Maintenance	27340452 Str. & Xarm Repair
7/15/2014 4:28:00 PM	7/15/2014 4:28:00 PM	0	Momentary	Equipment Failure	
8/12/2014 5:35:00 PM	8/12/2014 7:41:00 PM	126	Sustained	Weather	
10/13/2015 11:00:00 PM	10/14/2015 6:45:00 AM	465	Sustained	Maintenance	27439191 Woodpecker Repair

Provided as Attachments 2 and 3 on the enclosed CD are the summaries of costs for the two identified work orders, 27340452 and 27439191, respectively.

The response to this Request is sponsored by Tris Yerrington, Transmission Design Leader, Idaho Power Company.

BEFORE THE
IDAHO PUBLIC UTILITIES COMMISSION

CASE NO. IPC-E-16-28

IDAHO SIERRA CLUB

HECKLER, DI
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EXHIBIT NO. 305

REQUEST FOR PRODUCTION NO. 8: The table below lists some outages experienced on the existing WDRI-KCHM 138kV line (data taken from Idaho Power's response to Tidwell's Request for Production No. 13). Please provide the load being served from the Ketchum and Elkhorn substations immediately preceding each outage.

Date	Duration	Cause
5/31/95	104	Maintenance
8/14/98	5	Unknown
1/1/04	10	Weather
10/11/04	108	Maintenance - Vandalism
2/18/05	58	Equipment Failure
9/27/11	342	Maintenance
8/12/14	126	Lightning
10/13/15	465	Maintenance - Woodpecker

RESPONSE TO REQUEST FOR PRODUCTION NO. 8: Load data for the first two outages is unavailable because the Company only maintains data back to 2000. Please refer to the table below for the load data immediately preceding each outage.

Date	Duration	Cause	Ketchum Load	Elkhorn Load
5/31/95	104	Maintenance	Unavailable	Unavailable
8/14/98	5	Unknown	Unavailable	Unavailable
1/1/04	10	Weather	33.1 MW	7.4 MW
10/11/04	108	Maintenance - Vandalism	10.8 MW	3.1 MW
2/18/05	58	Equipment Failure	28.5 MW	6.7 MW
9/27/11	342	Maintenance	9.5 MW	2.0 MW
8/12/14	126	Lightning	16.3 MW	5.3 MW
10/13/15	465	Maintenance - Woodpecker	10.6 MW	4.0 MW

The response to this Request is sponsored by David Angell, Transmission and Distribution Planning Manager, Idaho Power Company.

BEFORE THE
IDAHO PUBLIC UTILITIES COMMISSION

CASE NO. IPC-E-16-28

IDAHO SIERRA CLUB

HECKLER, DI
TESTIMONY

EXHIBIT NO. 306

REQUEST FOR PRODUCTION NO. 2: The Application states that reconstruction of the existing line will involve replacing the existing wood structures with steel structures in approximately the same locations. Application at 17. Could replacing the existing wood structures with steel structures provide greater resiliency to outages caused by avalanche, ice loads, fire or micro-burst winds? Please explain.

RESPONSE TO REQUEST FOR PRODUCTION NO. 2: Simply replacing the existing wood structures with steel structures does not ensure they will have a higher structural capacity. There are steel poles available that have lower strength than some wood poles that are common and readily available. The existing wood poles' structural capacity has degraded over time as they have aged. The existing wood structures on the Wood River-Ketchum line do not have the same capacity they had at the time the line was built in 1962. The National Electric Safety Code ("NESC") allows for and takes into account this wood degradation in establishment of its strength criteria. If the existing conductor is replaced during the reconstruction, the new structures would need to have a higher strength capacity in order to meet the NESC requirements generated by the larger and heavier conductor. If the existing conductor is not replaced, it is possible and likely that the proposed steel structures would still have a higher structural capacity than the existing wood structures. Additionally, Idaho Power would take into account known threats to the line, such as conductor icing and avalanche, during the design process of the reconstruction. This would further increase the structural capacity of some of the new structures beyond those of the existing line.

Steel structures would eliminate the threat of two of the hazards experienced by the existing line. Those two threats are structure damage from wildfire and

woodpeckers. Neither of these threats would affect the new steel replacement structures. The new steel replacement structures could be designed to mitigate the threat from weather events such as avalanche, micro-burst wind, and ice loading but these threats cannot be eliminated. In particular, because of the extreme nature and unpredictability of avalanches, it is impossible to design structures that are entirely avalanche resistant. Threat from micro-burst winds and extreme icing events can also be mitigated but not completely eliminated. Idaho Power engineering will use its experience and knowledge to minimize the threats to the reconstructed line to the extent practical. The reconstructed line would be more resilient to the threats outlined above, but there would still be significant risk without a second transmission source to the Ketchum substation.

The response to this Request is sponsored by Ryan Adelman, Transmission and Distribution Manager, Idaho Power Company.

BEFORE THE
IDAHO PUBLIC UTILITIES COMMISSION

CASE NO. IPC-E-16-28

IDAHO SIERRA CLUB

HECKLER, DI
TESTIMONY

EXHIBIT NO. 307

REQUEST FOR PRODUCTION NO. 51: Please explain the apparent inconsistency of sourcing redundant transmission lines from a single common substation. Please also explain the apparent inconsistency of siting redundant transmission lines along a parallel path from the Wood River Substation to just north of the golf club. Please explain and document the added reliability the use of a common substation and parallel paths (from the WRS to the golf club) provides the North Valley.

RESPONSE TO REQUEST FOR PRODUCTION NO. 51: The industry-expected outage frequency for a transmission substation can range from once in eight to once in 15 years, depending on the configuration. The industry-expected outage frequency for a 138 kilovolt ("kV") transmission line is once in two years. The construction of a redundant transmission line changes the outage frequency to once in 3000 years. Idaho Power has proposed the new transmission line in a separate corridor and reconfigured the existing transmission line route to avoid one line crossing the other. This proposal maintains separation between the two lines for all but a short section. The short section within a common corridor increases the expected outage frequency; however, it is expected to occur less frequently than a substation outage. Table 1 contains the outage frequency expressed in Mean Time Between Failures as computed by the General Reliability SUBREL computer program.

Table 1. Substation and Transmission Line Outage Frequencies

Configuration	4 Breakers - Single Bus	4 Breakers - Ring Bus	Single Line	Two Lines
Mean Time Between Failures (years)	7.9	15.4	2.3	3003

The response to this Request is sponsored by David Angell, Transmission and Distribution Planning Manager, Idaho Power Company.

BEFORE THE
IDAHO PUBLIC UTILITIES COMMISSION

CASE NO. IPC-E-16-28

IDAHO SIERRA CLUB

HECKLER, DI
TESTIMONY

EXHIBIT NO. 308

In addition to the written copies provided as response to the questions, please provide all Excel and electronic files on CD with formulas activated.

REQUEST NO. 13: Please provide cost estimates for the Company's proposed line route across Dollar Mountain as described on page 19 of the Company's Application. Please include electronic workpapers with all formulas and links intact.

REQUEST NO. 14: On page 19 of its Application, the Company explains that the overhead transmission line route through the Ketchum Downtown District would depend upon the condemnation of private property. Please provide the Company's estimates of condemnation costs of the Overhead Transmission line route through the Ketchum Downtown District.

REQUEST NO. 15: On page 19 of its Application, the Company explains that the line route across Dollar Mountain may require condemnation of private property. Please provide the Company's estimates of condemnation costs for the line route across Dollar Mountain.

REQUEST NO. 16: In case no. IPC-E-95-6, the Company requested that the Commission amend CPCN No. 272 to delete its authorization to construct a new 138 kV transmission line from the Wood River substation to the Ketchum substation. In its Application, the Company stated that it had conducted an extensive reassessment of the feasibility and need for an additional 138 kV transmission, and had concluded that a redundant line was not necessary. The Company stated that its reassessment included structural, electrical, fire protection, and avalanche considerations. The Company also stated that its actual 1994-1995 winter peak load was 55.5 MW, and that this was well below the system's summer capacity limit. For the five year period from 2012 through 2016, system peak has averaged 57.9 MW, or a 4.3% increase over the 1994-1995 winter peak load. Please answer the following questions:

a) What new information has caused the Company to determine that a redundant 138 kV transmission line is now needed?

b) Please provide the results of any structural, electrical, fire protection, and avalanche risks assessments that the Company has used to determine the need for a redundant line.

BEFORE THE
IDAHO PUBLIC UTILITIES COMMISSION

CASE NO. IPC-E-16-28

IDAHO SIERRA CLUB

HECKLER, DI
TESTIMONY

EXHIBIT NO. 309

REQUEST FOR PRODUCTION NO. 7: The Company's Application at page 4 states that the North Valley peak demand reached 63 megawatts in 2007. Please provide documentation of the referenced peak demand. Also for the time of the North Valley peak demand in 2007 please separately identify the peak demand at the Ketchum Substation and the Sun Valley Substation. Please, for each year from 1973 forward, identify the North Valley peak demand and the peak demand for the Ketchum Substation and the Sun Valley Substation at the time of the North Valley peak demand for each year. Please also identify the peak demand and time of the peak demand for the Ketchum substation and the Sun Valley substation for each year since 1973.

RESPONSE TO REQUEST FOR PRODUCTION NO. 7: The peak coincident demand for the North Valley is the sum of the Elkhorn and Ketchum substation transformer coincident demands as acquired by the substations supervisory control and data acquisition (SCADA) system, which are stored in a OSIsoft Process Information ("PI") data historian. The PI historian maintains data back to 2000. Please refer to Table 7.1 below for the date and time of the coincident North Valley peak demand and Table 7.2 below for the peak demand of each substation.

Table 7.1

Coincident Peak of North Valley				
Year	**North Valley Peak (MW)**	**EKHN (MW)**	**KCHM (MW)**	**Date and Time**
Winter 00-01	52.5	9.1	43.4	1/16/01 8:30 AM
Winter 01-02	51.2	8.7	42.5	12/12/01 8:25 AM
Winter 02-03	54.9	9.6	45.3	12/24/02 9:05 AM
Winter 03-04	54.9	9.4	45.5	12/28/03 5:45 PM
Winter 04-05	56.3	11.2	45.1	12/23/04 9:20 AM
Winter 05-06	55.9	12.2	43.7	12/8/05 8:50 AM
Winter 06-07	60.6	12.8	47.8	1/13/07 9:20 AM
Winter 07-08	63.8	14.3	49.5	12/31/07 6:45 PM
Winter 08-09	59.2	12.9	46.3	12/24/08 10:00 AM
Winter 09-10	57.9	11.9	46.0	12/31/09 10:30 AM

Winter 10-11	62.0	12.9	49.1	12/31/10 9:50 AM
Winter 11-12	55.5	10.8	44.6	12/23/11 9:25 AM
Winter 12-13	59.5	13.3	46.2	1/14/13 8:55 AM
Winter 13-14	54.0	11.3	42.7	12/29/13 9:30 AM
Winter 14-15	59.7	13.7	46.0	12/31/14 6:20 PM
Winter 15-16	60.8	14.1	46.7	12/31/15 6:10 PM

Table 7.2

Non-Coincident Peaks For Ketchum and Elkhorn Substations				
Year	**KCHM Peak (MW)**	**Date and Time**	**EKHN Peak (MW)**	**Date and Time**
Winter 00-01	43.5	1/16/01 8:35 AM	9.7	12/28/00 6:15 PM
Winter 01-02	42.5	12/12/01 8:30 AM	9.9	12/29/01 7:00 PM
Winter 02-03	45.4	12/24/02 9:00 AM	9.6	12/24/02 9:00 AM
Winter 03-04	46.1	12/28/03 10:15 AM	9.8	12/28/03 6:55 PM
Winter 04-05	45.1	12/23/04 9:25 AM	12.0	12/23/04 7:00 PM
Winter 05-06	46.1	12/18/05 9:25 AM	12.2	12/8/05 8:55 AM
Winter 06-07	47.8	1/13/07 9:20 AM	13.3	1/15/07 9:00 AM
Winter 07-08	50.4	12/27/07 9:35 AM	14.3	12/31/07 6:55 PM
Winter 08-09	46.3	12/24/08 9:40 AM	13.3	12/27/08 6:55 PM
Winter 09-10	46.0	12/31/09 10:30 AM	14.2	12/25/09 5:00 PM
Winter 10-11	49.2	12/31/10 10:05 AM	14.3	12/31/10 6:55 PM
Winter 11-12	44.6	12/23/11 9:25 AM	12.3	12/31/11 6:30 PM
Winter 12-13	46.2	1/14/13 8:55 AM	13.5	12/31/12 6:15 PM
Winter 13-14	42.7	12/29/13 9:20 AM	11.7	12/29/13 6:30 PM
Winter 14-15	46.9	12/31/14 9:45 AM	13.7	12/31/14 6:20 PM
Winter 15-16	46.8	12/31/15 6:05 PM	14.3	12/31/15 6:25 PM

The response to this Request is sponsored by David Angell, Customer Operations Planning Manager, Idaho Power Company.

BEFORE THE
IDAHO PUBLIC UTILITIES COMMISSION

CASE NO. IPC-E-16-28

IDAHO SIERRA CLUB

HECKLER, DI
TESTIMONY

EXHIBIT NO. 310

REQUEST FOR PRODUCTION NO. 18: In its Request For Production No. 16, Commission Staff references that the Company stated its actual 1994-95 winter peak load was 55.5 MW. In response to Tidwell's Request for Production No. 7, the Company provided winter peak load information in Table 7.1, noting that the data source (PI historian) maintains data back to 2000. If it is possible, please provide, in a format similar to Table 7.1, the winter Coincident Peak for the North Valley during the winters from 1994-95 through 1999-00, including as many of the following data sets as are available: the total North Valley Peak (MW), the EKHN (MW) and KCHM (MW) substation loads at the time of the peak, and the date and time the peak was experienced.

Even if the data from the 1990s is limited in availability, please provide the full Table 7.1 list of data for the Winter 2016-17.

RESPONSE TO REQUEST FOR PRODUCTION NO. 18: The Company does not maintain coincident peak data before the year 2000. Please refer to Table 18.1 below for the date and time of the coincident North Valley peak demand for Winter 2016-17.

Table 18.1

Coincident Peak of North Valley				
Year	**North Valley Peak (MW)**	**EKHN (MW)**	**KCHM (MW)**	**Date and Time**
Winter 2016-17	55.8	11.9	43.9	12/31/15 6:10 PM

The response to this Request is sponsored by David Angell, Transmission and Distribution Planning Manager, Idaho Power Company.

BEFORE THE
IDAHO PUBLIC UTILITIES COMMISSION

CASE NO. IPC-E-16-28

IDAHO SIERRA CLUB

HECKLER, DI
TESTIMONY

EXHIBIT NO. 311

City of Ketchum
Planning & Building

March 10, 2015

Mayor Jonas and City Councilors
City of Ketchum
Ketchum, Idaho

Mayor Jonas and City Councilors:

Resolution No. 15-012, Regarding Establishment of Energy Conservation Goals for the City of Ketchum

Introduction/History
Since 2007, the City of Ketchum has been working towards achieving a reduction in energy used by the municipal government as well as the community as a whole. In 2007, the City of Ketchum City Council approved a climate protection resolution and general guidelines to address municipal energy costs and carbon emissions (i.e. greenhouse gas emissions). In addition, the City committed to reduce municipal emissions by joining the Cities for Climate Protection Campaign (CCP), a program of the International Council for Local Environmental Initiatives (ICLEI). The City also participated in a county-wide carbon emissions analysis by ICLEI.

Since then, the City has enacted a green building code in 2011 and the 2009 and, subsequently, the 2012 International Energy Conservation Codes. These have served to reduce energy consumption in new construction and additions. In 2010, the City also undertook a lighting retrofit of City buildings with a grant from Idaho Power.

With the creation of the Ketchum Energy Advisory Committee (KEAC) in February 2014, the City began to look at more ambitious ways to reduce energy consumption and support the use of renewable energy technologies. One project resulting from KEAC's endeavors is the soon to be installed photovoltaic system destined for the Ore Wagon Museum roof. In addition, KEAC and the City have received a 2014 National Renewable Energy Lab grant to learn more about barriers and solutions to solar energy installation and a Rocky Mountain Institute (RMI) award to attend the RMI E-Lab Accelerator workshop in Sundance Utah in late March 2015.

Current Report
As part of the City's commitment to reduce energy consumption and increase use of renewable energy technologies, KEAC has produced a list of energy conservation goals (Exhibit A of the attached Resolution No. 15-012.).

Financial Requirement/Impact
While undertaking some energy conservation and renewable energy installation measures may have an upfront costs, those costs will be recouped in reduced energy use fees over time. Conservation measures tend to have the most immediate rate of return (often on the order of just a few years), while the cost of installation of renewable energy systems may take much longer to recoup. However, the environmental cost of our energy consumption and use of carbon fuels should be taken into account alongside the monetary costs.

Recommendation
Staff respectfully recommends that the City Council approve the attached resolution establishing energy conservation goals for the City of Ketchum.

Recommended Motion
"I move to approve Resolution No. 15-012, establishing Ketchum's energy conservation goals."

Sincerely,

Rebecca Bundy
Senior Planner / Building and Development Manager

ATTACHMENTS:

A. Resolution 15-012, A Resolution of the City of Ketchum, Idaho, Establishing Energy Conservation Goals for the City of Ketchum, Idaho

Attachment A:
Resolution 15-012:
A Resolution of the City of Ketchum, Idaho, Establishing Energy Conservation Goals for the City of Ketchum, Idaho

RESOLUTION NUMBER 15-012

A RESOLUTION OF THE CITY OF KETCHUM, IDAHO, ESTABLISHING ENERGY CONERVATION GOALS FOR THE CITY OF KETCHUM, IDAHO.

BE IT RESOLVED BY THE MAYOR AND CITY COUNCIL OF THE CITY OF KETCHUM, IDAHO:

WHEREAS, the City of Ketchum recognizes the environmental and monetary costs of continued overconsumption of energy, including fossil fuels, and seeks to increase its energy resiliency and security;

WHEREAS, there are risks to reliable energy sources for Ketchum due to fires, earthquakes, snow slides, storms, sabotage and accidents;

WHEREAS, there are risks to the Ketchum economy resulting from increased power, and natural gas prices;

WHEREAS, the Wood River Valley spends up to $80 million on gas and electricity annually which is now supporting companies outside the region and the State of Idaho;

WHEREAS, Idaho Power Company is promoting polices and actions that undermine renewable energy projects thus creating a greater reliance on fossil fuel energy;

WHEREAS, the current energy utilization and systems to support consumption, is contributing to climate change impacts such as wildfires, drought, unpredictable weather, and water shortages;

WHEREAS, the City of Ketchum has striven to be a leader in energy conservation practices and to that end has appointed the Ketchum Energy Advisory Committee (KEAC) to research and advise on energy conservation and renewable energy opportunities; and

WHEREAS, KEAC has made energy conservation goals, as described in Exhibit A, to help guide the City towards energy resiliency and security;

NOW THEREFORE, be it resolved by the City Council and Mayor of the City of Ketchum, Idaho, as follows:

The City of Ketchum shall adopt energy efficiency goals as outlined in attached Exhibit A: City of Ketchum Energy Conservation Goals, March 2015.

This resolution shall be in full force and effect after its passage, approval, and publication according to law.

PASSED by the Ketchum City Council and APPROVED by the Mayor this ____day of _____, 2015.

_____
Nina Jonas
Mayor

ATTEST:

_____
SANDRA CADY
Ketchum City Clerk

Exhibit A:

City of Ketchum Energy Conservation Goals,
March 2015

Overall Energy Conservation Stretch Goals by 2030:

- Achieve a 50% per Capita Reduction in Energy Use within the Ketchum community
  - Green Building Codes
  - Education
  - Incentives
  - Smart Systems
- Achieve a 75% Reduction of Energy Use within City Operations
  - Retrofit Lighting and Mechanical Equipment
  - New Buildings to be Net Zero Energy
  - Conservation Education
- Achieve 100% Renewable Energy Use for City Operations
  - Buying Renewable Energy Offsets
  - Installation of Renewable Energy Systems
  - Local Power Generation
- Achieve 50% Local Renewable Energy Generation for Ketchum Community
  - Solar Farm
  - Roof Top Solar
  - Micro-grid
  - Wind Farm
- Achieve 100% Green House Gas Reduction for City Operations while Maintaining High Level of Customer Service
  - Energy Generation
  - Alternative Mobility
  - Buildings LEED Gold Equivalent
  - Operational Change Incentives
- Achieve 75% Green House Gas Reduction within Ketchum community
  - Increase Bike/Pedestrian Activity - Measured by vehicle miles traveled, Blaine County Recreation District (BCRD) usage numbers
  - Increase Transit Ridership - measured by Mountain Rides numbers
  - Create a More Walkable Community
  - *see* Energy Reduction Goals
  - Work with School District to Increase Student Ridership

Assumptions:

Goal year: 2030

Baseline data:

- ICLEI data from 2007:
  - City of Ketchum, Climate Protection Campaign, Carbon Emissions Baseline Inventory, Municipal Analysis, 2004, 2007
  - Blaine County Community Carbon Emissions Data, 2007
- Other as obtained from Idaho Power, Intermountain Gas, propane distributers, Mountain Rides, BCRD, greenhouse gas calculation websites, etc.

Area / Who: City of Ketchum Operations and Ketchum Community (manage what we have control over)

Definitions:

- Energy = electricity, natural gas, propane, wood
- Renewable = solar, wind, geothermal, biomass, hydrogen
- Local = 100 mile radius

BEFORE THE
IDAHO PUBLIC UTILITIES COMMISSION

CASE NO. IPC-E-16-28

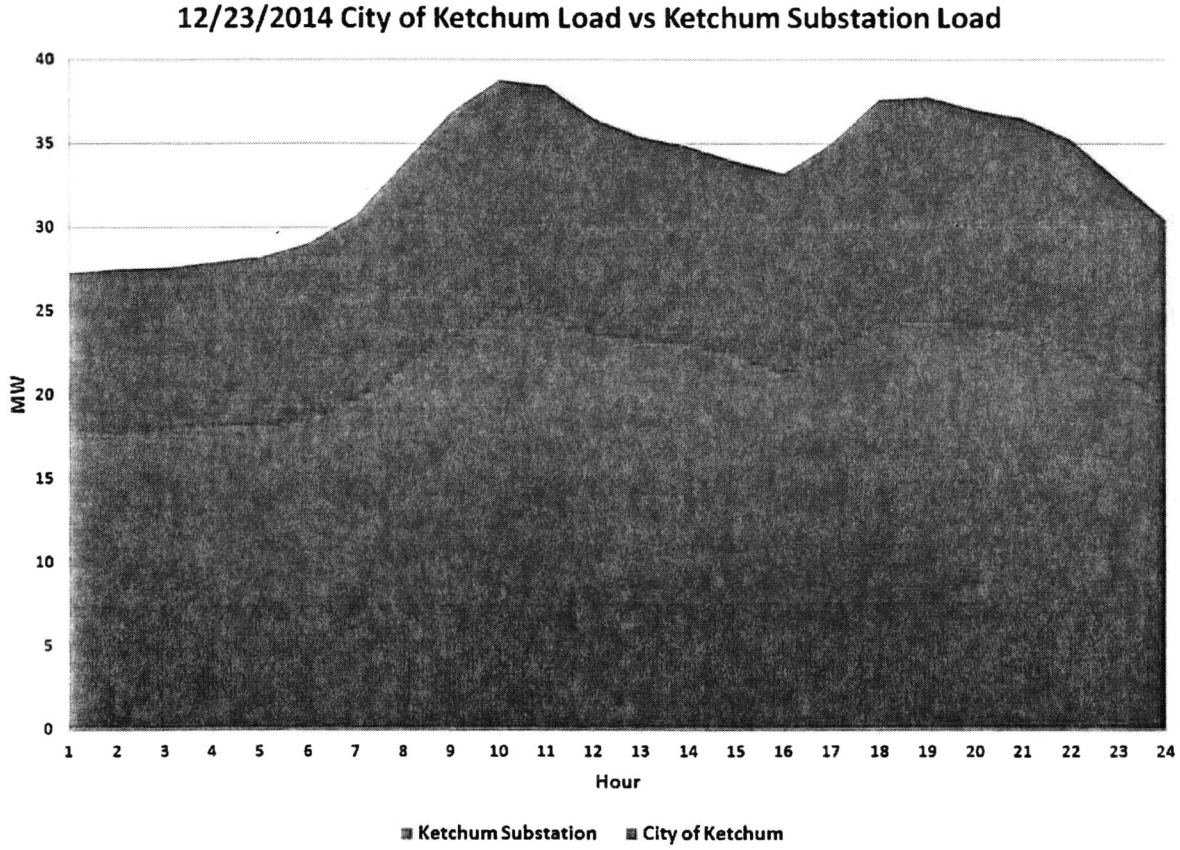
IDAHO SIERRA CLUB

HECKLER, DI
TESTIMONY

EXHIBIT NO. 312

REQUEST FOR PRODUCTION NO. 13: In *Figure 2* of *Appendix C* of the *Northern Wood River Valley - Local Backup Electrical Supply Report* (the *City of Ketchum Solar Generation Assessment*), the Company shows the City of Ketchum load on December 23, 2014. Please provide a figure, in similar format, showing both City of Ketchum load and total Ketchum substation load for that same day.

RESPONSE TO REQUEST FOR PRODUCTION NO. 13: The figure below shows the total load at the Ketchum substation and the total load in the City of Ketchum on December 23, 2014.



The response to this Request is sponsored by David Angell, Transmission and Distribution Planning Manager, Idaho Power Company.

BEFORE THE
IDAHO PUBLIC UTILITIES COMMISSION

CASE NO. IPC-E-16-28

IDAHO SIERRA CLUB

HECKLER, DI
TESTIMONY

EXHIBIT NO. 313

THE SPOKESMAN-REVIEW

BUSINESS

Knowledge gained as power conserved

Sun., April 9, 2017, 7:17 a.m.

By Elaine Williams
Lewiston Tribune

A volunteer group of Pullman Avista customers saw their power consumption decline by 9.3 percent after they were given high-tech thermostats.

The devices were distributed as part of a smart grid project where Avista deployed a number of cutting-edge technologies and gathered data to see if their performance merited putting them into broader use.

Overall, the upgrades are saving 43,000 megawatt hours per year in Pullman and Spokane, not counting the conservation by the Pullman thermostat users.

"We exceeded our goal," said Curtis Kirkeby, an engineer at Avista. "We did our normal utility business case. It met that criteria."

Kirkeby declined to share dollars saved versus those that were spent, but he said that generally Avista looks at the rate of return on investments over 20 years.

And in this instance, Avista didn't assign a value to the 2.5 million customer outage minutes that were avoided from August of 2012 through September of 2016. That was because the benefit came through equipment that had other advantages, such as reducing consumption.

The research completed by Avista was one part of the Pacific Northwest Smart Grid Demonstration Project. A federal grant of $178 million was split among 11 utilities in Idaho, Washington, Montana, Oregon and Wyoming.

Each grant recipient tested emerging technologies to see how well they made strides in conservation and reliability at a reasonable price. The data was documented and shared nationally.

Elements of the smart grid that Avista introduced have been put into broader use and as the utility moves forward, it will consider what it learned anytime it makes a major decision about infrastructure, Kirkeby said.

In the case of the thermostats which are connected to wireless internet, Avista is encouraging residential customers anywhere in its Idaho and Washington territory to buy them by offering rebates of as much as $100. The retail price runs anywhere from $100 to $300 and installation costs vary.

The thermostats allowed 75 Pullman families during the project to adjust the temperatures in their homes using smartphones, which could be done even if they weren't on the premises.

They also provided information about daily usage patterns and enabled users to see what their estimated monthly bill would be at any time.

Almost as surprising was what happened when Avista activated another feature of the thermostats, one that allowed the utility to adjust the temperature in private residences up or down by two degrees on days where extreme hot or cold taxed the utility's power resources.

Avista had high acceptance from the participants – who had the option of rejecting the thermostat changes – but the utility found other smart grid measures showed more promise.

One is invisible to customers. Voltage in wall outlets was diminished by two volts, something that was possible because the improvements Avista made ensured a constant flow of power in the lower range without diminishing the performance of appliances like toasters. That technology also helped prevent outages.

Another strategy that succeeded involved closer cooperation with Washington State University. Avista now has a protocol where it can request power from the school's generating facilities, which are powered with natural gas and diesel.

It can also have the school reduce its demand through minor changes in how it operates its heating and cooling system for classrooms, conference rooms, offices and hallways, but not more sensitive areas such as laboratories or dormitories.

Even though the smart grid project is technically over, Avista continues to examine innovations, Kirkeby said.

"Everything is on a road map where we have customers gain value from what we do and participate in what we do."

PUBLISHED: APRIL 9, 2017, 7:17 A.M.
Tags: Avista, electricity, energy, Pullman, smart grid, thermostats

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BEFORE THE
IDAHO PUBLIC UTILITIES COMMISSION

CASE NO. IPC-E-16-28

IDAHO SIERRA CLUB

HECKLER, DI
TESTIMONY

EXHIBIT NO. 314

REQUEST FOR PRODUCTION NO. 1: The Application states that the existing 138 kV radial transmission line in the North Valley will require reconstruction and that such reconstruction "is required whether or not a redundant transmission line is constructed." Application at 16. Please provide the Company's estimate for the costs of reconstructing the existing line, as well as the Company's plan for recovering those costs.

RESPONSE TO REQUEST FOR PRODUCTION NO. 1: No design work has been performed on the reconstruction of the existing transmission line, nor have any detailed cost estimates been developed for the reconstruction of the existing Wood River-Ketchum 138 kilovolt ("kV") transmission line. Also, the degree of reconstruction for the existing line has not been fully scoped. However, two preliminary cost estimates have been prepared, assuming the project would require a complete line rebuild (conductor and structure replacement). Those two preliminary cost estimates and the nature of the projects are described in the attached document. In addition, the document talks about a third method to accomplish the rebuild by doing the work on an energized line. This third "hot" method is not estimated and the reasons for this are explained in the document.

While the Company has not developed a specific plan for recovering costs associated with reconstruction of the existing line, at this time, it is anticipated that these costs will be recorded to electric plant-in-service in the same manner as other capital projects for inclusion in a future rate filing. However, if incremental costs are incurred related to non-standard construction (e.g., building a temporary line to accommodate line reconstruction due to local opposition to permanent redundant service), the

Company may consider directly assigning these costs to the local jurisdictions responsible for the incurrence of these costs.

The response to this Request is sponsored by David Angell, Transmission and Distribution Planning Manager, Idaho Power Company, and Tim Tatum, Vice President of Regulatory Affairs, Idaho Power Company.

BEFORE THE

IDAHO PUBLIC UTILITIES COMMISSION

CASE NO. IPC-E-16-28

IDAHO POWER COMPANY

RESPONSE TO IDAHO SIERRA CLUB'S REQUEST FOR PRODUCTION NO. 1

Wood River – Ketchum 138kV Line 433: Rebuild Options for Existing Transmission Line

Three construction scenarios have been identified that would allow the existing Wood River – Ketchum 138kV transmission line to be rebuilt. Preliminary costs of these three options have been developed and are shown below, along with assumptions that were made for each scenario. The three scenarios are listed in order of cost, from least to most.

Option 1 - BASE: This option involves the replacement all of the existing wood, H-frame structures on the existing H-frame line with similar, steel H-frame structures along the current alignment, in approximately the same locations. The entire 12.6 mile route would be re-conductored with 397.5 ACSR Ibis conductor. This option assumes that the existing line can be taken out of service for long periods (6 months May – October) and that the existing load at Ketchum and Elkhorn substations will be supplied from a separate source. This separate source is presumed to be either a second 138kV source from Wood River to Ketchum substation or a 138kV source from Wood River to a new distribution station located south of the Wood River Medical Center. The estimate for this option assumes the use of existing right-of-way with no new acquisition necessary. This estimate does not include any new access road work, landscaping repair or traffic control. It does include the cost for removal and disposal of existing structures and conductor.

Estimated Cost: $6.2 million (includes 15% general overhead and 8% AFUDC)

Option 2 – Shoo-fly: This option involves the replacement all of the existing wood, H-frame structures on the existing H-frame line with similar, steel H-frame structures along the current alignment, in approximately the same locations. The entire 12.6 mile route would be re-conductored with 397.5 ACSR Ibis conductor. This option assumes that the existing line can be taken out of service for long periods (6 months from May – October) and that the existing load at Ketchum and Elkhorn substations will be supplied from a temporary shoo-fly line to be built from Wood River Sub to Ketchum Sub along a route that roughly follows Highway 75. The temporary shoo-fly will only be in place while the existing line is rebuilt and will be removed after the rebuild is complete. The shoo-fly would consist of single, wood-pole structures with horizontal post insulators and would have 300 foot typical span lengths. After, the existing line is rebuilt, the shoo-fly would removed and the majority of materials (poles and insulators) would be salvaged. The conductor used for the shoo-fly would be scrapped. The estimate for the rebuild of the existing line assumes the use of existing right-of-way with only a small amount of temporary ROW acquisition necessary for the shoo-fly. This estimate does not include any new access road work or landscaping repair. It does include traffic control for the shoo-fly work. It does include the cost for removal and disposal of existing structures and conductor on the existing WDRI-KCHM 138kV line.

Estimated Cost: $9.4 million (includes 15% general overhead and 8% AFUDC)

Option 3 – Hot Work & Outages: This option involves the replacement all of the existing wood, H-frame structures on the existing H-frame line with similar, steel H-frame structures along the current alignment, in approximately the same locations. This option assumes that the existing line cannot be taken out of service for long periods and must remain in service as much as possible to serve the load at Ketchum and Elkhorn Substations. It is not feasible to replace the energized conductors without an extended outage, so the existing 4/0 ACSR conductor on the entire 12.6 mile route would remain in place and would be transferred to the new structures under this option. Since no long-term line outage will be available under this option, as much structure replacement work as possible will be done with the line energized. In order to replace the H-frame structures with the line energized, unrestricted, level access to both sides of the structure must be available (approximately 50 feet of clear space on each side). This clear space is necessary to position large cranes and bucket trucks on each side of the existing structure to lift, spread and support the existing energized-phase conductors away from the immediate vicinity of the structure using insulated equipment. If either or both sides of the structure are restricted by residential development, vegetation or steep terrain, then the structure could not safely be replaced using "energized methods" and an outage would be necessary. Each of the structures was evaluated using aerial photos and topographic maps to determine if adequate access was available. It was determined that approximately 34% of the structures (35-40 total) were candidates for being changed out with the line energized. Approximately 50% of the structures (50-60 total) on the existing line would require outages to replace the structures and about 16% (20 structures) of the structures in the vicinity of The Valley Club are a newer vintage and would not need to be replaced. In order to replace the 50 to 60 structures that require outages, it is preliminarily estimated that it would require 20-25 individual 8-hour outages, if two crews were assigned the work. It follows, that this number could be reduced to 10 to 13 individual 8-hour outages if four crews were mobilized to work the outages. Given the large number of customers and businesses that would be adversely affected by this number of outages, this option would have much larger societal impacts than Option 1 or 2. Option 3 also has much greater environmental impacts because of the large, level equipment pads that must be built around the structures that would be replaced "hot". Option 3 also has inherent worker safety issues that result from working on energized conductors. This increased safety risk is impossible to quantify. Also, Option 3 does not replace the transmission conductor, so it doesn't resolve all of the issues of reliability and aging infrastructure that are the goal of this project. Because Option 3 comes at a higher construction, societal, safety and environment cost than either Option 1 or 2, and because it produces less long-term benefit, it has been determined that this option is not practical or feasible and will not be pursued further.

Estimated Cost: Not determined because of difficulty quantifying construction, societal, safety and environmental costs.

BEFORE THE
IDAHO PUBLIC UTILITIES COMMISSION

CASE NO. IPC-E-16-28

IDAHO SIERRA CLUB

HECKLER, DI
TESTIMONY

EXHIBIT NO. 315

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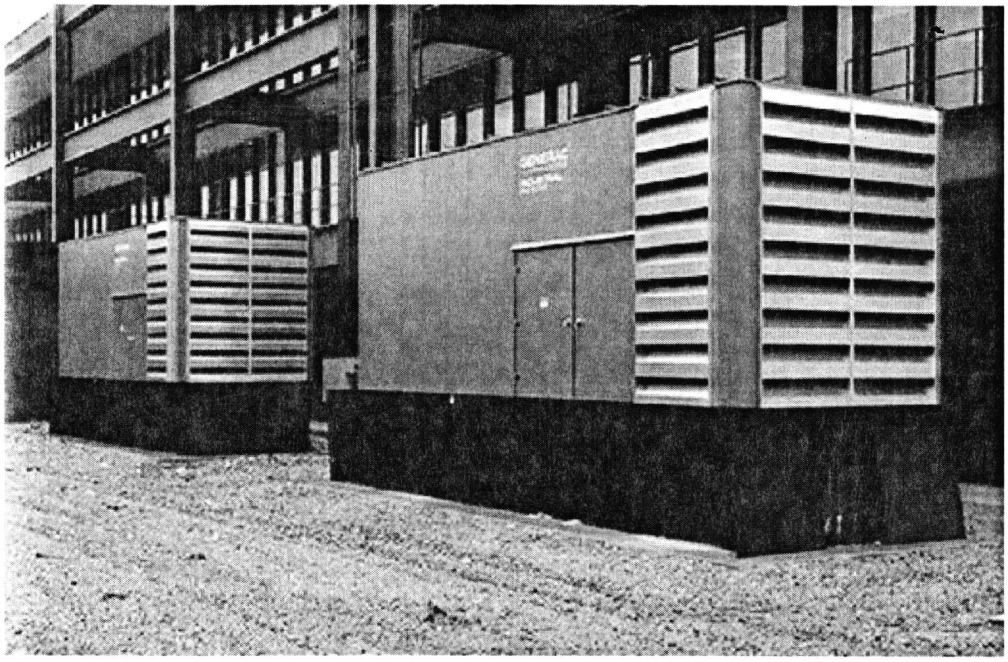
GENERAC | INDUSTRIAL POWER

EMERGENCY POWER FOR MUNICIPALITIES

GENERAC INDUSTRIAL POWER HELPS MUNICIPALITIES RISE TO THE CHALLENGES OF SERVING AND PROTECTING COMMUNITY MEMBERS



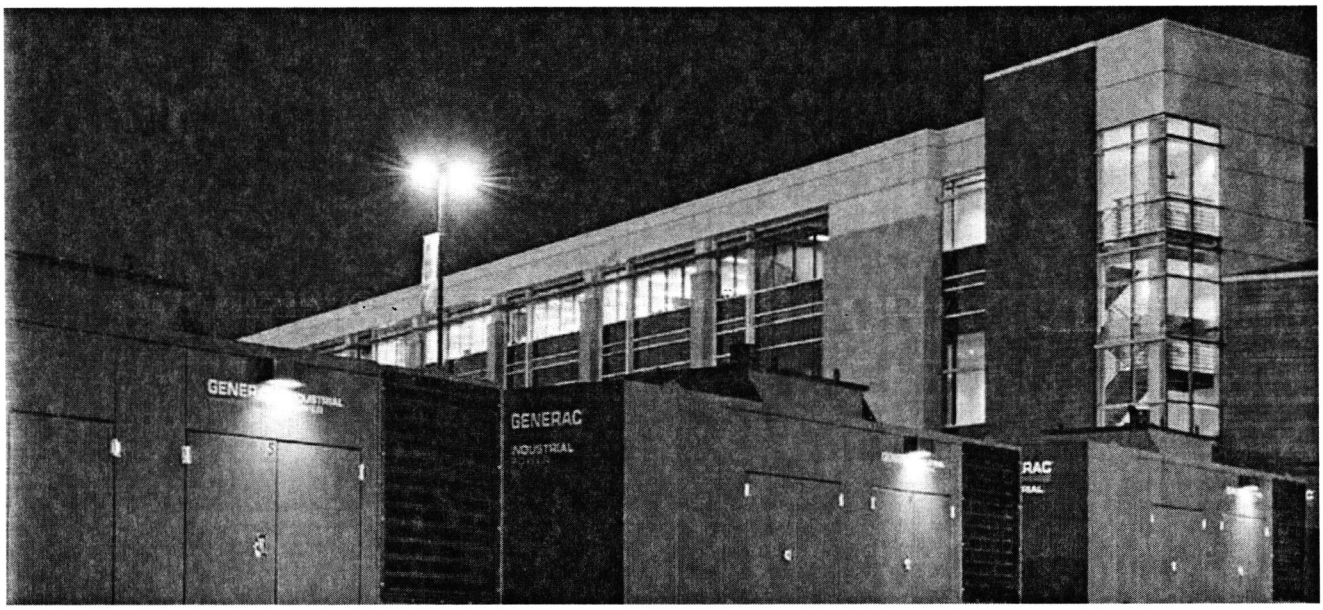
Municipalities are continually asked to do more with less whether its maintaining municipal buildings, providing a vast array of community services, or providing protection for citizens during emergencies. There is no one "cookie-cutter" generator solution that will meet the incredibly diverse needs of municipalities. The good news is that Generac Industrial Power provides a wide range of gensets, accessories, controllers, and enclosures, so we can help you find the optimum solution to surpass your challenges.

Your Need: Emergency Preparedness

In the wake of recent hurricanes and massive flooding in the south and east, the role of emergency preparedness has never been greater. Citizens not only depend upon crisis services including first responders and 911 call centers, but they also look to municipal facilities for shelter during the storm. Authorities may also need municipal buildings to act as command centers in the wake of a disaster.

If that were not enough, FEMA and other governmental agencies are asking cities and towns to deliver more robust support systems to community members living in underserved areas and government-sponsored housing unit.

STANDBY POWER FOR **EMERGENCY SERVICES**



Police and fire stations, and 911 call centers must function during emergencies. Generac provides diesel gensets from 50 kW up to 2 MW to meet NEC and NFPA requirements for on-site fuel. And many of these gensets can be paralleled to meet even greater power requirements. Generac's Modular Power Systems (MPS) feature on-generator paralleling so our units do not require dedicated and expensive third-party switchgear.

Future expansion generators simply tie directly to the generator bus. Because the paralleling is already built into the generator, the Generac MPS system inherently has greater flexibility for growth, requires less electrical room space, and reduces initial capital cost, which can help with your always tight budgets.

Paralleling also works for many government housing units as rooftop installations are being specified so flooding doesn't impact power supply. MPS gensets are smaller and lighter weight which helps balance

the rooftop load, while still providing the needed kWs.

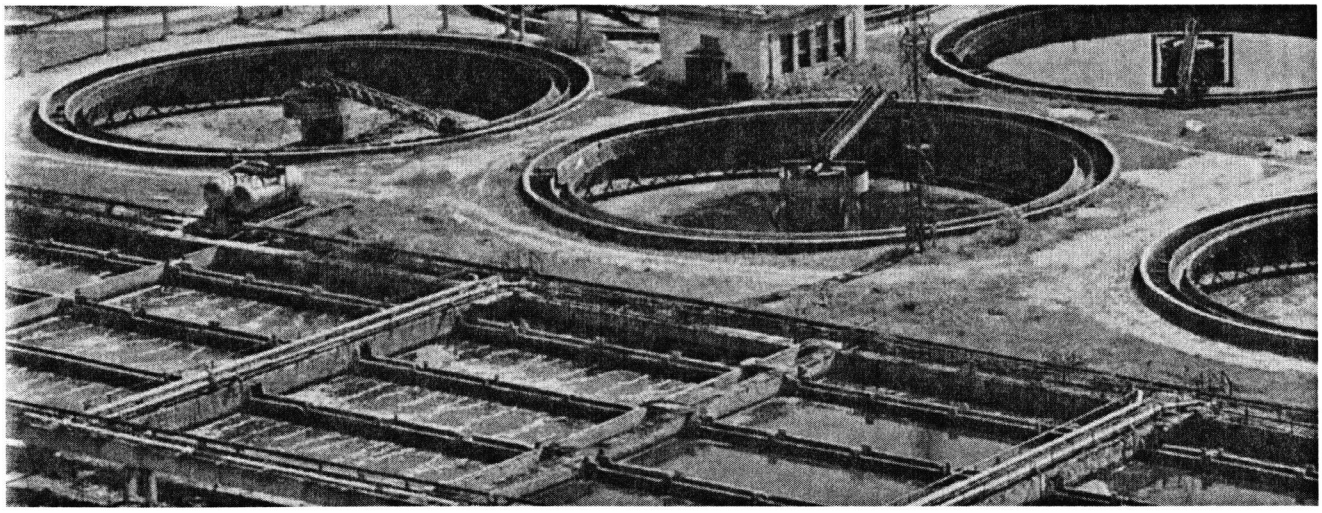
Backup Power for Light Rail Crossings

Many communities are turning to light rail systems to provide more efficient ways for citizens to access downtown areas while at the same time helping to reduce emissions and parking challenges. Since light rail trains typically cross many busy intersections, during an outage, it's vital crossing signals continue to function to help prevent dangerous accidents.

For light rail crossings, natural gas generators are becoming the preferred choice. Most light rail systems are located along the natural gas right of way making it easy to tie into the service lines. Generac offers gaseous generators from 22 kW up to 500 kW nodes, providing the power needed for most applications with limited service and maintenance requirements. In addition, these units can be paralleled to provide more kWs, as needed.

Our technological advances in natural gas generators have earned us awards from Frost and Sullivan as "The Natural Gas Generator Company of the Year". In addition, our 500 kW natural gas generator recently earned a Silver Award from the readers of Consulting-Specifying Engineer magazine. Any questions?

PROVIDING CLEAN WATER FOR CITIZENS THROUGH WATER AND WASTEWATER TREATMENT FACILITIES



The demand for safe water is growing rapidly. And as water consumption doubles globally every 20 years, municipalities are more focused than ever on using this resource wisely and efficiently.

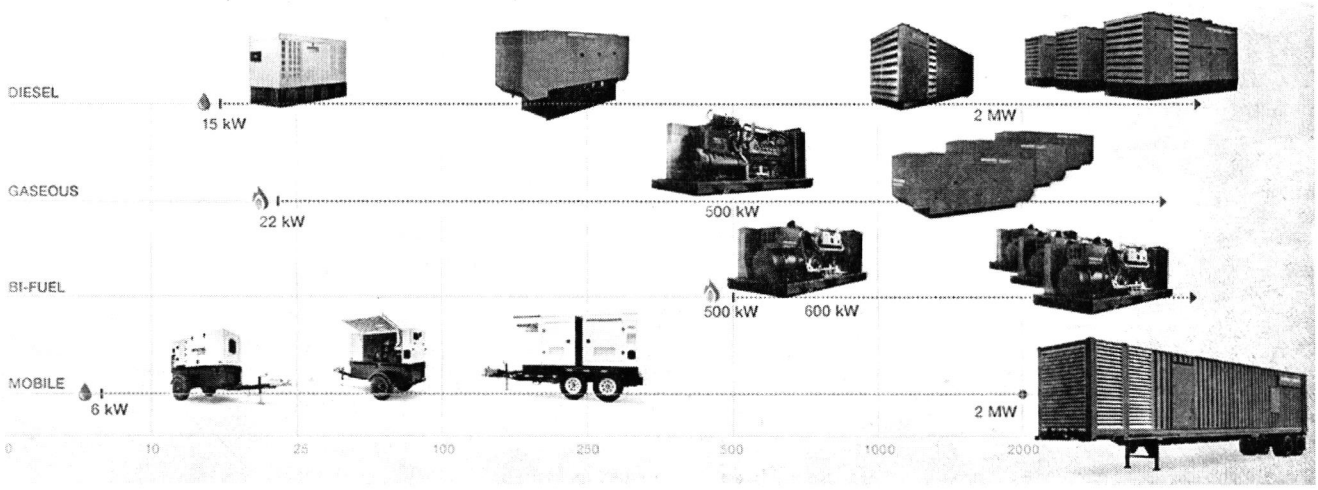
Computers control water-processing and delivery systems, and sophisticated digital water meters and

data analysis can improve operations and reduce costs. Yet those innovations and increasing regulations have put even more pressure on facilities to have reliable backup power systems.

Both water and wastewater facilities place great demands on pumping equipment for consistent water distribution and treatment processes. When pumps go offline due to power outages, these processes are halted and water distribution ceases. In the case of large municipalities, returning all plant systems to normal operations and resuming the distribution of water can be a daunting task. During prolonged outages, under-treatment may occur, and the penalties both in terms of financial and environmental damage can be severe.

HOW GENERAC **RISES TO THE CHALLENGE**

Generac Industrial Power can provide the kWs you need with a variety of fuel sources. We offer everything from 1 MW of plant backup power up to 100 MW of primary power with our paralleled MPS for critical pumping stations. Generac Industrial Power can tailor a robust power system that meets your specific requirements — delivering dependable power when you need it most.



And our tough-as-nails diesel gensets can be paralleled with our natural gas and bi-fuel units, providing the extended runtimes you may need. You can also choose from larger alternators, sound attenuated enclosures, extreme performance enclosures, a variety of control systems, and different size base tanks. Each one designed to meet your specifications seamlessly.

Generac is the Leader in Municipal Support

Providing a substantive backup power response requires strategic planning including the location of genset units, fuel choices, sizing requirements, and paralleling potential. We also understand the complexities involved with RFPs and budget considerations, and we provide a variety to tools such as

SpecExpert, to help you create custom specs, and Power Design Pro™ for sizing and analysis of different options, to assist you in this process.

At the same time, we think your best resource is our network of Industrial Power Distributors, as they know your local community codes, local AHJs, and they can assist in countless ways. Count on our distributors to serve and protect you during this process.
We know cities never sleep and at Generac—neither do we.

ADDITIONAL **RESOURCES**

Case Studies

- On the Road with a Modular Power System - Providing Standby Power for a Highway Toll Plaza
- Four Times the Power – Toll Bridge and Plaza
- MPS — The best N + 1 Solution for Wastewater Treatment Facilities
- Emergency Power for Emergency Services
- Mission Critical Public Safety Building Powers Up for Emergencies
- Generac Helps to Keep 'em Flying
- Going With The Flow – County Water and Sewerage District
- When a Whole Town is Depending on You - Providing Standby Power to Stockton East Water Treatment Plant

White Papers

- Medium Voltage On-Site Generation Overview
- Natural Gas Whitepaper
- MPS Whitepaper

GENERAC INDUSTRIAL POWER'S **FLEXIBILITY**

FIND A **DISTRIBUTOR**

BEFORE THE
IDAHO PUBLIC UTILITIES
COMMISSION

CASE NO. IPC-E-16-28

IDAHO SIERRA CLUB

HECKLER, DI
TESTIMONY

EXHIBIT NO. 316

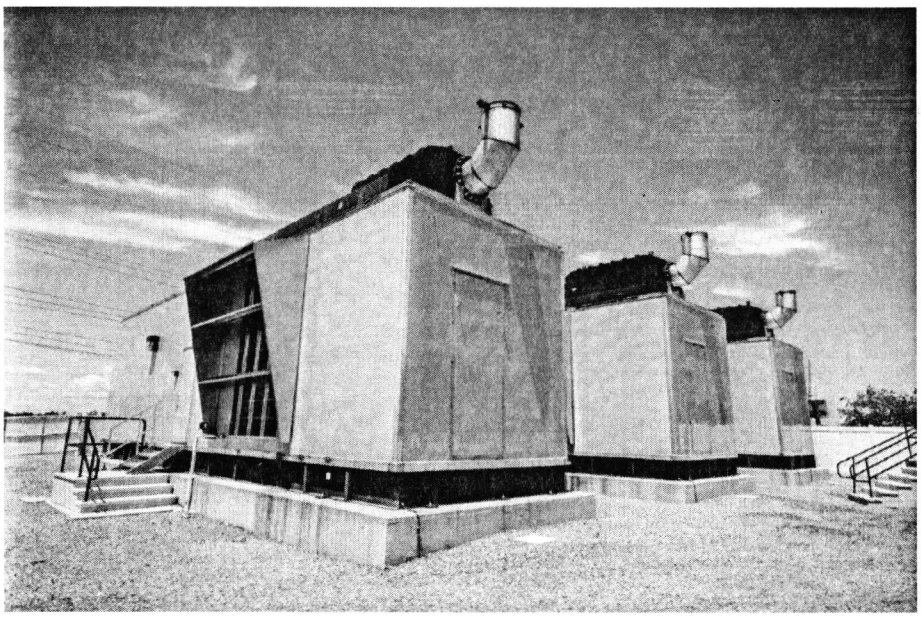
Emergency Generators Power Town After Sandy Comes Ashore

Release date: June 21, 2013

Release Number: 4086-174

TRENTON, N.J. – Superstorm Sandy left many thousands of homes, municipal services and emergency service facilities across New Jersey without power.

But Seaside Heights, a



Seaside Heights, NJ generators were essential for emergency services during Superstorm Sandy. – Photo by Rosanna Arias

Jersey Shore barrier island borough, escaped the massive power outages that most other areas faced because of its three peak-demand generators which had been protected from high water when they were installed.

"Initially, we powered them on to supply electricity for the firehouse, emergency management, the police headquarters and the municipal building," Seaside Heights Borough Superintendent William Rumbolo said.

Because Sandy's impact on the borough would be unpredictable, officials began preparations for the storm by having emergency workers and officials go door-to-door encouraging residents to evacuate. As Sandy got closer, officials moved the borough's fire trucks inland to Toms River to escape anticipated flooding and brought in three army trucks the Office of Emergency Management Coordinator obtained for emergency transportation.

When Sandy came ashore, the storm brought winds that knocked down telephone poles, knocking out power and trapping emergency responders and residents who failed to heed the evacuation warnings.

Emergency responders (approximately 45 firemen and 30 policemen) were able to use the generators to keep electricity going and complete rescue missions.

For three weeks, Seaside Heights used the generators to power the community. "We fired up the generators and made some connections so that we could run the whole town," Rumbolo said. Borough officials originally proposed the idea of obtaining generators to help reduce the cost of wholesale power during peak demand times.

The three two-megawatt diesel generators and their installation cost the borough nearly $4 million. The generators were initially intended to be used during heavy power use hours, to reduce community power consumption and give the borough a better rate when purchasing electricity.

The borough made the decision to power the generators with diesel fuel in the initial installation, which worked out well during the storm since natural gas – the other option – was unavailable to the island after the storm.

"We were able to truck in diesel fuel and run the generators," said borough officials. "If these things had been powered by natural gas, we would not have been able to use them."

Sandy brought flooding to the area but the generators had been installed approximately 43 inches above the ground and one foot above the Base Flood Elevation.

Although Seaside Heights officials did not buy and install the generators primarily to be a backup power source, having them was crucial to keep the town running in the aftermath of the storm.

Officials powered up two hotels in the borough so that the responders and those rescued could have a place to stay. They were also able to power the water main to supply running water throughout the borough.

Having the generators protected from storm surge and fully operational gave the borough the ability to safely house the emergency responders as close to the damaged area as possible enabling them to continue uninterrupted response operations.

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BEFORE THE
IDAHO PUBLIC UTILITIES COMMISSION

CASE NO. IPC-E-16-28

IDAHO SIERRA CLUB

HECKLER, DI
TESTIMONY

EXHIBIT NO. 317

There are many other activities in addition to those sponsored by Idaho Power that customers could undertake to reduce their energy use and, like the alternative generating resources discussed previously, it will be up to the local residents, businesses and governments to make them a reality.

Goals Document

The first step in developing proposed solutions to the electrical needs of the Wood River Valley was to develop a Goals Document that could be used to guide the committee's efforts to develop and evaluate alternatives. The committee spent a significant amount of time refining the Goals Document to ensure it represented their desires for a responsible, reliable and affordable electrical system. Much discussion took place concerning the preservation and improvement of view corridors, cost issues and comparing new lines to existing lines. The goals were divided into 6 areas:

- **Reliable Power:** Provide reliable power to the entire Wood River Valley
- **New Infrastructure Design:** Develop new transmission and delivery infrastructure as appropriate when providing for current and future power needs
- **Energy Conservation:** Implement programs that reduce demand for additional energy
- **Environment:** Cause no or minimum impacts to the natural, physical, cultural, historic, social and aesthetic environment due to development and operation of power facilities and delivery systems
- **Political Support:** Develop solutions that are politically supported throughout the Wood River Valley
- **Cost Effectiveness:** Develop solutions that are cost effective and provide associated benefits

The CAC developed a number of bullets describing the goals more fully. These can be found in Appendix C, Page 6.

The CAC also came up with a list of siting criteria. These criteria may not all be completely achievable, but they are measures to be strived for when developing and evaluating alternatives.

- **North of Wood River Transmission Station (WDRI)**
  - *Provide both redundancy and capacity to meet electrical needs north of WDRI*
  - *Do not use the existing 138,000-volt transmission corridor without new technology to avoid new impacts*
  - *Preserve the scenic corridor*
  - *Maintain the ordinance-required 150 ft setback from residences when using overhead transmission lines*
  - *Conform to existing hillside ordinances*
  - *Install underground lines in locations where the necessary additional funding is available.*
- **South of Wood River Transmission Station (WDRI)**
  - *Provide electrical infrastructure and systems that meet Lincoln County electrical needs*
  - *Improve structures and transmission lines in Lincoln County as needed to accommodate future growth*
  - *Maintain scenic corridors*
  - *Cause no environmental impact to wetlands and habitat*

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REQUEST FOR PRODUCTION NO. 19: The Company's Application states at page 11 that "Sun Valley stated that at the regular City Council meeting of September 1, 2016, the council unanimously agreed that the redundant line project was necessary and vital for its community..." The Mayor of the City of Sun Valley stated at the referenced meeting that, "It is not a vote, it is an expression of our wishes as far as how they will tackle this project that they are mandated to do to provide us with power. They [Idaho Power] have decided that they need to do this they are asking us to think about how we want it done." Please reconcile the Application's assertion that the City of Sun Valley "agreed that the redundant line project was necessary" with the Mayor's explanation that the need for the line was already "decided" by Idaho Power and that the City Council was only asked to "think about how we want it done."[1]

RESPONSE TO REQUEST FOR PRODUCTION NO. 19: The Company's statement on page 11 of its Application refers to a letter received from the City of Sun Valley, dated September 29, 2016, which was sent to the Company as well as filed with the Commission. The letter is an expression of the City's official action, and the words and contents of the letter speak for themselves.

The letter, signed by Peter M. Hendricks, Mayor of the City of Sun Valley, states "the City has been thoroughly informed on the purpose and need, as well as the impacts of potential routing options." The letter continues to state that:

> At the regular City Council meeting of September 1st, the Council unanimously agreed on the following project scope and components:

[1] City of Sun Valley audio transcript, September 1, 2016 at hour 1:45, emphasis provided. See: http://sunvalley.granicus.com/MediaPlayer.php?view_id=3&clip_id=772

1) **That the redundant line project is necessary and vital for our community**, which is geographically isolated, has substantial wildfire risk, relies heavily on tourism during the winter, and experiences severe winter weather.

The letter continues:

2) **That the best location at which to underground the line is near the intersections of Highway 75 and Elkhorn Road**, because it offers the best combination of low project cost and low visual impacts to the combined communities of Ketchum and Sun Valley.

(Emphasis in original.)

The Mayor also stated that the "City of Sun Valley understands that this line will provide the opportunity to eventually replace the aging and dilapidated Wood River-to-Elkhorn line, which is also important to maintaining the reliability of electrical power in our community."

The response to this Request is sponsored by Michael J. Youngblood, Manager of Regulatory Projects, Idaho Power Company.