BEFORE THE IDAHO PUBLIC UTILITIES COMMISSION

IN THE MATTER OF IDAHO POWER COMPANY'S APPLICATION FOR A DETERMINATION VALIDATING THE NORTH VALMY POWER PLANT BALANCING ACCOUNT TRUE-UP.	)	CASE NO. IPC-E-22-05

IDAHO POWER COMPANY

DIRECT TESTIMONY

OF

LINDSAY BARRETTO

Q. Please state your name and business address.

A. My name is Lindsay Barretto. My business address is 1221 West Idaho Street, Boise, Idaho 83702.

Q. By whom are you employed and in what capacity?

A. I am employed by Idaho Power Company ("Idaho Power" or "Company") as the 500 kilovolt ("kV") and Joint Projects Senior Manager.

Q. Please describe your educational background.

A. I received a Bachelor of Science degree in Civil Engineering from Purdue University, West Lafayette, Indiana in 2005. In 2007, I earned a Master of Science degree in Civil Engineering from Purdue University. I am a registered professional engineer in the state of Idaho.

Q. Please describe your work experience with Idaho Power.

A. I began my employment with Idaho Power in 2010 as an engineer in Power Production's Civil Engineering department. As an engineer I worked on hydroelectric and hatchery projects and regulatory compliance. In 2015, I moved to Transmission and Distribution Engineering and Construction as a project manager leading power line and substation projects. In 2018, I became an Engineering Leader, responsible for the Stations Engineering and Design department. In 2020, I was promoted to my current position, Senior Manager of 500kV and Joint Projects, where

my responsibilities include supervision over Idaho Power's jointly-owned coal assets.

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

A. The purpose of my testimony is to discuss the prudence of investments made at the North Valmy Power Plant ("Valmy") that have been added to the associated plant balances since the Company's last request to update Valmy plant balances became effective on June 1, 2019, Case No. IPC-E-19-08, and to inform the Idaho Public Utilities Commission ("Commission") of necessary future investments at the plant to ensure Unit 2 continues to be available for reliable load service through the end of 2025.

Q. Have you prepared any exhibits detailing the investments made at Valmy since the last update to rates?

A. Yes. In Case No. IPC-E-19-08, the Commission approved, with Order No. 34349, Valmy investments through December 31, 2018. Therefore, Exhibit No. 2 details Idaho Power's share of the investments made at Valmy between January 1, 2019, and December 31, 2021. Projects for which the Company's ownership share is over $20,000, and all investments associated with Unit 1, include a project description and investment purpose classification for environmental compliance, safety, or for reliability. Confidential Exhibit No. 3 presents the forecasted capital

expenditures for the 2022 through 2025 time period.

I. THE VALMY PLANT

Q. Please describe the Valmy plant.

A. Valmy is a coal-fired power plant that consists of two units and is located near Winnemucca, Nevada. Unit 1 went into service in 1981 and Unit 2 followed in 1985. Idaho Power owns 50 percent of Valmy. NV Energy is the co-owner of the plant with the remaining 50 percent ownership and operates the Valmy facility. Idaho Power and NV Energy (collectively, the "Parties") work jointly to make decisions regarding Valmy. The plant is connected via a single 345 kilovolt transmission line to the Idaho Power control area at the Midpoint substation. Idaho Power owns the northbound capacity and NV Energy owns the southbound capacity of this line. The Company exited coal-fired operations of Unit 1 December 31, 2019, as accepted[1] by the Commission as part of Idaho Power's 2017 Integrated Resource Plan.

Coal for Valmy is shipped via railroad from various mines in Utah, Wyoming, and Colorado. The power plant uses a variety of emissions control technologies, including state-of-the-art fabric filters that remove more than 99 percent of particulate emissions. A dry sorbent injection system was installed in Unit 1 to reduce acid gas emissions

[1] Order No. 33983.

and flue-gas scrubber technology is utilized on Unit 2 for the reduction of sulfur dioxide emissions.

Q. Please describe the current agreements under which the Co-Owners own and operate Valmy.

A. The ownership and operation of Valmy is governed by three agreements: the Agreement for the Ownership of the North Valmy Power Plant Project, the Agreement for the Operation of the North Valmy Power Plant Project, both of which are dated December 12, 1978, and the North Valmy Station Operating Procedures Criteria, dated as of February 11, 1993, between Idaho Power Company and Sierra Pacific Power Company,[2] as amended by Amendment No. 1 to the Operating Procedure Criteria for Valmy Coal Diversion Procedures and Usage, dated as of January 1, 2012 (collectively, the "Existing North Valmy Agreements"). Additionally, the Parties entered into the North Valmy Project Framework Agreement between NV Energy and Idaho Power dated as of February 22, 2019 ("Framework Agreement"), memorializing the terms and conditions under which either partner may elect exit of participation of Valmy.

Q. What is the position of Valmy Unit 2 in Idaho Power's generation portfolio as identified in the 2021 IRP?

[2] Sierra Pacific Power Company has conducted business as NV Energy since 2008.

A. The Preferred Portfolio identified in the 2021 IRP, filed in Case No. IPC-E-21-43, includes an exit from Valmy Unit 2 in 2025, concluding that the 2025 exit from Valmy provides a more favorable economic outcome when compared to an earlier exit.

II. VALMY CAPITAL BUDGET PARTICIPATION

Q. As a 50-percent owner in the plant, is Idaho Power involved in the decision-making process related to capital investments at Valmy?

A. Yes. As the plant operator, NV Energy manages the capital budget for Valmy. However, Idaho Power has established guidelines at Valmy to allow NV Energy to manage the capital budget as needed and directed by the plant manager, without exceeding the yearly budget, or adding large projects without authorization by the Parties. These guidelines provide the appropriate level of oversight while allowing the plant operator to practically manage the plant and any variances that may occur throughout the budget year.

Q. What guidelines are in place to monitor capital expenditures at Valmy?

A. First, if Idaho Power's share of the capital forecast is greater than the capital budget by more than $100,000, the Company will review and may authorize the

budget change. In addition, all new or unbudgeted Unit 2 or common facility capital projects larger than $1,000,000, at the plant level, require a review and authorization in writing prior to starting the project. Finally, any time an individual Unit 2 or common facility capital project with a value greater than $1 million, at the plant level, is expected to exceed the current year original budget by 20 percent, Idaho Power will review and authorize it in writing prior to starting or continuing.

Q. Aside from the guidelines, are there any other ways the Company participates in the capital budget process?

A. Yes. Individual capital project variances are discussed between the Parties during Ownership Meetings and other meetings as directed by the Parties. In addition, NV Energy produces an Authorization for Expenditures ("AFE") request for all capital projects. AFEs include the project title, date, project manager, description and purpose of the expenditure, cost and budget information, along with various other information to provide support for the project. If the project is expected to exceed the AFE amount by either 10 percent or $100,000, a supplemental AFE is required. Currently, Idaho Power provides authorization to NV Energy of all AFEs and

supplemental AFEs for each project. Idaho Power has requested that no projects begin, and the budget may not be exceeded, unless the AFE is approved by both NV Energy and Idaho Power. Lastly, in addition to the plant-specific guidelines detailed above, Idaho Power performs holistic budget reviews on a monthly and quarterly basis. This includes capital expenditures at all of the Company's facilities, including Valmy, and therefore provides an additional review process through which the Company monitors its capital spend at Valmy.

III. VALMY INVESTMENTS SINCE 2018

Q. What is the time period for which Idaho Power is requesting a prudence review of Valmy investments for purposes of validating the Valmy balancing account true-up?

A. Idaho Power's last request to update Valmy plant balances, Case No. IPC-E-19-08, became effective on June 1, 2019, and included actual Valmy plant balances through December 31, 2018. Therefore, the Company is requesting a prudence determination on incremental Valmy investments since the last Valmy rate update, or those investments made at the plant during the January 1, 2019, through December 31, 2021, time period. There have been a number of investments required to operate the plant in a safe, efficient, and reliable manner, including investments required to ensure environmental compliance as well as a

number of investments for routine asset replacement.

Q. Have you identified the investments made at Valmy during the January 1, 2019, through December 31, 2021, time period?

A. Yes. Exhibit No. 2 presents Idaho Power's share of the investments made at Valmy between January 1, 2019, and December 31, 2021, detailing 57 different projects totaling $4.66 million. In addition, for those projects for which Idaho Power's ownership share is over $20,000, and all investments associated with Unit 1, the Company has included a project description and investment purpose classification as to whether the investment was for environmental compliance, safety, and/or reliability. Of the 40 projects for which a detailed project description and investment purpose classification was provided, 23 were for continued reliable plant operations, four were required for environmental compliance, one was for the safe operations of the plant, and 12 were for a combination of either reliability, environmental compliance, or safety.

Q. Why did the Company include a project description and investment purpose classification for all investments associated with Unit 1, even if they were less than $20,000?

A. Idaho Power included a project description and investment purpose classification for all investments

associated with Unit 1 to highlight that although the Company exited operations of Unit 1 on December 31, 2019, there were investments required to ensure reliable operations of Unit 1 until the Company's exited participation in coal-fired operations.

Q. Were all the projects comprising the $4.66 million in investments that occurred between January 1, 2019, and December 31, 2021, necessary for either environmental compliance, the safe and economic operation of the plant, or for reliability purposes?

A. Yes.

Plant Reliability Investments

Q. You indicated there were 23 investments greater than $20,000 required for the reliable operation of the plant. What was the largest investment made to maintain reliability?

A. While not the largest investment made during the January 1, 2019, through December 31, 2021, time period, the largest investment made solely for reliability purposes was made in 2019 for approximately $540,000 when freeze protection heaters were installed at the plant.

Q. What necessitated installation of freeze protection heaters?

A. When the Valmy operating schedule shifted to running the units in only the summer months and to be in

long-term layup during the remaining months of the year, it was determined that with both units offline there was no auxiliary steam to provide heat to the turbines, boilers and buildings to keep them dry and above the dew point, per the long-term layup plan.

Q. How was Valmy heated at the time?

A. The plant was renting portable electric space heaters to sufficiently heat the plant buildings and equipment during the layup period. However, it was determined that the purchase of the heaters was more cost-effective than renting. In addition, the purchase and installation included four water-to-air dry finned coolers which cool the component cooling system on each unit and exhaust warm dry air into the lower level of the turbine building, reducing the number of electric heaters required to be purchased. Heating of the turbines and buildings helps ensure the units can be operational when needed.

Q. What additional investments were made at Valmy to maintain reliability?

A. The next set of investments made to maintain reliable operations of Valmy were associated with normal wear and tear of existing investments. First, for approximately $225,000, the Unit 2 pin mixer, which unloads the wet fly ash, required replacement and was rebuilt prior to the summer run to avoid the potential of a serious

failure due to the lack of non-redundant equipment. In addition, approximately $107,000 was spent to replace bushing gaskets and for the regasketing of the bushing terminal plant. Finally, the Unit 2 pulverizers required a major rebuild, as expected every 18 to 24 months, for approximately $166,000.

Q. Why must bushing gaskets be replaced?

A. The terminal plate gaskets for the high voltage bushings of the generator were worn out and there was indication of bushing gaskets leaking as the viscasil was seeping through the bushing gaskets. Bushing gasket leakage could lead to catastrophic failure of the generator.

Q. When was this issue first identified?

A. The issue was first identified in 2010 and temporary repairs were made. In 2017, it was noticed that the leak had become significant and one more temporary repair was made and annual inspections conducted. However, the 2018 annual inspection discovered more leakage so the replacement of the bushings and regasketing of the bushing terminal plate was performed.

Q. Why do pulverizers require major rebuilds?

A. Pulverizers are utilized to grind coal to fine dust before being transported to burner fronts. This process wears out roll wheel assemblies, table grinding

segments, and the interior of pulverizer equipment. As a result, the normal operating life cycle of a Unit 2pulverizer is roughly 18 to 24 months.

Q. How does the plant monitor the life cycle of a pulverizer?

A. Routine inspections are performed at 3,000 hours and required maintenance is performed to ensure the maximum life of the pulverizer rebuild.

Q. What did the major rebuild of the Unit 2 pulverizer entail?

A. Typically, major pulverizer overhauls, required for continued reliable operation, include replacements of roll wheels, air seals, coal shields, bearings, wear resistant ceramic liners, classifier vanes, coal feeder wear components, spring frame wear plate, and the pyrites plow. A pulverizer overhaul was scheduled for 2019 but due to reduced run times for Unit 2, a full overhaul was not yet needed. Instead, the project consisted of purchasing three refurbished trunnion wheel assemblies as capital spares.

Q. What is the benefit to purchasing capital spares?

A. The capital spares will allow the capital maintenance outages to be completed on an as needed basis, as opposed to during the routine inspection, when the

pulverizers' hours of operation and level of wear justifies the overhauls.

Q. What was the next largest reliability-related investment?

A. In 2019, the Unit 1D pulverizer roll wheel assembly failed, resulting in two separate project identifications, one associated with the repair and one with the replacement, for investments totaling approximately $159,000 and $47,000, respectively.

Q. What is the importance of the pulverizer roll wheel assembly?

A. Black Butte coal requires all four pulverizers to achieve full load of a unit. In September 2019, plant personnel reported high amps on the Unit 1 pulverizer drive motor. Unit 1 had been experiencing much higher-than-expected availability requirements; the 1D coal pulverizer exceeded 20,000 hours of operation with significant wear and parts deteriorated beyond the service life expectations. Upon inspection, it was found that one of the three wheel assemblies was cracked and not rotating freely due to a bearing failure.

Q. If Valmy had been primarily operating only in summer months, why was the replacement necessary in 2019?

A. The plant was coming up on its annual testing and certification of the cold reheat safety valves, a

compliance requirement of the annual State of Nevada Boiler Operating Permit, and needed to reach full load status, requiring all four pulverizers. Due to the wear, there were sizing differences of the three roll wheels' diameters, requiring the replacement of all three of the roll wheel assemblies on the Unit 1D pulverizer.

Q. Please describe the next project associated with investments required to maintain reliable operations of Valmy.

A. Approximately $151,000 in investments were made in the boiler equipment wash piping in 2021. A section of the boiler equipment wash piping, which is used to fill both circulating water systems prior to start-up, failed. The underground piping was the original piping put in during construction in 1979. Using alternative means to fill the circulating water systems is very time consuming and results in start-up delays, thus requiring the replacement of the underground equipment wash piping.

Q. What was the next largest investment required to maintain reliability at Valmy?

A. In 2019, the recoating of the condenser inlet tube sheet was required contributing to approximately $108,000 of the Valmy investments. The condenser inlet tube sheet of a unit is exposed to erosion from particles and turbulence in the circulating water. It is coated with

a wear resistant coating to protect the metal tube sheet and condenser tube ends. The coating on Unit 2 had worn to the point that significant portions of bare tube and tube ends were exposed.

Q. What happens if it is left exposed?

A. When exposed, the tube ends will erode and can result in tube failure and leakage of circulated water into the steam side of the condenser, contaminating the boiler water. Recoating of the tube sheet was required. However, when the recoating began, the plant was able to repair some of the existing waterbox coating resulting in project costs lower than initially estimated.

Q. What additional investments were made solely for reliability purposes?

A. The remaining 15 projects associated with investments for reliable operations of Valmy made between the January 1, 2019, through December 31, 2021, time period were all under $100,000. They included (1) the replacement of the coal handling conveyor following sustained run time failure, (2) the purchase and installation of two redundant 1000 KVA transformers that power the coal handling system following failure beyond economic repair, (3 and 4) two projects associated with the motor of the Unit 1 circulating water pump that failed following a ground fault, one investment associated with the replacement of

the motor and the second with the rewind of the failed motor for use as a capital spare, (5) the refurbishment of the failed Unit 2D pulverizer motor, (6) the installation of a condensate pump rotating element to correct for low condensate pressure, (7 and 8) two projects to ensure cyber security compliance, the movement of individual servers to a high availability server cluster capable of resisting hardware failure and the replacement of several Human Machine Interfaces and an Industrial Control System network configuration change, (9) the installation of the spare Unit 1A primary air fan motor due to damage, (10) the replacement of two Electronic Deionization unit modules to ensure very pure water for the boiler, (11) a new fly ash blower to convey ash in order to prevent the baghouse hoppers from overflowing due to internal wear and damage, (12) new east to west first pass reverse osmosis membranes as required every two years, (13) an upgrade of the revenue meter required when Idaho Power exited participation in operations of a Valmy unit, (14) refurbishment of the block valve that supplies extraction steam to Unit 1 first point feedwater heater, and (15) the Unit 1B pulverizer rebuild. Exhibit No. 2 provides additional information for each project including the total investment amount and a detailed project description and justification.

Q. How have these 23 investments required for the

continued reliable operations of Valmy contributed to the additions at the plant since January 1, 2019?

A. At $2.04 million, the investments for reliability purposes are the largest expenditures made at Valmy since 2018, making up 44 percent of the total projects.

Q. You mentioned some of the investments over $20,000 were made for a combination of either reliability, environmental compliance, or safety purposes. Were there any additional investments for which the purpose included a reliability component?

A. Yes. There were eight projects for a combination of reliability and safety purposes and three for a combination of environmental and reliability purposes.

Plant Reliability and Safety Investments

Q. Please describe those projects over $20,000 that have been identified as required for reliability and safety purposes.

A. The largest investment made at Valmy during the January 1, 2019, through December 31, 2021, time period was for a combination of reliability and safety purposes. In 2021, $1.24 million was spent to fix the Unit 2 turbine high pressure/intermediate pressure ("HP/IP") section shell steam leaks.

Q. What caused the HP/IP section shell steam leaks on the Unit 2 turbine?

A. Beginning in 2015, the Unit 2 steam turbine HP/IP shell experienced five steam leaks from the mating surfaces of the steam turbine HP/IP upper and lower shells. Each steam leak damaged the two turbine shells by eroding the mating surfaces material and providing further paths for the superheated steam to escape from the turbine HP/IP shells. At the time, previous repairs did not fix the eroded mating surfaces or the compromised connection hardware that compresses the two shell halves together to form the mating surfaces seal.

Q. What happens when the mating surfaces and connection hardware is not repaired?

A. Connecting hardware eventually wears out, only enduring a limited number of tightening and loosening cycles before the connecting hardware loses its strength and the ability to provide the compressive forces necessary to form the mating surfaces seal of the two shell halves. This loss of connecting hardware strength is also compounded by the high temperature during operations causing the plastic deformation of the steel. This process is known as creep.

Q. How did the creeping compound the issues with the HP/IP shells?

A. The plastic deformation, in conjunction with applied stresses, can also warp and distort both the connecting hardware and the HP/IP shells themselves. A 'tapped stud' threads into the lower shell half and a large nut is installed on the upper portion of the tapped stud and tightened to apply the compressive force to the two shell mating surfaces.

Q. Were the tapped studs of the HP/IP shells affected?

A. Yes. A minimum of six tapped connecting studs are known to have been compromised in some fashion, mostly warpage.

Q. What was the extent of the investments necessary to repair and prevent future HP/IP section shell steam leaks?

A. This project replaced the connecting hardware, which was no longer providing sufficient consistent compressive force, with new hardware and refurbished the mating surfaces of the two HP/IP shells. The two turbine HP/IP turbine shells were separated, and the mating surfaces were refurbished with a combination of welding and machining. In addition, ten tapped connecting studs and nuts on each side of the HP/IP turbine section in the areas of the five steam leaks were replaced with new tapped connecting studs and nuts. The tapped stud threads in the

lower half shell were also repaired as necessary. The tapped studs replacement, lower half thread repairs and HP/IP shell mating surfaces refurbishment were made after the two HP/IP shells were separated. These repairs corrected the known root causes and corrected for the turbine HP/IP section shell steam leaks.

Q. What additional investments required for both safety and reliability purposes were made?

A. In November 2017 an evaluation of the fire protection systems was performed that determined the refurbishment or replacement of the systems was required due to degradation of the existing system, through a combination of worn out and/or outdated components and systems. As a result, the refurbishment of the Early Warning Smoke Detection system was performed, the Unit 1 and Unit 2 stand-pipe booster pipes were replaced, the fire alarm control panels and associated controls and alarms were replaced, the deluge valves were replaced, and the required flow testing of the electric fire pump and the diesel fuel tank system was performed. The project concluded in 2019 for total investments of approximately $263,000.

Q. Please describe the additional investments made between January 1, 2019, and December 31, 2021, classified as required for reliability and safety purposes.

A. The next set of investments over $20,000 made for reliable and safe operation of the plant were required because of the age of the existing investment and the associated wear and tear, including the replacement of the Unit 2 stack elevator and transportation fleet at the plant. The stack elevator was installed with Unit 2 in 1984 and replacement parts had become obsolete. On several occasions the elevator stopped operating properly during the installation of environmental compliance equipment and prior to scheduled emission testing, causing delayed installation timelines. A total of $107,341 was invested to complete the elevator replacement including the car, brake assembly, drive motor and gearbox, electrical system replacement and call system replacement.

In 2020, approximately $88,000 was spent to replace some of the van transportation fleet due to concern with the safety and reliability. The Valmy fleet was aging and reaching high mileage, traveling approximately 1,650 miles for maintenance and 4,575 miles for operations/fuels per month. The vans transport employees to and from the remote plant site, 24 hours a day, seven days a week, which is a standard in northern Nevada set by local mining companies. Three of the existing nine vans were replaced as each van was over ten years old with between 190,000 to 256,000 miles.

Q. What were the remaining four investments made for reliability and safety purposes between January 1, 2019, and December 31, 2021?

A. The remaining investments identified as necessary for reliable and safe operations of Valmy were all under $100,000 and include (1) the refurbishment of the trisector air heater expansion joint following damage from thermal expansion, rust, acid condensation and erosion, (2) the replacement of the Unit 2 desuperheater due to thermal stress cracking and the potential for steam leaks, (3) a software update to the system that monitors critical rotating equipment at Valmy and the replacement of the associated communication cards, and (4) the refurbishment of the first point feedwater inlet valve on Unit 1.

Q. How have these projects, necessary for the continued reliable and safe operations of Valmy, contributed to the additions at the plant since January 1, 2019?

A. The investments made at Valmy for reliability and safety purposes during the January 1, 2019, through December 31, 2021, time period total $1.84 million, or 39 percent of the total projects.

Q. Were there any additional investments made at Valmy between January 1, 2019, and December 31, 2021, that included a purpose classification for continued reliable

operations of the plant?

A. Yes. There were three projects associated with continued reliable operations of Valmy as well as required for environmental compliance.

Plant Reliability and Environmental Compliance Investments

Q. What were the largest Valmy investments required for with continued reliable operations and environmental compliance purposes?

A. All three investments made at Valmy between January 1, 2019, and December 31, 2021, and identified as required for both continued reliable operations and environmental compliance were associated with the scrubber atomizer wheels on Unit 2. The dry scrubber on Unit 2 utilizes nine atomizing spray machines, three atomizers per scrubber vessel, to atomize a lime/recycled fly ash mixed slurry that reacts with the sulfur dioxide in the flue gas to produce calcium sulfate. The solid calcium sulfate particles are then collected along with fly ash in the baghouse.

To accomplish this, the atomizer wheel rotates at approximately 13,000 revolutions per minute and centrifugal force shears the lime/recycled ash slurry into very small droplets for intimate liquid/gas contact. The force of the shearing slurry slowly erodes the atomizer wheels which require routine replacement. An atomizer wheel can be

expected to last for 10,000 to 12,000 hours in service. In 2019 the procurement of six new atomizer wheels was required. Five of the atomizer wheels that were at the end of their service life were replaced in 2020 and 2021, all to ensure the reliable operations of Valmy during the summer peak season.

Environmental Compliance Investments

Q. What investments were made at Valmy solely for environmental compliance?

A. There were four investments made at Valmy between January 1, 2019, and December 31, 2021, for which the purpose was environmental compliance. The first, for approximately $220,000, included the installation of nine new ground water monitoring wells.

Q. Why were the new ground water monitoring wells required?

A. Ground water elevation at Valmy had risen noticeably over the last six to eight years, presumably due to cessation of dewatering activities at the nearby Lone Tree Mine. As a result, the screened interval intake of several wells was nearly fully submerged.

Q. Are there guidelines in place for appropriate groundwater levels?

A. Yes. According to Nevada Division of Environmental Protection ("NDEP") monitoring well

guidelines, the groundwater level should be within the screened interval level to obtain an accurate water level reading. Any reported ground water levels above the top screen level are considered invalid. At the time, of the Valmy plant's 14 ground water monitoring wells, five were reading above the top screen level and four were close.

Q. What would happen if the groundwater levels were not addressed?

A. If the wells were not redrilled, plugged, abandoned or replaced, the existing wells may have become non-compliant with the regulatory intent of monitoring the potential impacts of operating the facilities' landfill and evaporation ponds. In addition, if not in compliance, the NDEP can order similar action. As a result, the plant installed nine new ground water monitoring wells.

Q. Please describe the remaining investments made at Valmy for environmental compliance.

A. Approximately $21,000 was spent to replace the Unit 2B scrubber lime transfer blower which overheated and failed, another $13,000 for the replacement of the low nitrogen-oxide burner nozzles of Unit 1 to remain compliant with the Mercury and Air Toxics Standards, and finally $1,000 of costs associated with the replacement of the existing sorbent trap mercury monitoring equipment closed in 2019.

Q. Were there any additional investments made at Valmy between January 1, 2019, and December 31, 2021, that included a purpose classification for environmental compliance?

A. Yes. There was one project associated with environmental compliance and the continued safe operations of Valmy.

Environmental Compliance and Safety Investments

Q. Please describe the required investment for environmental compliance and safety.

A. The three dry scrubber vessels on Unit 2 often suffer severe scaling and/or debris material buildup as scale is dislodged from the scrubber vessel walls. The scale and buildup can be severe enough that several times per year the unit is curtailed by 70 MWs while the scale and buildup are removed from the vessel walls and the outlet duct via the existing debris chute and from the outlet duct door. The debris material is then collected and transported to the ash landfill. The removal of the debris is required under the Mercury and Air Toxic Standards regulations.

In 2020, approximately $127,000 in project costs were incurred to enlarge the existing Unit 2 scrubber vessel debris chute and install three 24-inch diameter hydraulically actuated knife gate valves. The purpose was

to allow for the faster and safer removal and collection of the scale, sludge and debris for disposal in the ash landfill. The investment reduced the duration of forced outage by 50 percent. In addition, automation of the valves to open the scrubber vessel, which previously required personnel to perform via a ladder, rectified a safety concern.

Safety Investments

Q. Were there any investments made at Valmy since 2018 that were solely for the safety of plant personnel?

A. Yes. The final investment made at Valmy between the January 1, 2019, through December 31, 2021, time period that I did not previously discuss was made as a result of a safety concern at the plant. In the design of the Unit 2 boiler, no provisions were made to provide attachment points for cables supporting the furnace sky climber during outages.

Q. What is the furnace sky climber used for?

A. These platform type sky climbers are used by maintenance and engineering to provide a moveable aerial platform in the furnace for inspections and repairs. Attachments for the two cables supporting each sky climber consisted of wire slings placed around structural steel or pipes above the penthouse. Placement of these slings, each year prior to outage work, was a significant fall hazard to

maintenance personnel, even with appropriate fall protection equipment. To mitigate the fall hazard and provide more substantial, reliable, and safer attachment points for the sky climber support cables, a permanent, engineered attachment structure was installed, consisting of welded attachments to structural steel with steel ropes and spreader beams to position reachable attachment points directly above the sky climber cable furnace penetration points. Total projects costs for this necessary safety improvement were $33,051.

Q. Please summarize the investments that were made at Valmy over $20,000 or were specific to Unit 1 that make up the $4.66 million for which Idaho Power is requesting a prudence determination.

A. Of the 40 projects for which a detailed project description and investment purpose classification was provided, 23 were for the continued reliable plant operations totaling $2.04 million, another $255,000 was associated with the four projects required for environmental compliance, one project at $33,000 was for the safe operations of the plant, and the remaining 12, which were for the combination of either reliability, environmental compliance, or safety, contributed to $2.30 million of the total investments made at Valmy between January 1, 2019, through December 31, 2021.

III. FORECASTED VALMY INVESTMENTS

Q. Company witness Courtney Waites indicated the Valmy balancing account true-up included an update to the forecasted investment component of the levelized revenue requirement. Please explain the investments expected to be made over the remaining life of the plant.

A. While the Parties are cognizant of the approaching end-of-life of Valmy, there are investments necessary to ensure the plant remains operational in a safe, efficient, and reliable matter. Under the Framework Agreement, because Idaho Power has exited participation in Unit 1 operations, the Company is no longer responsible for capital costs associated with that unit, so the forecast does not include investments expected in Unit 1.

However, Idaho Power is still responsible for common facility investments and Unit 2 investments until the last unit is exited. The latest forecast, presented in Confidential Exhibit No. 3, includes a project spend during the 2022 through 2025 time period approximately $7.57 million higher than previously anticipated. The largest expenditures are associated with an additional Human Machine Interface and server update, the replacement of Unit 2 components and pulverizer roll wheels due to normal wear and tear, and another production well replacement.

Q. What additional investments does the Company

anticipate will be required prior to Idaho Power's exit from operations at Valmy?

A. The remaining investments anticipated between 2022 and 2025 are all associated with the annual blanket projects for pumps, valves and motors, and routine infrastructure to maintain the reliable safe operations of the plant.

Q. What are blanket projects?

A. Blanket projects are intended to capture capital issues that arise, typically equipment failures that were unplanned and therefore not individually identified and budgeted.

VI. CONCLUSION

Q. Please summarize your testimony.

A. The Preferred Portfolio identified in the 2021 IRP continues to reflect an exit from Valmy Unit 2 in 2025 as a more favorable economic outcome when compared to an earlier exit. Idaho Power has been required to make investments at Valmy since 2018 and has been actively involved in the capital spend decision making process at the plant. Of the 40 projects identified in which Idaho Power's share of the investments was more than $20,000 or the investment was made in Unit 1, 23 were for the continued reliable plant operations totaling $2.04 million, another $255,000 was associated with the four projects

required for environmental compliance, one project at $33,000 was for the safe operations of the plant, and the remaining 12, which were for the combination of either reliability, environmental compliance, or safety, contributed to $2.30 million of the total investments made at Valmy. While the Parties have been cognizant of the approaching end-of-life of Valmy, the investments made were prudent and required to ensure the plant remains operational in a safe, efficient, and reliable matter.

Q. Does this conclude your testimony?

A. Yes.

DECLARATION OF LINDSAY BARRETTO

I, Lindsay Barretto, declare under penalty of perjury under the laws of the state of Idaho:

1. My name is Lindsay Barretto. I am employed by Idaho Power Company as the 500kV and Joint Projects Senior Manager.

2. On behalf of Idaho Power, I present this pre-filed direct testimony and Exhibit Nos. 2 and 3 in this matter.

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

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

SIGNED this 28th day of February 2022, at Boise, Idaho.

Signed:

BEFORE THE

IDAHO PUBLIC UTILITIES COMMISSION

CASE NO. IPC-E-22-05

IDAHO POWER COMPANY

BARRETTO
TESTIMONY

EXHIBIT NO. 2

VALMY PLANT ADDITIONS: Jan 1, 2019 - Dec 31, 2021

Project	Descr	V1	V2	VC	Total	Purpose	Project Description/Justification
27574743	VALMY 98482392 V2 REPLACE TURBINE HP/IP SECTION		1,240,965		1,240,965	Reliability/Safety	The Unit 2 steam turbine high pressure/intermediate pressure (HP/IP) shell experienced five steam leaks from the mating surfaces of the steam turbine HP/IP upper and lower shells, beginning in 2015. Each steam leak damaged the two turbine shells by eroding the mating surfaces material and providing further paths for the superheated steam to escape from the turbine HP/IP shells. At the time, previous repairs did not fix the eroded mating surfaces or the compromised connection hardware that compresses the two shell halves together to form the mating surfaces seal. Connecting hardware wears it out, only enduring a limited number of tightening and loosening cycles before the connecting hardware loses its strength and the ability to provide the compressive forces necessary to form the mating surfaces seal of the two shell halves. This loss of connecting hardware strength is also compounded by the high temperature during operations causing the plastic deformation of the steel in a process known as creep. This plastic deformation in conjunction with applied stresses can also warp and distort both the connecting hardware and the HP/IP shells themselves. A 'tapped stud' threads into the lower shell half and a large nut is installed on the upper portion of the tapped stud and tightened to apply the compressive force to the two shell mating surfaces. A minimum of six tapped connecting studs are known to have been compromised in some fashion, mostly warpage. This project replaced the connecting hardware, which was no longer providing sufficient consistent compressive force, with new hardware and refurbished the mating surfaces of the two HP/IP shell mating surfaces. The two turbine HP/IP turbine shells were separated and the mating surfaces were refurbished with a combination of welding and machining. In addition, ten tapped connecting studs and nuts on each side of the HP/IP turbine section in the areas of the five steam leaks were replaced with new tapped connecting studs and nuts. The tapped stud threads in the lower half shell were also repaired as necessary. The tapped studs replacement, lower half thread repairs and HP/IP shell refurbishment were made after the two HP/IP shells were separated. These repairs corrected the known root causes, compromised mating surfaces and compromised connecting hardware, that were causing the turbine HP/IP section shell steam leaks.
27514784	VALMY 98438396 VC FREEZE PROTECTION HEATERS,			541,325	541,325	Reliability	When the Valmy operating schedule shifted to running the units in only the summer months, and to be in long-term layup during the remaining months of the year, it was determined that with both units offline there was no auxiliary steam to provide heat to the turbines, boilers and buildings to keep them dry and above the dew point, per the long-term layup plan. The plant was renting portable electric space heaters to sufficiently heat the plant buildings and equipment during the layup period. It was determined that the purchase of the heaters was more cost effective than renting. In addition, the purchase and installation included four water-to-air dry finned coolers which cool the component cooling system on each unit and exhaust warm dry air into the lower level of the turbine building, reducing the number of electric heaters required to be purchased.
27517151	VALMY 98438233 VC FIRE PROTECTION SYSTEM, REF			262,492	262,492	Reliability/Safety	In November 2017, an evaluation of the fire protection systems was performed that determined the refurbishment or replacement of the systems was required due to degradation of the existing system, through a combination of worn out and/or outdated components and systems. This project included the refurbishment of the Early Warning Smoke Detection system, the replacement of the Unit 1 and Unit 2 stand-pipe booster pipes, the replacement of the fire alarm control panels and associated controls and alarms, replacement of deluge valves, the electric fire pump and the required flow testing on the diesel fuel tank system.
27528897	VALMY 98455128 V2 PIN MIXER/UNLOADER, REBUILD		224,787		224,787	Reliability	The existing original Unit 2 pin mixer (wet fly ash unloader) required replacement due to normal wear and tear. In addition, in 2018 an ash hauling dump truck damaged the Unit 2 wet fly ash unloader, further impacting the reliability of the pin mixer. The pin mixer/unloader was rebuilt prior to the summer run to avoid the potential of serious failure of the non-redundant equipment.
27555279	VALMY 98455852 VC GROUND WATER MONITORING WEL			219,799	219,799	Environmental	Ground water elevation at Valmy had risen noticeably over the last 6-8 years, presumably due to cessation of dewatering activities at the nearby Lone Tree Mine, resulting in the screened interval intake of several wells becoming fully submerged. According to Nevada Division of Environmental Protection (NDEP) monitoring well guidelines, the groundwater level should be within the screened interval level to obtain an accurate water level reading. Any reported ground water levels above the top screen level are considered invalid. Valmy has 14 total ground water monitoring wells, of which five were reading above the top screen level and four were close. If the wells were not redrilled, plugged, abandoned or replaced, the existing wells may have become non-compliant with the regulatory intent of monitoring the potential impacts of operating the facilities landfill and evaporation ponds. In addition, if not in compliance, the NDEP can order similar action. These costs are associated with the installation of nine new ground water monitoring wells.
27527353	VALMY 98438400 V2 GENERATOR BUSHINGS, REPLACE		106,641		106,641	Reliability	The terminal plate gaskets for the high voltage bushings of the generator were worn out and there was indication of bushing gaskets leaking as the viscasil was seeping through the bushing gaskets. Bushing gasket leakage could lead to catastrophic failure of the generator. The issue was first identified in 2010 and temporary repairs were made. In 2017, it was noticed that the leak had become significant and one more temporary repair was made and annual inspections conducted. The 2018 annual inspection discovered more leakage so the replacement of the bushings and regasketing of the bushing terminal plate was performed.
27547460	VALMY 98377358 V2 PULVERIZER "A" MAJOR REBUILD-2016		165,540		165,540	Reliability	Pulverizers are utilized to grind coal to fine dust before being transported to burner fronts. This process wears out roll wheel assemblies, table grinding segments, and the interior of pulverizer equipment. The normal operating life cycle of a Unit 2 pulverizer is roughly 18 to 24 months. Routine inspections are performed at 3,000 hours and required maintenance is performed to ensure the maximum life of the pulverizer rebuild. Typically, major pulverizer overhauls for continued reliable operation of Unit 2 and include replacements of roll wheels, air seals, coal shields, bearings, wear resistant ceramic liners, classifier vanes, coal feeder wear components, spring frame wear plate, and the pyrites plow. A pulverizer overhaul was scheduled for 2019 but due to reduced run times for Unit 2, a full overhaul was not yet needed. Instead, the project consisted of purchasing three refurbished trunnion wheel assemblies as capital spares. The capital spares will allow the capital maintenance outages to be completed on an as needed basis, as opposed to during the routine inspection, when the pulverizers' hours of operation and level of wear justifies the overhauls.
27545751	VALMY 98466935 V1 PULVERIZER D ROLL WHEEL ASS	159,459			159,459	Reliability	In April 2019, the Unit 1D pulverizer roll wheel assembly failed. Black Butte coal requires all four pulverizers to achieve full load. The roll wheel assembly was replaced. In addition, in September 2019, plant personnel reported high amps on the Unit 1 pulverizer drive motor. Unit 1 had been experiencing much higher than expected availability requirements; the 1D coal pulverizer exceeded 20,000 hours of operation with significant wear and parts deteriorated beyond the service life expectations. Upon inspection, it was found that one of the three wheel assemblies was cracked and not rotating freely due to a bearing failure. The plant was coming up on its annual testing and certification of the cold reheat safety valves, a compliance requirement of the annual State of Nevada Boiler Operating Permit, and needed to reach full load status, requiring all four pulverizers. Due to the wear, there were sizing differences of the three roll wheels' diameters, requiring the replacement of all three of the roll wheel assemblies.
27591516	VALMY 98494358 VC EQUIPMENT WASH PIPING REPLACEMENT			150,961	150,961	Reliability	A section of boiler equipment wash piping that is used to fill both circulating water systems prior to start up failed. This was the original underground piping from construction in 1979. Using alternative means to fill the circulating water systems is very time consuming and results in start up delays. These costs included the replacement of the underground equipment wash piping.
27549554	VALMY 98467485 V2 SCRUBBER OUTLET DUCT PLUGGA		126,759		126,759	Safety / Environmental	The three dry scrubber vessels on Unit 2 often suffer severe scaling and/or debris material buildup as scale is dislodged from the scrubber vessel walls. The scale and buildup can be severe enough that several times per year the unit is curtailed by 70 MW's while the scale and buildup are removed from the vessel walls and the outlet duct via the existing debris chute and from the outlet duct door. The debris material is then collected and transported to the ash landfill. The removal is also required under the Mercury and Air Toxic Standards regulations. This project enlarged the existing Unit 2 scrubber vessel debris chute and installed three 24-inch diameter hydraulically actuated knife gate valves to allow for the faster and safer removal and collection of the scale, sludge and debris for disposal in the ash landfill. The duration of forced outage was decreased by half and automated the valves to open the scrubber vessel, which previously required personnel to perform via a ladder, improving safety.
27533137	VALMY 98455854 V2 ATOMIZER WHEELS, REPL		115,962		115,962	Environmental/Reliability	A dry scrubber utilizes nine atomizing spray machines to atomize a lime/recycled fly ash mixed slurry that reacts with the sulfur dioxide in the flue gas to produce calcium sulfate. In 2018, Valmy was expected to be used as a seasonal facility and to only run during the summer peak months. The plant was utilized more than anticipated and stayed on through the winter of 2018 and into the spring of 2019, primarily due to the impacts of the Enbridge pipeline explosion that occurred in October 2018. The extended run time amounted to many more hours on the wheels than originally anticipated requiring the procurement of six new atomizer wheels. The replacement of the wheels ensured the plant's reliability for the 2019 summer peak season.
27579441	VALMY 98485333 V2 SCRUBBER ATOMIZER WHEELS, R		109,728		109,728	Environmental/Reliability	The dry scrubber on Unit 2 utilizes nine atomizing spray machines (three atomizers per scrubber vessel) to atomize a lime/recycled fly ash mixed slurry that reacts with the sulfur dioxide in the flue gas to produce calcium sulfate. The solid calcium sulfate particles are then collected along with fly ash in the baghouse. To accomplish this the atomizer wheel rotates at approximately 13,000 revolutions per minute and centrifugal force shears the lime/recycled ash slurry into very small droplets for intimate liquid/gas contact. The force of the shearing slurry slowly erodes the atomizer wheels which require routine replacement. An atomizer wheel can be expected to last for 10,000 – 12,000 hours in service. This project replaced five of the atomizer wheels that were at the end of their service life and was necessary to ensure the plant's reliability for the 2021 summer peak season.
27557530	VALMY 98473784 V2 SCRUBBER ATOMIZER WHEELS, R		108,817		108,817	Environmental/Reliability	The dry scrubber on Unit 2 utilizes nine atomizing spray machines (three atomizers per scrubber vessel) to atomize a lime/recycled fly ash mixed slurry that reacts with the sulfur dioxide in the flue gas to produce calcium sulfate. The solid calcium sulfate particles are then collected along with fly ash in the baghouse. To accomplish this the atomizer wheel rotates at approximately 13,000 revolutions per minute and centrifugal force shears the lime/recycled ash slurry into very small droplets for intimate liquid/gas contact. The force of the shearing slurry slowly erodes the atomizer wheels which require routine replacement. An atomizer wheel can be expected to last for 10,000 – 12,000 hours in service. This project replaced five of the atomizer wheels that were at the end of their service life and was necessary to ensure the plant's reliability for the 2020 summer peak season.

VALMY PLANT ADDITIONS: Jan 1, 2019 - Dec 31, 2021

Project	Descr	V1	V2	VC	Total	Purpose	Project Description/Justification
27528895	VALMY 98455127 V2 CONDENSER INLET WATERBOX, R		108,028		108,028	Reliability	The condenser inlet tube sheet of a unit is exposed to erosion from particles and turbulence in the circulating water so it is coated with a wear resistant coating to protect the metal tube sheet and condenser tube ends. The coating on Unit 2 had worn to the point that significant portions of bare tube and tube ends were exposed. When exposed, the tube ends will erode and can result in tube failure and leakage of circulated water into the steam side of the condenser, contaminating the boiler water. The scope of the project included the recoating of the tube sheet. When the recoating began, the plant was able to repair some of the waterbox coating resulting in project costs lower than initially estimated.
27539687	VALMY 98462057 V2 STACK ELEVATOR, REPLACE		107,341		107,341	Reliability/Safety	The Unit 2 stack elevator reliability and safety was compromised due to the age of the elevator and replacement parts had become obsolete. The elevator installed with Unit 2 was constructed in 1984. On several occasions the elevator stopped operating properly during the installation of environmental compliance equipment and prior to scheduled emission testing, causing delayed installation timelines. The project included a complete elevator replacement including the car, brake assembly, drive motor and gearbox, electrical system replacement and call system replacement.
27570622	VALMY 98481652 VC 5B COAL UNLOAD CONVEYER BELT, REPLACE VA			88,583	88,583	Reliability	Coal handling conveyor 5B sustained a run time failure resulting in severe damage to the conveyor belting, bend pulleys and to the bend pulley support framing. Permanent repairs were made to the bend pulleys and bend pulley support framing. Temporary repairs were made to the damaged 5B building in order to make the 5B belt train available for emergency use only if needed. Because Valmy was relying on only conveyors 5A and 6A for full delivery of coal (two conveyors used in tandem are required), conveyor 5B was replaced in the event 5A or 6A became damaged or inoperable. Upon inspection of the drive gearbox, it was determined a replacement was necessary. Quotes were received for a rebuild of the gearbox but it was determined a replacement was more cost-effective.
27555276	VALMY 98466597 VC VANS, REPLACE (3) VA			87,965	87,965	Reliability/Safety	The plant was concerned with the safety and reliability of the van transportation fleet. The Valmy fleet was aging and reaching high mileage, traveling approximately 1,650 miles for maintenance and 4,575 miles for operations/fuels per month. The vans transport employees to and from the remote plant site, 24 hours a day, seven days a week, which is a standard in northern Nevada set by local mining companies. The cost of the vans is partially offset by a payroll deduction from each employee riding in the van. This project replaced three of the existing nine vans, each van is over ten years old with between 190,000 to 256,000 miles.
27506993	VALMY 98437320 VC UNIT SUB 5A 5B 1000 KVA DRY TRANSORMER RPL			64,961	64,961	Reliability	The coal handling system is powered by two redundant 1000 KVA transformers. Both of the transformers have failed and were beyond economic repair so the system was being run on a temporary transformer that is close enough in design to be used for temporary purposes only. Two redundant transformers are necessary for reliable operation. If not remedied and the temporary transformer were to fail, the coal handling system would go down until a new or rewound transformer is installed. The lead time for a new transformer is 8 to 10 weeks. This would result in a 100 percent derate on the units because there would be no coal delivery to the plant. These costs were associated with the purchase and install of two new transformers.
27568576	VALMY 98478100 V2 TRISECTOR AIR HEATER EXPANSION JOINT REFUR		61,203		61,203	Reliability/Safety	The trisector air heater expansion joint suffered damage from thermal expansion, rust, acid condensation and erosion and failure was imminent. The expansion joint was torn and leaking on the outlet side of the trisector air heater. Valmy's cycling operation compounds the fatigue and wear exposure from thermal stress from cooling to ambient conditions when the unit is in reserve shutdown followed by heating back to operating temperatures in excess of 700 degrees Fahrenheit. Continued operation would likely cause deterioration, which would have resulted in an outage or derate, as well as a potential safety concern and heat rate impact due to the hot air leakage. This repair was critical for reliability and safety.
27533144	VALMY 98459394 V1 CIRCULATION WATER PUMP 1A MOTOR, REPL	58,576			58,576	Reliability	In April 2019, the Unit 1 circulating water pump failed due to a motor ground fault. Absent a circulating water pump in service, Unit 1 would be de-rated to approximately 125 net MW output, or half its normal load. The motor was sent to a contract repair shop for evaluation where it was determined that a complete motor rewind was required. At the request of the Western Electricity Coordinating Council, and because of the four to six-week lead time associated with the repairs, a new replacement motor was purchased so that the plant could meet reliability and availability needs. The rewind was performed and used as a capital spare and a replacement motor was procured.
27533145	VALMY 98459395 V1 D1 PULVERIZER ROLL WHEEL ASSEMBLY, REPL	46,984			46,984	Reliability	In April 2019, the Unit 1D pulverizer roll wheel assembly failed. Black Butte coal requires all four pulverizers to achieve full load. The roll wheel assembly was replaced. In addition, in September 2019, plant personnel reported over amping of the Unit 1 pulverizer drive motor. Unit 1 had been experiencing much higher than expected availability requirements; the 1D coal pulverizer exceeded 20,000 hours of operation with significant wear and parts deteriorated beyond the service life expectations. Upon inspection, it was found that one of the three wheel assemblies was cracked and not rotating freely due to a bearing failure. The plant was coming up on its annual testing and certification of the cold reheat safety valves, a compliance requirement of the annual State of Nevada Boiler Operating Permit, and needed to reach full load status, requiring all four pulverizers. Due to the wear, there were sizing differences of the three roll wheels' diameters, requiring the replacement of all three of the roll wheel assemblies.
27534969	VALMY 98455853 V2 PULVERIZER MOTOR 2D, REBUILD		44,287		44,287	Reliability	Unit 2 pulverizers have old and obsolete 600 HP electric motors. Due to the frequency of failures of the old motors, a spare motor is needed in order to avoid long unit derates and costly expedited motor repair services. In October 2018, the new spare motor for the Unit 2 pulverizers was used to replace a failed motor on 2D pulverizer, leaving no spare pulverizer motor for Unit 2. This project refurbished the failed 2D pulverizer motor for use as a spare for all Unit 2 pulverizers.
27587933	VALMY 98492604 V2 CONDENSATE PUMP CAPITAL SPARE INSTALLATION		40,991		40,991	Reliability	Unit 2 was not able to achieve full load due to low condensate pressure. An engineering review showed deterioration of the pump performance. The pump was last replaced in August 2012 due to failure of the rotating element. The deterioration was contributing to the unit's inability to achieve full load. Installation of the capital spare condensate pump rotating element was performed to eliminate the issue.
27556791	VALMLY 98473462 VAL DMZ SERVER CLUSTER VA			37,130	37,130	Reliability	The configurations in the Valmy De-Militarized Zone ("DMZ") included five individual servers for each functional and protective service. One of the servers had reached the end of its life because it was running on an outdated operating system that was no longer supported by Microsoft. As a result, the cyber security patching was no longer available for that server. This project moved the many individual servers in the Valmy DMZ to a high availability server cluster capable of resisting hardware failure and facilitating cyber security compliance.
27539686	VALMY 98459449 V1 1A CIRCULATING WATER PUMP M	35,960			35,960	Reliability	In April 2019, the Unit 1 circulating water pump failed due to a motor ground fault. Absent a circulating water pump in service, Unit 1 would be de-rated to approximately 125 net MW output, or half its normal load. The motor was sent to a contract repair shop for evaluation where it was determined that a complete motor rewind was required. At the request of the Western Electricity Coordinating Council, and because of the four to six-week lead time associated with the repairs, a new replacement motor was purchased so that the plant could meet reliability and availability needs. The rewind was performed and used as a capital spare and a replacement motor was procured.
27534970	VALMY 98458824 V2 AUXILIARY STEAM DESUPERHEAT		34,947		34,947	Reliability/Safety	Auxiliary steam for Unit 2 is supplied through a control station fed by either main steam or extraction steam. The supplied steam passes through a control station and is reduced to auxiliary steam pressure at an elevated temperature. The steam then passes through the auxiliary steam desuperheater which is cooled to an appropriate temperature by the introduction of high pressure feedwater being sprayed into the path of the steam while passing through. This spraying action results in thermal stress cracking to the body of the desuperheater. The cracks in the desuperheater body will leak steam which becomes a hazard to employees in the area. Without an operable desuperheater downstream carbon steel piping temperature limits would be exceeded as per ASME B31.1 Power Piping Code which could damage or destroy the piping. Unit reliability and personnel safety are jeopardized without an operable auxiliary steam desuperheater or Unit 1 being in operation to supply Unit 2 with auxiliary steam. Because a replacement has a 26 week lead time, a new one was ordered and installed to replace the desuperheater and prevent failures.
27547697	VALMY 98468760 V1 PRIMARY AIR FAN A MOTOR, RE	33,880			33,880	Reliability	On October 31, 2019, the Unit 1 A Primary Air Fan motor inboard bearing overheated and failed while in service. The motor inboard bearing alarm sounded and upon inspection of the motor, plant personnel discovered a large amount of smoke coming from the motor inboard bearing housing. The motor was shut down and replaced with the existing spare motor. The damaged motor was refurbished to become a spare Primary Air Fan motor. Unit 1 Primary Air Fans are used to convey fluidized coal from the pulverizers to the boiler burner through attached coal conduit piping. Without both Primary Air Fans, Unit 1 could not reach stable operation and would have been curtailed until late December 2019 while the damaged motor was repaired. While the costs appear as 2020 plant additions, the work was performed on Unit 1 in 2019 but final costs did not close to the project until early 2020.

VALMY PLANT ADDITIONS: Jan 1, 2019 - Dec 31, 2021

Project	Descr	V1	V2	VC	Total	Purpose	Project Description/Justification
27551304	VALMY 98453212 V2 SKY CLIMBER ATTACHMENT PLATFORM, INSTALL		33,051		33,051	Safety	In the design of the Unit 2 boiler, no provisions were made to provide attachment points for cables supporting the furnace sky climber during outages. These platform type sky climbers are used by maintenance and engineering to provide a moveable aerial platform in the furnace for inspections and repairs. Attachments for the two cables supporting each sky climber consisted of wire slings placed around structural steel or pipes above the penthouse. Placement of these slings, each year prior to outage work, was a significant fall hazard to maintenance personnel, even with appropriate fall protection equipment. To mitigate the fall hazard and provide more substantial, safer and reliable attachment points for the sky climber support cables, a permanent, engineered attachment structure was installed, consisting of welded attachments to structural steel with steel ropes and spreader beams to position reachable attachment points directly above the sky climber cable furnace penetration points.
27531065	VALMY 98454279 VALMY TECHNOLOGY SECURITY UPDA			30,781	30,781	Reliability	A review of the cyber security profile revealed a vulnerability in several components through their obsolete and no longer securable operating systems and software. The devices, which included laptops used to maintain the Industrial Control System (ICS) environment and several Human Machine Interfaces (HMI) in the ICS network, must be replaced with HMIs that are able to be secured to the current standards. To do so, the software needed to be updated to run the new hardware. In addition, one of the HMI's that was being replaced was not able to communicate as required for asset management and monitoring. This project replaced several HMIs, made an ICS network configuration change, and updated software used in two ICS systems.
27577136	VALMY 98485331 VC EDI MODULES, REPLACE 2			28,976	28,976	Reliability	The service life of the Electronic Deionization (EDI) units used to make very pure water for the boiler makeup is 3-4 years, based on similarly installed units in Northern Nevada. Longer periods of down time from seasonal operation require proper layup to prevent shortening of the service life. EDI life is monitored by the varying voltage required to maintain the current to the electodes at 8.5 to 9.5 amps. When modules are clean, only 120-130V is required. Fouled modules require 400-450V. Valmy's modules were running 150-250V and it was anticipated that replacement of the modules would be required on one EDI train in 2021 and the other EDI train in 2023. These two modules were installed in 2017. The project replaced two EDI modules.
27579435	VALMY 98486141 VC SYSTEM1 UPDATE			27,421	27,421	Reliability/Safety	This specific software is used to monitor the vibration and process data for the critical rotating equipment at Valmy, such as the pumps, generators, and turbines. It is used to quickly and accurately diagnose equipment problems before failure, improving the plant's ability to plan for outages and maintain the equipment. The version of the software installed throughout the generation fleet was reaching the end of its life and was no longer going to be supported by the vendor. Absent vendor support, patches would not be available or bug fixes provided to keep the system up to date. To remain cyber secure, the software would be required to be patched continually. This project upgraded the software to the latest version and replaced the required communication cards that are compatible with the upgraded system.
27543734	VALMY 98464825 V1 FLY ASH BLOWER 1B, REPLACE	25,802			25,802	Reliability	A fly ash blower is needed to convey ash in order to keep the baghouse hoppers from overflowing which would lead to an eventual unit shutdown. Inspection of the fly ash blower 1B after it began making unusual noises determined that the blower was not reliable for dependable service and failure was imminent due to internal wear and damage. Plant reliability is increased as replacing the 1B fly ash blower ensures that there is a redundant blower to convey ash and fluidize when needed to do so.
27539690	VALMY 98463011 V2 LIME TRANSFER BLOWER 2B, RE		20,983		20,983	Environmental	The Unit 2 scrubber utilizes a lime transfer piping system to convey lime from one of two externally located lime storage silos to the scrubber unit where the lime is used in process to remove sulfur dioxide limits for boiler flue gas as mandated by the NDEP. The lime transfer system was originally designed with two redundant transfer blowers, one blower serving as the in-service blower and the other serving as a backup or standby blower in the event of a failure. With regard to the original design, having only 1 operable transfer blower is a risk to environmental compliance and could lead to reliability concerns or reduced or no Unit 2 generation. Lime must be conveyed into the scrubber in order for sulfur dioxide emissions reduction to take place. The Unit 2 scrubber lime transfer blower 2B overheated and failed, leaving the scrubber with only one operable blower to transfer lime. This project replaced the 2B lime transfer blower, restoring system redundancy to its original design, preventing any potential environmental or reliability concerns.
27566786	VALMY 98475628 VC RO MEMBRANES, REPLACE 68/32			20,635	20,635	Reliability	First pass reverse osmosis membranes foul and plug over time. New membranes are required approximately every two years to maintain ultra-pure condensate for boiler makeup. This project replaced the east and west first pass reverse osmosis membranes which were last replaced in 2018.
27533141	VALMY 98459392 V2 1ST POINT HEATER DRAIN VALVE, REPL		18,078		18,078		
27566788	VALMY 98478101 VC DIGITAL ALIGNMENT TOOL			16,892	16,892		
27539683	VALMY 98455129 VC DATA LOGGERS, REPLACE			14,967	14,967		
27533139	VALMY 98457380 VA HMI REPLACEMENT			14,622	14,622		
27533143	VALMY 98459393 V1 1ST POINT FEEDWATER INLET VALVE, REFUR	14,564			14,564	Reliability/Safety	In August 2018 a steam leak to atmosphere from the pressure seal surface of the valve on Unit 1 was discovered. Disassembly and refurbishment was the only way repairs could be made to the valve to avoid the burn hazard of leaking steam to plant personnel and ensure continued reliability of the unit's operation.
27537126	VALMY 98459140 V2 REVENUE METER, UPGRADE		14,443		14,443		
27502697	VALMY 98434354 V1 LOW NOX BURNER NOZZLES, REP	13,148			13,148	Environmental	Mercury and Air Toxics Standards ("MATS") Rule 40 CFR 63.10021 require a burner and combustion control inspection, and combustion tuning every thirty-six months. During the inspection, completed in December 2017, significant degradations were noted on 22 thermocouples, 15 coal burner assemblies, and refractory around all burners. This scope of work was identified as required to be completed to meet regulations and allow continued boiler operation.
27557532	VALMY 98473888 VC ONSITE BACKUP HOST SERVER			12,989	12,989		
27537123	VALMY 98459139 V1 REVENUE METER, UPGRADE	12,709			12,709	Reliability	Given Idaho Power's impending exit from Unit 1 operations, it is important to have in place a sufficient measurement infrastructure to properly account for both owners' utilization of each unit. Based upon NV Energy's review of the net megawatt ("MW") billing infrastructure, it was determined that Valmy lacked sufficiently accurate meters, totalizers, and communication infrastructure to reliably account for MW generation including transformer losses. At the time the Company joined the Energy Imbalance Market, the Valmy metering infrastructure had not been upgraded and instead relied on a mix of local readings from different meters and systems that did not always match. This project consolidates and standardizes Valmy net MW reporting by sending the data to the plant's distributed controls system, which then consolidates the information and reports it in a single, consistent value to each owner.
27568580	VALMY 98480883 V2 PULVERIZER 600HP ELECTRIC MOTOR, CAP SPARE		11,641		11,641		
27568635	VALMY 98476439 VC FPS DIESEL FIRE PUMP A ENGINE REBUILD			11,605	11,605		
27579439	VALMY 98486138 V2 DCS NETWORK GPS TIME SERVER		10,088		10,088		
27533147	VALMY 98459448 V1 1ST POINT HEATER EXTRACTION STEAM BLOCK VA	9,119			9,119	Reliability	The block valve that supplies extraction steam to the Unit 1 1st point feedwater heater failed in the closed position in July 2018. This valve serves to isolate the 1st point feedwater heater from turbine fed extraction steam and also protects the turbine from backflow/water induction by going to closed position when called on. The failure required the bypass of the 1st point feedwater heater affecting the plant reliability and diminishing the heat rate. This project refurbished the block valve.
27501116	VALMY 98427786 V1 PULVERIZER "B" MAJOR REBUILD	6,732			6,732	Reliability	Pulverizers are utilized to grind coal to fine dust before being transported to burner fronts. This process wears out roll wheel assemblies, table grinding segments, and interior of pulverizer equipment. The normal operating life cycle of a Unit 1 pulverizer is roughly 18 to 24 months. Routine inspections are performed at 3,000 hours and required maintenance is performed to ensure the maximum life of the pulverizer rebuild. Major overhaul includes replacements of roll wheels, air seals, coal shields, bearings, wear resistant ceramic liners, classifier vanes, coal feeder wear components, spring frame wear plate, and the pyrites plow. In addition, the gearbox and lubrication system was refurbished and other associated welding and re-building was performed due to erosions to the pulverizer housing and associated equipment. The purpose of this project is for the continued reliable operation of Unit 1.
27545750	VALMY 98466598 VC UTILITY CARTS, REPLACE			6,268	6,268		
27570624	VALMY 98478541 V2 BOILER DRUM MERLI REPL		2,582		2,582		
27517150	VALMY 98442216 ACOUSTIC MONITORING SECU			2,051	2,051		
27545747	VALMY 98454282 OT PLANT TECHNICIAN TOOLS NORT			988	988		
27502692	VALMY 98434198 V1 SORBENT TRAP MERCURY MONITO	929			929	Environmental	A mercury monitoring system is required for environmental compliance. The monitoring provisions apply to the measurement of total vapor phase mercury in emissions from sorbent trap monitoring systems that must be capable of measuring mercury in units of the applicable emissions standards. The existing monitoring system suffered failures requiring parts to be replaced and exhausted warehouse stock. While attempting to replenish the stock, it was determined that replacement parts were no longer available. This project replaced the existing sorbent trap mercury monitoring equipment with units which meet compliance requirements and have parts readily available to maintain compliance. The majority of the project costs closed in 2018, with some remaining dollars closing in 2019.
27502694	VALMY 98434199 V2 SORBENT TRAP MERCURY MONITO		627		627		
27587123	VALMY 98490976 VC CONVEYOR 2 GEARBOX			521	521		
27590308	VALMY 98493304 V2 CONDENSATE PUMP B MOTOR REPLACEMENT		162		162		
27509175	VALMY 98437316 VC RO MEMBRANES, REPLACE			92	92		
27514789	VALMY 98443689 V1 ID FAN MOTOR 1B, REBUILD	(1,002)			(1,002)		
27440893	VALMY 98376800 VC PRODUCTION WELL #10 REPLACE			(109,095)	(109,095)		
Grand Total		**416,860**	**2,707,651**	**1,532,927**	**4,657,437**		

Exhibit No. 2
Case No. IPC-E-22-05
L. Barretto, IPC
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BEFORE THE

IDAHO PUBLIC UTILITIES COMMISSION

CASE NO. IPC-E-22-05

IDAHO POWER COMPANY

BARRETTO
TESTIMONY

CONFIDENTIAL
EXHIBIT NO. 3