BEFORE THE WASHINGTON UTILITIES AND TRANSPORTATION COMMISSION

DOCKET NO. UE-20_____

EXH. JRT-11

JASON R. THACKSTON

REPRESENTING AVISTA CORPORATION

Project ID:	4574
Project Name:	Separate Overfire Air Bucket Replacements
Plant:	Colstrip Steam Electric Station
Unit(s):	Unit 4
Estimated Costs:	$414,000
Avista Portion:	$62,100
Avista Recommendation:	Approve

Q:	Please describe the project
A:	A critical component of the SmartBurn NOx control system are the separated overfire air (SOFA) buckets. These are essential to meeting environmental compliance. To maintain equipment function and help provide for NOx emission and opacity control, the separated overfire buckets (and the top overfire buckets (TOFA)) need to be replaced every 4 years during the overhaul. These overfire buckets warp with heat exposure over an extended time, which causes buckets to bind up in the boiler and restrict movement during unit operation. Through inspection during overhaul, the buckets on Unit 4 have been found to be at the end of life. The SOFA buckets are scheduled to be replaced during the 2020 overhaul. This allows physical access to all buckets (SOFA, TOFA, Burner) while scaffold is in the boiler. The process of replacing buckets is most economical with scaffold as this allows for an effective and cohesive removal of buckets, repairs to support material, testing of movement, and alignment of all emission control components associated with the boiler corners at the same time. Complete failure of the buckets is HIGH if not replace during the U4 2020 outage. SOFA buckets are a portion of the SmartBurn NOX control system and need to be in good working order for combustion optimization and PM, opacity, & NOX control.
Q:	Did Avista/Talen consider alternatives to the project?
A:	The only other option is to Do Nothing and replace SOFA buckets during the next planned outage in four years in 2024. Not performing this work would result in is a high risk that environmental compliance (NOX, PM, Opacity) would not be met. This could also result in fines from the DEQ for violating emissions standards. In addition to consequences from the resulting non-compliance situation, the Unit would need to be run at reduced load or be placed offline until new buckets were purchase and installed. The lead time to obtain SOFA buckets is a 3-4 month lead time.
Q:	What was the timeline for completion?
A:	The new Overfire Buckets would be purchased in early 2020 so they would be available for planners to incorporate into the 2020 Unit 4 Overhaul work plans currently scheduled for June 2020. They would be installed during the planned 2020 outage.
Q:	What was the final cost of the project and when did it go into service?

A:	Total cost is estimated to be $414,000. $160,000 of this is material and the balance ($254,000) labor to remove the old Overfire Air buckets and install the new ones. Work is expected to begin in 2020 and placed in service in 2020.
Q:	Describe the system need for these projects.
A:	The ability to control the combustion in the boiler is essential to manage the NOx emissions from the unit. In addition, proper combustion management is required to manage opacity, PM emissions, and other elements and properties that result coal is burned. The overfire air system is a critical component used to manage this combustion process. The injection of air into the boiler fire at various levels allows the combustion to be lengthened, that results in less air being combusted to create the same heat for production purposes. By this process, lower NOx levels are achieved while the fuel is still fully consumed to manage other constituents of the combustion process. Collectively, there are several components needed to allow the coal to combust as clean as possible and still provide the energy needed to produce the power from the unit.
Q:	Describe the alternatives and how this solution was chosen?
A:	Replacing these buckets during the 2020 overhaul is the only viable alternative if the unit is to continue to meet its permitted levels and avoid permitted non-compliance.
Q:	Did Avista/Talen re-evaluate the alternatives?
A:	No
Q:	Describe Avista's/Talen's project management process that was used to manage this process?
A:	Avista does not manage the projects at Colstrip directly. Talen, as contract operator, manages all of the projects. They use Primavera as a software solution to keep projects on budget and on schedule. Talen's employs a number Project Management Professionals and engineers who may be assigned to manage projects depending on complexity.
Q:	Describe how Talen kept Avista management informed during this project.
A:	Budget to Actual reports are issued to Avista by Talen on a monthly basis. The cost status of each individual project is reported in these spreadsheet reports
Q:	Please describe any material changes that impacted the project scope, schedule or budget.
A:	
Q:	Provide up-to-date economics over its expected life.
A:	
Q:	Provide up-to-date environmental liabilities and risks over its expected life.
A:	
Q:	Does this project extend the plant life beyond anticipated shut down date?
A:	No, these buckets are crucial to the combustion process and are therefore right in the combustion chain. As a result, they are subject to extreme heat and will warp and get out of

	alignment in a relatively short time. These buckets need to be replaced every three to four years.

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Project ID:	78.4575 (preliminary number)		
Project Name:	New Break/Shear/Electric Shop / CaBr2 System Building		
Plant:	Colstrip Steam Electric Station		
Unit(s):	3&4		
Project Costs:	$2,050,000	**Avista Costs:**	$307,500

This represents a pre-approval to start construction of the building in 2019 (rather than waiting to 2020) so that cutover of the building can take place as soon as possible.

Q:	Please describe the project
A:	*This represents a pre-approval to start construction of the building in 2019 (rather than waiting to 2020) so that cutover of the building can take place as soon as possible.* With the shutdown of Units 1 and 2, a number of items have been identified that will need to be addressed that affect the near term continued operation of Units 3 and 4. One of these items is the bulk storage and transfer system for the Calcium Bromide (CaBr2) that is used for mercury abatement in Units 3 and 4. The existing system is currently housed alongside the Condensate system in Units 1 and 2. With the demolition and removal of Units 1 and 2, that location will no longer be serviceable. A building is to be erected on the East side of Unit 4, just south of the existing Hydrazine building. It will share a common wall with Unit 4. I will house the Calcium Bromide Bulk tank, and transfer pumps in one end of the building in an enclosed space with a tank containment built into the foundation. On the other end of the building will house the electric shop work area and an area that the existing break and shear will be placed. The electric shop and the brake and shear area will be serviced by an electric overhead crane. These work areas are also currently within the Unit 1 and 2 footprint and will be required for near term continued operation.
Q:	Did Avista/Talen consider alternatives to the project?
A:	Talen did consider erecting different buildings to house the break and shear equipment, a separate building to house the electric shop, and the CaBr2 building. Conceptually, each building would be smaller than the single building being proposed. It turned out to be an estimated three times more expensive to erect the individual buildings rather than the single larger building. In addition, no alternate space was found where the Break and Shear Equipment nor the Electric shop could be reasonably located. Finally, because of the environmental permit requirements for the mercury abatement, the CaBr2 system must be moved so that it can continue to function. This is a mandatory condition. Finally, there was consideration of not erecting the building to include the Break and Shear equipment and the Electric Shop. Without this space, work would need to be contracted out, likely to the Billings area, and could cause delays in maintenance and corrective actions for the existing Units 3 and 4 as well as increase expenses.

	Additionally, work areas for the electrical work would be required to be set up throughout the plant on an ad hoc basis that would reduce efficiencies provided by a central location as well as increase access hazards throughout the plant.
Q:	What was the timeline for completion?
A:	If approved by the balance of the Owners, anticipated completion and "In-Service" date is November 2020.
Q:	What was the final cost of the project and when did it go into service?
A:	n/a at this time (9/19)
Q:	Describe the system need for these projects.
A:	This project is required to support the mercury abatement system. The Calcium Bromide (CaBr2) solution is injected in the scrubber slurry. This reacts with the mercury and oxidizes the mercury in the flue gas which can then be captured by the plants existing scrubber equipment. This system is required to meet EPA Mercury and Air Toxic Standards, commonly referred to as MATS.
Q:	Describe the alternatives and how this solution was chosen?
A:	The alternative is described above. As discussed, this was the lowest cost solution to address the three concerns of the combination Break and Sheer Equipment, Electric Shop, and CaBr2 bulk storage and transfer system. All of these are necessary for the cost effective maintenance and operational compliance of Units 3 and 4 in the near term and until the final disposition of Units 3 and 4 are implemented.
Q:	Did Avista/Talen re-evaluate the alternatives?
A:	The alternatives as presented were not re-evaluated.
Q:	Describe Avista's/Talen's project management process that was used to manage this process?
A:	Avista does not manage the projects at Colstrip directly. Talen, as contract operator, manages all of the projects. They use Primavera as a software solution to keep projects on budget and on schedule. Talen's employs a number Project Management Professionals and engineers who may be assigned to manage projects depending on complexity.
Q:	Describe how Talen kept Avista management informed during this project.
A:	Budget to Actual reports are issued to Avista by Talen on a monthly basis. The cost status of each individual project is reported in these spreadsheet reports
Q:	Please describe any material changes that impacted the project scope, schedule or budget.
A:	n/a at this time
Q:	Provide up-to-date economics over its expected life.
A:	This is an Environmental Must Do project so no economics were developed for this project
Q:	Provide up-to-date environmental liabilities and risks over its expected life.
A:	

Q:	Does this project extend the plant life beyond anticipated shut down date?
A:	This project is required to continue operation up to the shut down date, whenever that is determined to be.

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Project ID[i]:	63.4573		
Project Name:	Capture Well Treatment System		
Plant:	Colstrip Steam Electric Station		
Unit(s):	Units 1 - 4		
Project Costs:	$13,200,000	**Avista Costs:**	$1,980,000
Costs of this Request	$6,600,000	**Avista Costs of this Request**	$990,000

Background: The Water Management System and Coal Combustion Residual are essentially a building block set of projects that support the same strategic goal – to meet our regulatory obligations and environmental compliance requirements under the Agreement of Consent (AOC) with the Montana Department of Environmental Quality (MDEQ) and Environmental Protection Agency (EPA) rules on Coal Combustion Residuals (CCR). These requirements result in a several multi-year capital projects that will likely extend out through 2024 that address groundwater quality at the Colstrip site.

A simple process description begins with raw water is piped from the Yellowstone River to Castle Rock Lake and ultimately to holding tanks at the plant site. This water is used in boilers, cooling towers and scrubber systems. Fly ash from the scrubber system is transported to the plants which then removes the excess water and deposits paste into disposal cells. Once the water is clear, it is ultimately recirculated back to the plants for reuse. All water is reused or lost through evaporation – this is a zero discharge facility. Throughout the years, water has been lost through seepage from the ponds that has contaminated the groundwater on the Colstrip site. The AOC is the primary Montana regulatory mechanism to address the groundwater contamination. This is a multi-year project due to the complexity and inter-related nature of the ponds.

Due to the significant amount of work required to meet these environmental regulations, this project has and will continue to have Capital Projects in each year from 2040 through the closure of the Plant. The overall handling of the close loop water system at Colstrip is subject to these two Environmental Must Do requirements.

Q:	Please describe the project
A:	The Colstrip Wastewater Administrative Order on Consent (AOC) requires specific actions by the plant to remediate impacted groundwater at the Plant Site. The Montana Dept. of Environmental Quality (MDEQ) approved actions requires treatment of the capture well water as part of the cleanup of impacted groundwater at the Plant Site. This project provides funding for a two year design/construction schedule to implement a groundwater capture treatment system in accordance with the requirements identified in the Colstrip Wastewater AOC Plant Site Remedy as approved by MDEQ. The construction schedule meets the requirements of the approved MDEQ remediation for the plant site groundwater capture wells. Current groundwater capture rate for the Plant Site area is 165gpm and the Unit 1&2 Stage One Evaporation Pond (SOEP)/Stage Two Evaporation Pond (STEP) area capture rate is 144gpm. With these flow rates, the Groundwater Capture Storage Pond (approved for construction in 2019) would fill in about 3.2 years.

	The MDEQ approved remediation remedy also includes fresh water injection into the plant water system. To implement this, fresh water injection wells will be installed and additional capture wells provide this year as required by this approved remedy. Once the remediation injection wells are operating at full capacity, we expect the total capture rate to be approximately 500gpm. At this full capacity rate, we will fill the Groundwater Capture Storage Pond in about 2 years. The 2-year design and construction schedule proposed with this project will meet the remediation requirements as approved by MDEQ. This project will include the design and construction of a new Brine Concentrator, steam supply unit, and a Crystallizer. The steam supply unit will provide capacity for this groundwater capture treatment system and the other groundwater capture treatment systems (currently in service) when all four units cease operation. In addition, this steam supply unit is capable of supplying steam heating to Units 3&4 if both Units are off during winter months.
Q:	Did Avista/Talen consider alternatives to the project?
A:	As part of the effort, there were alternatives considered. These included upgrading some ponds and implementing more rigid institutional controls (i.e. more strict procedures, but with more costs associated with those more strict procedures), changing existing pumping performance requirements for the site and adding a treatments system, or continuing with the present operation. MDEQ ultimately determined that these options were not as effective as the selected option. Therefore the selected option was written into the Agreement of Consent with the MDEQ to remedy the water issues at Colstrip.
Q:	What was the timeline for completion?
A:	The current work plan has engineering and design to start in January 2020 and construction and installation completed in October 2021. This request is to accelerate the engineering by starting work in late 2019.
Q:	What was the final cost of the project and when did it go into service?
A:	n/a at this time (9/19)
Q:	Describe the system need for these projects.
A:	This system is required for the overall water handling requirements for the Colstrip site. Costs have been adjudicated between the U12 owners and the U34 owners.
Q:	Describe the alternatives and how this solution was chosen?
A:	The decision was ultimately MDEQ required.
Q:	Did Avista/Talen re-evaluate the alternatives?
A:	As stated, this is part of the AOC and not subject to re-evaluation unless ultimately the system fails to achieve the anticipated results.

Q:	Describe Avista's/Talen's project management process that was used to manage this process?
A:	Avista does not manage the projects at Colstrip directly. Talen, as contract operator, manages all of the projects. They use Primavera as a software solution to keep projects on budget and on schedule. Talen's employs a number Project Management Professionals and engineers who may be assigned to manage projects depending on complexity.
Q:	Describe how Talen kept Avista management informed during this project.
A:	Budget to Actual reports are issued to Avista by Talen on a monthly basis. The cost status of each individual project is reported in these spreadsheet reports
Q:	Please describe any material changes that impacted the project scope, schedule or budget.
A:	n/a at this time.
Q:	Provide up-to-date economics over its expected life.
A:	This is an Environmental Must Do as required by the AOC
Q:	Provide up-to-date environmental liabilities and risks over its expected life.
A:	Currently, water from existing containment ponds has leaked into the ground water system on or near the site. This is required to be remediated. It is anticipated that this remediation will continue on past the operating life of the units.
Q:	Does this project extend the plant life beyond anticipated shut down date?
A:	This project is required to be continued by AOC even after the Plant may be shut down and dismantled. This is an ongoing environmental commitment

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Revision Summary		
Date	**Revision**	**Initials**
11/6/19	Initial Rate Sheet created	SEW
10/26/20	Updated to Reflect 2020 and 2021 budgets	SEW

Project ID[i]:	23.4571		
Project Name:	U3 Aux Transformer		
Plant:	Colstrip Steam Electric Station		
Unit(s):	3		
Project Costs:	$1,950,000	**Avista Costs:**	$293,000
2020 Costs:	$250,000		$37,500

Q:	Please describe the project
A:	Unit 3's aux transformer is original and has been in service longer than ~36 years. This unit has been subject to several through faults due to in-plant electrical failures. The LTC's (load tap changers) on Unit 3's Auxiliary transformer have experienced internal arcing failure, oil leakage and controls failures in the last 5 years. The furanic compound testing of the in service transformer oil shows insulation aging concerns. Recently the 13.8kv load tap changer failed. The troubleshooting indicated failed components on a control board. It was repaired by removing a board from the failed Unit 4 aux transformer and installing it in the Unit 3 aux transformer. The auxiliary transformer for Unit 4 had failed in service previously (a year earlier)
Q:	Did Avista/Talen consider alternatives to the project?
A:	Yes. The Unit 4 Aux Transformer had previously failed in service. As a stop gap, a configuration was made with the transmission lines, the unit starting transformers, and station service bus to back feed the auxiliary load (normally served by the auxiliary transformer) through this arrangement. The resulting configuration results in a lot of system losses. In addition, it would require a significant de-rate on the operating unit in order to start the other unit if it had been shut down for whatever reason. This placed the entire plant at some risk of losing these key start up transformers as well. The startup transformers were not designed for this heavy continual loading condition. There was discussion to serve Unit 3 with this configuration. Attempts were made to locate a used or rebuilt transformer but the unique configuration of the 1000 MVA rating at the 26kV/13.8kV/4160 winding with load tap changer on both lower voltage windings is very rare. No other units were located.
Q:	What was the timeline for completion?
A:	The order was placed for the transformer in 2019. Installation of the transformer would coincide with the four year outage plan for Unit 3. This is currently planned for a window of 56 days starting in early May of 2021. The final schedule will be determined later.
Q:	What was the final cost of the project and when did it go into service?
A:	Final costs are anticipated to be within the original budget.
Q:	Describe the system need for these projects.
A:	The auxiliary transformer provides the necessary power to run the mills, ID and FD fans, and other critical loads necessary to support the generation of steam to power the turbines. These are very large loads – enough load to serve a small town in many cases. In addition, other miscellaneous loads needed to run the unit are provided by this source. An auxiliary transformer is used rather than using the grid as a source in that it can be tapped directly from the output of the generator, saving considerable system losses if the power is sourced through the

	transmission system. If the grid was used to source this load, it exposes the plant and these critical loads to a variety of possible failures due to line faults, storms, "driver hits pole", and other risks.
Q:	Describe the alternatives and how this solution was chosen?
A:	The alternatives were described above. For reasons of reduced exposure to possible grid faults or problems, using equipment (i.e. startup transformers) in a manner for which they were not designed, reduction in system losses, unit reliability, and the wear on the LTC's a new auxiliary transformer was the best solution.
Q:	Did Avista/Talen re-evaluate the alternatives?
A:	Yes – prior to placing the order, the alternatives were again discussed with the plant and the owners. No change in the decision resulted from those discussion.
Q:	Describe Avista's/Talen's project management process that was used to manage this process?
A:	Avista does not manage the projects at Colstrip directly. Talen, as contract operator, manages all of the projects. They use Primavera as a software solution to keep projects on budget and on schedule. Talen's employs a number Project Management Professionals and engineers who may be assigned to manage projects depending on complexity.
Q:	Describe how Talen kept Avista management informed during this project.
A:	Budget to Actual reports are issued to Avista by Talen on a monthly basis. The cost status of each individual project is reported in these spreadsheet reports
Q:	Please describe any material changes that impacted the project scope, schedule or budget.
A:	n/a at this time
Q:	Provide up-to-date economics over its expected life.
A:	n/a at this time.
Q:	Provide up-to-date environmental liabilities and risks over its expected life.
A:	This project does not directly impact environmental liabilities.
Q:	Does this project extend the plant life beyond anticipated shut down date?
A:	No

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Revision Summary		
Date	**Revision**	**Initials**
11/6/19	Initial Rate Sheet created	SEW

Project ID[i]:	6.4571		
Project Name:	U3 Turbine Generator Base Overhaul		
Plant:	Colstrip Steam Electric Station		
Unit(s):	3		
Project Costs:	$3,727,000	**Avista Costs:**	$559,000
2020 Costs	$150,000		$22,500

Q:	Please describe the project
A:	This project has planned work in two years. The first year (2020 commitment) is to rebuild the turbine control valves that are removed from Unit 4 in 2020. This work is to ship the removed valves to have them completely refurbished and prepared so they can be installed as part of the overhaul for Unit 4 scheduled in 2021. This rebuild is to assure the control valves will perform as they are crucial for turbine control and over speed protection. The work 2021 to be performed includes the mobilization of labor, the high velocity oil flush, bearing work as required, general open and close on the generator, TV pinned seat installation, GV, TV, IV and RHS valve routine rebuilds, contractor overhead (site support staff, project management, contract engineering support, office/clerical help, etc.), scaffolding, insulation, tool use, general steam chest maintenance, NDE testing and maintenance of the bolts and studs on the valves and steam chest and other assigned duties. This maintenance is performed every overhaul to ensure proper operation and reliability of the turbine/generator.
Q:	Did Avista/Talen consider alternatives to the project?
A:	The other option here is to do nothing. This is routine work necessary to provide a level of assurance that the unit will function through the outage interval.
Q:	What was the timeline for completion?
A:	This work would coincide with the four year outage plan for Unit 3. This is currently planned for a window of 56 days starting in early May of 2021. The final schedule will be determined later.
Q:	What was the final cost of the project and when did it go into service?
A:	Not applicable as of this writing.
Q:	Describe the system need for these projects.
A:	This is a series of refurbishments and replacements of parts of the turbine controls to assure they will function properly to provide the output control for a variety of items including indirectly managing emissions levels (by managing the output of the turbine, it provides means to make adjustments to the combustion process that can affect emissions), controlling the turbine output and response to system conditions, and as a safety system to prevent turbine over speed.
Q:	Describe the alternatives and how this solution was chosen?
A:	This work is either a “do” or a “don’t”. Failure to perform this routine work can increase the risk of an equipment failure or a system failure that could lead to personnel hazards. This work is intended to be scoped to provide adequate margins for safe and reliable operations between major outages. While this does not guarantee that systems will not fail between major outages, this is commonly accepted practices to minimize an unplanned event.

Q:	Did Avista/Talen re-evaluate the alternatives?
A:	No
Q:	Describe Avista's/Talen's project management process that was used to manage this process?
A:	Avista does not manage the projects at Colstrip directly. Talen, as contract operator, manages all of the projects. They use Primavera as a software solution to keep projects on budget and on schedule. Talen's employs a number Project Management Professionals and engineers who may be assigned to manage projects depending on complexity.
Q:	Describe how Talen kept Avista management informed during this project.
A:	Budget to Actual reports are issued to Avista by Talen on a monthly basis. The cost status of each individual project is reported in these spreadsheet reports
Q:	Please describe any material changes that impacted the project scope, schedule or budget.
A:	n/a
Q:	Provide up-to-date economics over its expected life.
A:	n/a
Q:	Provide up-to-date environmental liabilities and risks over its expected life.
A:	This project does not directly impact environmental liabilities.
Q:	Does this project extend the plant life beyond anticipated shut down date?
A:	No

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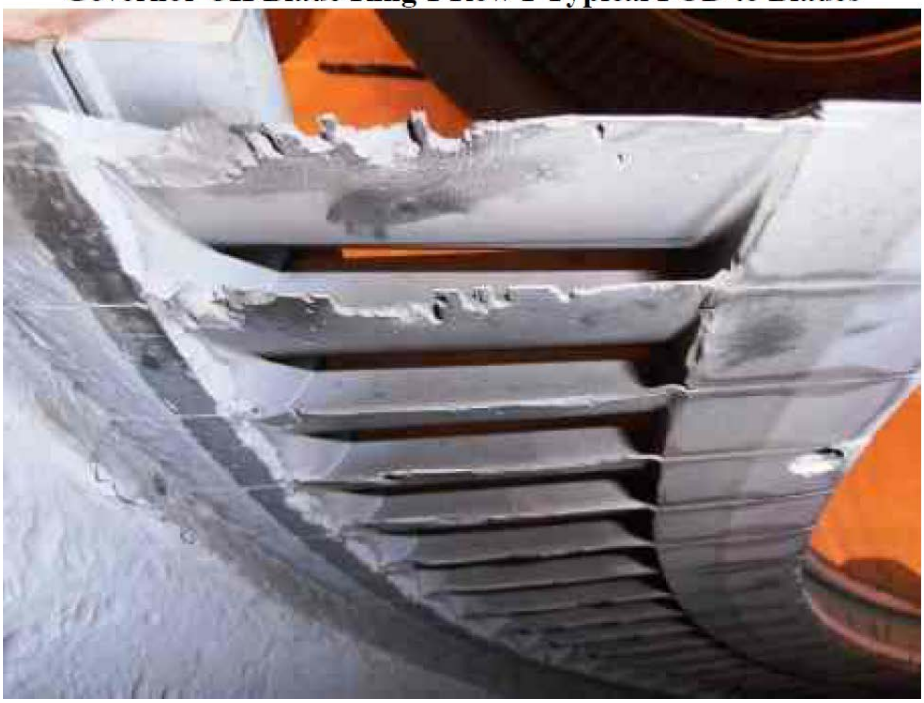
Revision Summary		
Date	**Revision**	**Initials**
11/6/19	Initial Rate Sheet created	SEW

Project ID[i]:	9.4571		
Project Name:	U4 IP Turbine Overhaul		
Plant:	Colstrip Steam Electric Station		
Unit(s):	4		
Project Costs:	$8,250,000	**Avista Costs:**	$1,238,000
2020 Costs	$2,719,000		$408,000

Q:	Please describe the project
A:	This project was originally approved as part of the 2018 budget as a three year project with completion planned for 2020. As proposed, this project was planned for $4M in 2018, $1.63M in 2019, with $2.62M in 2020. 2020 is the last year of this project. This project will entail disassembling the IP Turbine and replacing the rotor, stationary blades (blade rings), and the inner cylinder with new. The current outer cylinder will be re-used. Blade rows 1-3 and blade rings on both sides of the existing IP Turbine have moderate to severe trailing edge erosion and some blunt leading edges. The inlet flow guide is out of round due to thermal distortion and the inner cylinder bolting hardware is starting to bottom out. The initial rows of the turbine have had shroud repairs to mitigate shroud lifting. This turbine has been ordered, manufactured, and is currently in storage, ready to be shipped to the plant for installation.
Q:	Did Avista/Talen consider alternatives to the project?
A:	There was some consideration of ordering replacement turbine blades and rings to replace the damaged ones on the first three stages. Because of the extent of the damage observed in the inspection, it was determined to proceed with complete turbine blades, rings, and inner cylinder.
Q:	What was the timeline for completion?
A:	This work would coincide with the four year outage plan for Unit 4. This is currently planned for a window of 56 days starting in early May of 2020. The final schedule will be determined later.
Q:	What was the final cost of the project and when did it go into service?
A:	Final costs are anticipated to be within the original budget. Remaining capital cost in 2020 is for the replacement of the IP rotor is $2.719M, which includes $131K for remaining storage cost, $2.1M for labor to install and complete performance testing, and ~10% contingency
Q:	Describe the system need for these projects.
A:	This project was previously approved in 2018. The basis for the approval was to address reliability concerns associated with the condition of the IP turbine blades and rings. Some photos that illustrate the current condition that is causing the concerns are attached here:

RS Generator Blower Stationary Blade Casting Gouges

Governor UH Blade Ring 1 Row 1 Typical FOD to Blades



Q:	Describe the alternatives and how this solution was chosen?
A:	As briefly discussed above, some consideration was done to just replace the damaged components. In addition, doing nothing was also discussed. At the time the decision was made, it was determined that replacing the entire turbine blade, ring and rotor sections would best address plant reliability and would be less expensive to replace rather than repair due to the extensive field work necessary to repair in contrast to the shop work to replace.

Q:	Did Avista/Talen re-evaluate the alternatives?
A:	No
Q:	Describe Avista's/Talen's project management process that was used to manage this process?
A:	Avista does not manage the projects at Colstrip directly. Talen, as contract operator, manages all of the projects. They use Primavera as a software solution to keep projects on budget and on schedule. Talen's employs a number Project Management Professionals and engineers who may be assigned to manage projects depending on complexity.
Q:	Describe how Talen kept Avista management informed during this project.
A:	Budget to Actual reports are issued to Avista by Talen on a monthly basis. The cost status of each individual project is reported in these spreadsheet reports
Q:	Please describe any material changes that impacted the project scope, schedule or budget.
A:	n/a
Q:	Provide up-to-date economics over its expected life.
A:	n/a
Q:	Provide up-to-date environmental liabilities and risks over its expected life.
A:	This project does not directly impact environmental liabilities.
Q:	Does this project extend the plant life beyond anticipated shut down date?
A:	No

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Revision Summary		
Date	**Revision**	**Initials**
11/6/19	Initial Rate Sheet created	SEW

Project ID[i]:	10.4571		
Project Name:	U4 LP Turbine Overhaul		
Plant:	Colstrip Steam Electric Station		
Unit(s):	4		
Project Costs:	$1,814,000	**Avista Costs:**	$196,650

Q:	Please describe the project
A:	The scope of this project is to perform base maintenance on the LP Turbine associated with the overhaul on Unit 4. The work to be performed includes General NDE, cleaning, blade and seal inspections and repairs as needed. This work is done during overhaul to ensure proper operation and reliability of the LP Turbine.
Q:	Did Avista/Talen consider alternatives to the project?
A:	No. This work is planned work and is driven by manufacturer's recommendations, ongoing inspections, and work discovered when the unit is opened up for its planned overhaul.
Q:	What was the timeline for completion?
A:	This work would coincide with the four year outage plan for Unit 4. This is currently planned for a window of 56 days starting in early May of 2020. The final schedule will be determined later.
Q:	What was the final cost of the project and when did it go into service?
A:	Final costs are anticipated to be within the original budget. Inspection, cleaning, non-destructive testing for the two Low Pressure turbines are expected to cost $769k. The balance of the costs are to address worn and damaged turbine seals that were discovered during the previous inspection four years ago.
Q:	Describe the system need for these projects.
A:	In previous inspections, modest damage to the low pressure turbine were found. The damage was due to several influences including some debris strike damage, erosion on the blade due to normal operation, and some minor cracking due to age and wear. If these are not addressed in a routine way, they could cause a major failure and extended unplanned outage in the future.
Q:	Describe the alternatives and how this solution was chosen?
A:	Long industry practices have demonstrated the prudency of performing this work during a planned event to avoid the risk of a major unplanned failure.
Q:	Did Avista/Talen re-evaluate the alternatives?
A:	No
Q:	Describe Avista's/Talen's project management process that was used to manage this process?
A:	Avista does not manage the projects at Colstrip directly. Talen, as contract operator, manages all of the projects. They use Primavera as a software solution to keep projects on budget and on schedule. Talen's employs a number Project Management Professionals and engineers who may be assigned to manage projects depending on complexity.

Q:	Describe how Talen kept Avista management informed during this project.
A:	Budget to Actual reports are issued to Avista by Talen on a monthly basis. The cost status of each individual project is reported in these spreadsheet reports
Q:	Please describe any material changes that impacted the project scope, schedule or budget.
A:	n/a
Q:	Provide up-to-date economics over its expected life.
A:	n/a
Q:	Provide up-to-date environmental liabilities and risks over its expected life.
A:	This project does not directly impact environmental liabilities.
Q:	Does this project extend the plant life beyond anticipated shut down date?
A:	No

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Revision Summary		
Date	**Revision**	**Initials**
11/6/19	Initial Rate Sheet created	SEW

Project ID[i]:	7.4571		
Project Name:	U4 Turbine Generator Base Overhaul		
Plant:	Colstrip Steam Electric Station		
Unit(s):	4		
Project Costs:	$4,762,000	**Avista Costs:**	$714,000

Q:	Please describe the project
A:	The work to be performed includes the mobilization of labor, the high velocity oil flush, bearing work as required, general open and close on the generator, TV pinned seat installation, GV, TV, IV and RHS valve routine rebuilds, contractor overhead (site support staff, project management, contract engineering support, office/clerical help, etc.), scaffolding, insulation, tool use, general steam chest maintenance, NDE testing and maintenance of the bolts and studs on the valves and steam chest and other assigned duties. This maintenance is performed every overhaul to ensure proper operation and reliability of the turbine/generator. This work will install a rebuilt turbine valve system that had been previously removed from the last time Unit 3 was down in 2017.
Q:	Did Avista/Talen consider alternatives to the project?
A:	The other option here is to do nothing. This is routine work necessary to provide a level of assurance that the unit will function through the outage interval.
Q:	What was the timeline for completion?
A:	This work would coincide with the four year outage plan for Unit 4. This is currently planned for a window of 56 days starting in early May of 2020. The final schedule will be determined later.
Q:	What was the final cost of the project and when did it go into service?
A:	Not applicable as of this writing.
Q:	Describe the system need for these projects.
A:	This is a series of refurbishments and replacements of parts of the turbine controls to assure they will function properly to provide the output control for a variety of items including indirectly managing emissions levels (by managing the output of the turbine, it provides means to make adjustments to the combustion process that can affect emissions), controlling the turbine output and response to system conditions, and as a safety system to prevent turbine over speed.
Q:	Describe the alternatives and how this solution was chosen?
A:	This work is either a “do” or a “don’t”. Failure to perform this routine work can increase the risk of an equipment failure or a system failure that could lead to personnel hazards. This work is intended to be scoped to provide adequate margins for safe and reliable operations between major outages. While this does not guarantee that systems will not fail between major outages, this is commonly accepted practices to minimize an unplanned event.
Q:	Did Avista/Talen re-evaluate the alternatives?
A:	No

Q:	Describe Avista's/Talen's project management process that was used to manage this process?
A:	Avista does not manage the projects at Colstrip directly. Talen, as contract operator, manages all of the projects. They use Primavera as a software solution to keep projects on budget and on schedule. Talen's employs a number Project Management Professionals and engineers who may be assigned to manage projects depending on complexity.
Q:	Describe how Talen kept Avista management informed during this project.
A:	Budget to Actual reports are issued to Avista by Talen on a monthly basis. The cost status of each individual project is reported in these spreadsheet reports
Q:	Please describe any material changes that impacted the project scope, schedule or budget.
A:	n/a
Q:	Provide up-to-date economics over its expected life.
A:	n/a
Q:	Provide up-to-date environmental liabilities and risks over its expected life.
A:	This project does not directly impact environmental liabilities.
Q:	Does this project extend the plant life beyond anticipated shut down date?
A:	No

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Revision Summary		
Date	**Revision**	**Initials**
11/6/19	Initial Rate Sheet created	SEW

Project ID[i]:			
Project Name:	Unit 4 Boiler Bucket Burner and Auxiliary Air Replacement		
Plant:	Colstrip Steam Electric Station		
Unit(s):	3&4		
Project Costs:	$1,575,000	**Avista Costs:**	$236,000
2020 Costs	$1,575,000		

Q:	Please describe the project
A:	A critical component of the SmartBurn NOx control system are the Burner buckets and Aux Air Tips. In order to meet environmental emission targets, these elements must perform. To maintain equipment function and provide for NOx emission and opacity control, buckets (SOFA, TOFA, and Burner) need to be replaced every 4 years during the overhaul. Buckets warp with heat exposure over an extended time, which causes buckets to bind up in the boiler and restrict movement during unit operation. Through inspection during overhaul the buckets are found to be at the end of life in 3-4 years. Burner buckets/Aux Air tips are scheduled to be replaced on a 4 year plan during an overhaul, this allows physical access to all buckets (SOFA, TOFA, and Burner) while scaffold is in the boiler. The preventative maintenance process of replacing buckets is most economical with scaffold as this allows for an effective and cohesive removal of buckets, repairs to support material, testing of movement, and alignment of all emission components associated with the boiler corners at the same time. Burner buckets/Aux Air Tips are a portion of the SmartBurn NOX control system and need to be in good repair for combustion optimization, and PM & NOX control .
Q:	Did Avista/Talen consider alternatives to the project?
A:	The work here is replacing worn out equipment that has been used to end of life. This is a replacement “in-kind” project and is part of the ongoing work on the unit to keep its combustion performance optimal for emission management purposes.
Q:	What was the timeline for completion?
A:	The work is to be completed during the Unit 4 major planned outage in 2020.
Q:	What was the final cost of the project and when did it go into service?
A:	n/a at this time.
Q:	Describe the system need for these projects.
A:	The elements being replaced here are part of the combustion system. A optimal performing system will compliment other emission controls to minimize all emissions from the plant. This allows the plant to continue to operate within its permitted levels.
Q:	Describe the alternatives and how this solution was chosen?
A:	As this is an in-kind replacement of worn out parts, no options were pursued
Q:	Did Avista/Talen re-evaluate the alternatives?
A:	No.
Q:	Describe Avista’s/Talen’s project management process that was used to manage this process?

A:	Avista does not manage the projects at Colstrip directly. Talen, as contract operator, manages all of the projects. They use Primavera as a software solution to keep projects on budget and on schedule. Talen's employs a number Project Management Professionals and engineers who may be assigned to manage projects depending on complexity.
Q:	Describe how Talen kept Avista management informed during this project.
A:	Budget to Actual reports are issued to Avista by Talen on a monthly basis. The cost status of each individual project is reported in these spreadsheet reports
Q:	Please describe any material changes that impacted the project scope, schedule or budget.
A:	n/a at this time.
Q:	Provide up-to-date economics over its expected life.
A:	n/a at this time
Q:	Provide up-to-date environmental liabilities and risks over its expected life.
A:	This project creates no new environmental liabilities. As indicated above, this is only an issue while the unit is operating.
Q:	Does this project extend the plant life beyond anticipated shut down date?
A:	No -

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Revision Summary		
Date	**Revision**	**Initials**
2/12/20	Initial Rate Sheet created	SEW

Project ID[i]:	24.4571		
Project Name:	U4 Aux Transformer		
Plant:	Colstrip Steam Electric Station		
Unit(s):	3		
Project Costs:	$1,950,000	**Avista Costs:**	$293,000
2020 Costs:	$250,000		$37,500

Q:	Please describe the project
A:	In 2018, the Unit 4 Auxiliary transformer developed high levels of gassing in oil routine oil sampling indicating internal problems. Specifically, high levels of acetylene. When the transformer was opened for inspection, damaged to the tap changer and into the transformer winding was discovered. The damage was unrepairable. It was determined that the most cost-effective solution was to place an order for a new transformer and replace the out of service unit.
Q:	Did Avista/Talen consider alternatives to the project?
A:	Yes. As a stop gap, a configuration was made with the transmission lines, the unit starting transformers, and station service bus to back feed the auxiliary load (normally served by the auxiliary transformer) through this arrangement. The resulting configuration results in a lot of system losses. In addition, it would require a significant de-rate on the operating unit in order to start the other unit if it had been shut down for whatever reason. This placed the entire plant at some risk of losing these key start up transformers as well. The startup transformers were not designed for this heavy continual loading condition. There was discussion to serve Unit 3 with this configuration. Attempts were made to locate a used or rebuilt transformer but the unique configuration of the 1000 MVA rating at the 26kV/13.8kV/4160 winding with load tap changer on both lower voltage windings is very rare. No other units were located. Inquiries were also made to assess if repair was an option, but vendor quotes indicated it was far more expensive to attempt to repair the unit than to just replace with a new one.
Q:	What was the timeline for completion?
A:	The order was placed for the transformer in 2019. Installation of the transformer would coincide with the four year outage plan for Unit 3. This is currently planned for a window of 56 days starting in early May of 2021. The final schedule will be determined later. Update: the U4 Aux transformer arrived on site in April 2020. Because of concerns with the COVID-19 Pandemic, a small outage of three weeks was taken in May to inspect Unit 4 in advance of the major overhaul outage rescheduled to September 2020. During this three week outage, the U4 Aux transformer was installed and was placed into service.
Q:	What was the final cost of the project and when did it go into service?
A:	Final costs are anticipated to be within the original budget.
Q:	Describe the system need for these projects.

A:	The auxiliary transformer provides the necessary power to run the mills, ID and FD fans, and other critical loads necessary to support the generation of steam to power the turbines. These are very large loads – enough load to serve a small town in many cases. In addition, other miscellaneous loads needed to run the unit are provided by this source. An auxiliary transformer is used rather than using the grid as a source in that it can be tapped directly from the output of the generator, saving considerable system losses if the power is sourced through the transmission system. If the grid was used to source this load, it exposes the plant and these critical loads to a variety of possible failures due to line faults, storms, "driver hits pole", and other risks.
Q:	Describe the alternatives and how this solution was chosen?
A:	The alternatives were described above. For reasons of reduced exposure to possible grid faults or problems, using equipment (i.e. startup transformers) in a manner for which they were not designed, reduction in system losses, unit reliability, and the wear on the LTC's a new auxiliary transformer was the best solution.
Q:	Did Avista/Talen re-evaluate the alternatives?
A:	Yes – prior to placing the order, the alternatives were again discussed with the plant and the owners. No change in the decision resulted from those discussion.
Q:	Describe Avista's/Talen's project management process that was used to manage this process?
A:	Avista does not manage the projects at Colstrip directly. Talen, as contract operator, manages all of the projects. They use Primavera as a software solution to keep projects on budget and on schedule. Talen's employs a number Project Management Professionals and engineers who may be assigned to manage projects depending on complexity.
Q:	Describe how Talen kept Avista management informed during this project.
A:	Budget to Actual reports are issued to Avista by Talen on a monthly basis. The cost status of each individual project is reported in these spreadsheet reports. In addition, this item was discussed regularly at monthly Owner meetings to check in on status.
Q:	Please describe any material changes that impacted the project scope, schedule or budget.
A:	While there were some logistical challenges in getting the transformer to the site, the installation went off as planned and the unit was placed in service.
Q:	Provide up-to-date economics over its expected life.
A:	An economic analysis was not performed for this option. The final costs for this project was $2,033,704
Q:	Provide up-to-date environmental liabilities and risks over its expected life.
A:	This project does not directly impact environmental liabilities.
Q:	Does this project extend the plant life beyond anticipated shut down date?
A:	No

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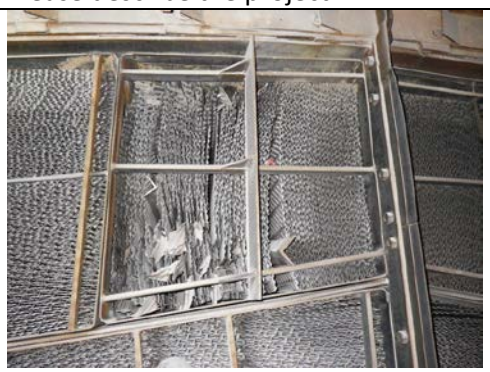
Revision Summary		
Date	**Revision**	**Initials**
11/6/19	Initial Rate Sheet created for Unit 3 Aux Transf	SEW
10/5/20	Updated to reflect Unit 4 Aux Transf	SEW

Project ID[i]:	37.4571		
Project Name:	U4 Air Preheater Basket Replacement		
Plant:	Colstrip Steam Electric Station		
Unit(s):	3		
Project Costs:	$2,345,000	**Avista Costs:**	$351,750
2020 Costs:	$1,260,000		$189,000

Q:	Please describe the project
A:	 This project was approved as a 2-year project, material was ordered in 2019. This project is to replace major sections of the air heat transfer baskets on B Air Preheater (APH). Because of the arrangement of the baskets they wear on the inner rows and some have caused damaged to the intermediate baskets. The wear on the baskets has caused the hot end baskets to fall apart and drop onto the top of the hot intermediate baskets. This has resulted in APH pluggage that cannot be mitigated with a high pressure wash. The only way to restore full function of the APH is to replace baskets . 
Q:	Did Avista/Talen consider alternatives to the project?
A:	As this is a replacement of elements of an existing system, there are few options. Choosing to continue to run in their current condition would result in a continual failure of the system and the ability to preheat air for the combustion process. This would result in a significant decrease in unit performance. Removing the Air Preheater is not a viable option as this is a critical element in the heat cycle process and unit performance would significantly change increasing the operating expense of the plant and increasing cost to customers. The replacement option was chosen as it will restore a normal operating condition to the unit without penalty or significant risk of failure after the overhaul work is completed.
Q:	What was the timeline for completion?
A:	This work is planned to be performed during the 2020 Unit 4 Overhaul outage.
Q:	What was the final cost of the project and when did it go into service?

A:	Final costs are anticipated to be within the original budget.
Q:	Describe the system need for these projects.
A:	The air pre-heater system is a key to overall boiler efficiency. This system extracts heat from the flue gas and transfers it to the boiler make up air before the fire. It takes less heat bring hot air to reach operating temperatures within the boiler than colder air. This process improves the cost effectiveness of the overall system.
Q:	Describe the alternatives and how this solution was chosen?
A:	The expense to replace the system rather than replacing parts of the system would be much more expensive and not improve performance. Removing the system would deprive the overall boiler of a significant efficiency improvement and cost more in fuel and likely reduce output to the detriment of the energy expense.
Q:	Did Avista/Talen re-evaluate the alternatives?
A:	No. The initial considerations were evident on the preferred course of action.
Q:	Describe Avista's/Talen's project management process that was used to manage this process?
A:	Avista does not manage the projects at Colstrip directly. Talen, as contract operator, manages all of the projects. They use Primavera as a software solution to keep projects on budget and on schedule. Talen's employs a number Project Management Professionals and engineers who may be assigned to manage projects depending on complexity.
Q:	Describe how Talen kept Avista management informed during this project.
A:	Budget to Actual reports are issued to Avista by Talen on a monthly basis. The cost status of each individual project is reported in these spreadsheet reports.
Q:	Please describe any material changes that impacted the project scope, schedule or budget.
A:	No material changes from the original plan had occurred.
Q:	Provide up-to-date economics over its expected life.
A:	An economic analysis was not performed for this option.
Q:	Provide up-to-date environmental liabilities and risks over its expected life.
A:	This project does not directly impact environmental liabilities.
Q:	Does this project extend the plant life beyond anticipated shut down date?
A:	No

[i]

Revision Summary		
Date	**Revision**	**Initials**
10/06/20	Initial Rate Sheet created	SEW

Project ID[i]:	53.4572		
Project Name:	U4 Cooling Tower Fill Replacement		
Plant:	Colstrip Steam Electric Station		
Unit(s):	3&4		
Project Costs:	$3,000,000	**Avista Costs:**	$450,000
2020 Costs	$3,000,000		$450,000

Q:	Please describe the project
A:	The cooling tower fill has been in place for more than ten years. It has become brittle and is further complicated by structural failures within the cooling tower structure. As these structural members fail due to normal age and wear, it causes those parts of the fill material, that those members supported, to fail and the brittle remnants of the failed cooling tower cause the circulating water system to plug up. This project will replace those failed members. In addition, work to replace the poorest condition structural members that are still in service will be undertaken. New fill material will be installed over these new members that will help restore the cooling tower function. This is a partial retrofit intended to allow reasonable operation until a similar project will be done at the next overhaul outage in four years.
Q:	Did Avista/Talen consider alternatives to the project?
A:	Yes – the original recommendation was to remove and replace all of the weak structural members and associated fill. The team also considered an option that would only replace those members that had either failed and the most at risk members based upon a pre-outage inspection. This would not correct the cooling tower for a long run but would expect to get through to the next overhaul outage. Additionally, discussions also centered around if the work needed to be done at all. It was concluded that this work would be needed to avoid possible intermittent shut downs.
Q:	What was the timeline for completion?
A:	This work is intended to be completed during the 2020 Overhaul
Q:	What was the final cost of the project and when did it go into service?
A:	The work is not completed as of this time.
Q:	Describe the system need for these projects.
A:	The cooling tower fill has been in place for more than ten years. It has become brittle and is further complicated by structural failures within the cooling tower structure. As these structural members fail due to normal age and wear, it causes those parts of the fill material that they supported to fail and the brittle remnants of the failed cooling tower cause the circulating water system to plug up.
Q:	Describe the alternatives and how this solution was chosen?

A:	After discussion of the alternatives described above, it was believed the choice to address only the most critical items at this time would be the appropriate course at this time. Doing nothing was thought to be a higher outage risk choice that would not meeting operational expectations.
Q:	Did Avista/Talen re-evaluate the alternatives?
A:	No – once the decision was made to pursue the more limited option, we did not reconsider.
Q:	Describe Avista's/Talen's project management process that was used to manage this process?
A:	Avista does not manage the projects at Colstrip directly. Talen, as contract operator, manages all of the projects. They use Primavera as a software solution to keep projects on budget and on schedule. Talen's employs a number Project Management Professionals and engineers who may be assigned to manage projects depending on complexity.
Q:	Describe how Talen kept Avista management informed during this project.
A:	Budget to Actual reports are issued to Avista by Talen on a monthly basis. The cost status of each individual project is reported in these spreadsheet reports
Q:	Please describe any material changes that impacted the project scope, schedule or budget.
A:	None known at this time.
Q:	Provide up-to-date economics over its expected life.
A:	No analysis was performed
Q:	Provide up-to-date environmental liabilities and risks over its expected life.
A:	None anticipated
Q:	Does this project extend the plant life beyond anticipated shut down date?
A:	No

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Revision Summary		
Date	**Revision**	**Initials**
10/7/20	Initial Rate Sheet created	SEW

Project ID[i]:	64.		
Project Name:	Install New Capture Wells at the Effluent Holding Pond (EHP)		
Plant:	Colstrip Steam Electric Station		
Unit(s):	3&4		
Project Costs:	$3,596,0000	**Avista Costs:**	$539,400
2020 Costs	$3,596,0000		$539,400

Q:	Please describe the project
A:	This project provides for additional capture wells to be installed at the Unit 3&4 EHP to capture water that seeps from the ponds into the ground. These wells collect this water to keep it from moving off the site.
Q:	Did Avista/Talen consider alternatives to the project?
A:	This work is required from the Colstrip Administrative Order of Consent (AOC) that dictates how water on the site is to be remediated. Any discussion of options is provided through the process of negotiations and process of settlement for the AOC with the Montana Department of Environmental Quality. (MDEQ)
Q:	What was the timeline for completion?
A:	The work on this item is to be completed by 2020
Q:	What was the final cost of the project and when did it go into service?
A:	This is not yet in service at this time.
Q:	Describe the system need for these projects.
A:	These are required by the AOC
Q:	Describe the alternatives and how this solution was chosen?
A:	This is included in the AOC that is determined through a process conducted by MDEQ.
Q:	Did Avista/Talen re-evaluate the alternatives?
A:	This was part of the process that resulted in the AOC
Q:	Describe Avista's/Talen's project management process that was used to manage this process?
A:	Avista does not manage the projects at Colstrip directly. Talen, as contract operator, manages all of the projects. They use Primavera as a software solution to keep projects on budget and on schedule. Talen's employs a number of Project Management Professionals and engineers who may be assigned to manage projects depending on complexity.
Q:	Describe how Talen kept Avista management informed during this project.
A:	Budget to Actual reports are issued to Avista by Talen on a monthly basis. The cost status of each individual project is reported in these spreadsheet reports
Q:	Please describe any material changes that impacted the project scope, schedule or budget.
A:	No issues are known at this time.

Q:	Provide up-to-date economics over its expected life.
A:	No economic analysis was done as this was done through the AOC process
Q:	Provide up-to-date environmental liabilities and risks over its expected life.
A:	This information is part of the AOC
Q:	Does this project extend the plant life beyond anticipated shut down date?
A:	No. this is a portion of what is ultimately required to shut down the plant whenever that occurs.

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Revision Summary		
Date	**Revision**	**Initials**
10/07/20	Initial Rate Sheet created	SEW

Project ID[i]:	65.		
Project Name:	Design and Install an In-Situ Flushing System		
Plant:	Colstrip Steam Electric Station		
Unit(s):	3&4		
Project Costs:	$5,965,000	**Avista Costs:**	$894,750
2020 Costs	$1,786,000		$539,400

Q:	Please describe the project
A:	This project provides for installation of 46 freshwater injection wells to be installed at the Unit 3&4 EHP to promote capture of water that seeps from the ponds into the ground. These wells inject fresh water into the ground to promote flows into the capture wells at the edge of the property near the EHP. This project is another part of this groundwater capture system.
Q:	Did Avista/Talen consider alternatives to the project?
A:	This work is required from the Colstrip Administrative Order of Consent (AOC) that dictates how water on the site is to be remediated. Any discussion of options is provided through the process of negotiations and process of settlement for the AOC with the Montana Department of Environmental Quality. (MDEQ)
Q:	What was the timeline for completion?
A:	The work on this item consists of design efforts in 2020 and installation in 2021.
Q:	What was the final cost of the project and when did it go into service?
A:	This is not yet in service at this time.
Q:	Describe the system need for these projects.
A:	These are required by the AOC
Q:	Describe the alternatives and how this solution was chosen?
A:	This is included in the AOC that is determined through a process conducted by MDEQ.
Q:	Did Avista/Talen re-evaluate the alternatives?
A:	This was part of the process that resulted in the AOC
Q:	Describe Avista's/Talen's project management process that was used to manage this process?
A:	Avista does not manage the projects at Colstrip directly. Talen, as contract operator, manages all the projects. They use Primavera as a software solution to keep projects on budget and on schedule. Talen's employs a number of Project Management Professionals and engineers who may be assigned to manage projects depending on complexity.
Q:	Describe how Talen kept Avista management informed during this project.
A:	Budget to Actual reports are issued to Avista by Talen on a monthly basis. The cost status of each individual project is reported in these spreadsheet reports
Q:	Please describe any material changes that impacted the project scope, schedule or budget.

A:	No issues are known at this time.
Q:	Provide up-to-date economics over its expected life.
A:	No economic analysis was done as this was done through the AOC process
Q:	Provide up-to-date environmental liabilities and risks over its expected life.
A:	This information is part of the AOC
Q:	Does this project extend the plant life beyond anticipated shut down date?
A:	No. this is a portion of what is ultimately required to shut down the plant, whenever that occurs.

[i]

Revision Summary		
Date	**Revision**	**Initials**
10/07/20	Initial Rate Sheet created	SEW

Project ID[i]:	46.4584		
Project Name:	Design and Build a Dry Waste Disposal System		
Plant:	Colstrip Steam Electric Station		
Unit(s):	3&4		
Project Costs:	$16,000,000	**Avista Costs:**	$2,400,000
2020 Costs	$3,000,000		$450,000

Q:	Please describe the project
A:	This project provides for installation a “non-liquid” disposal system for Coal Combustion Residue (CCR) material created by units 3&4. This is required as part of the Administrative Order of Consent (AOC).
Q:	Did Avista/Talen consider alternatives to the project?
A:	This work is required from the Colstrip Administrative Order of Consent (AOC) that dictates how water on the site is to be remediated. Any discussion of options is provided through the process of negotiations and process of settlement for the AOC with the Montana Department of Environmental Quality. (MDEQ)
Q:	What was the timeline for completion?
A:	The work on this item consists of design efforts in 2020 and construction starting in 2021 with estimated completion in Mid-2022.
Q:	What was the final cost of the project and when did it go into service?
A:	This is not yet in service at this time.
Q:	Describe the system need for these projects.
A:	These are required by the AOC
Q:	Describe the alternatives and how this solution was chosen?
A:	This is included in the AOC that is determined through a process conducted by MDEQ.
Q:	Did Avista/Talen re-evaluate the alternatives?
A:	This was part of the process that resulted in the AOC
Q:	Describe Avista’s/Talen’s project management process that was used to manage this process?
A:	Avista does not manage the projects at Colstrip directly. Talen, as contract operator, manages all the projects. They use Primavera as a software solution to keep projects on budget and on schedule. Talen’s employs a number of Project Management Professionals and engineers who may be assigned to manage projects depending on complexity.
Q:	Describe how Talen kept Avista management informed during this project.
A:	Budget to Actual reports are issued to Avista by Talen on a monthly basis. The cost status of each individual project is reported in these spreadsheet reports
Q:	Please describe any material changes that impacted the project scope, schedule or budget.

A:	No issues are known at this time.
Q:	Provide up-to-date economics over its expected life.
A:	No economic analysis was done as this was done through the AOC process
Q:	Provide up-to-date environmental liabilities and risks over its expected life.
A:	This information is part of the AOC
Q:	Does this project extend the plant life beyond anticipated shut down date?
A:	No. this is a portion of what is ultimately required to shut down the plant, whenever that occurs.

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Revision Summary		
Date	**Revision**	**Initials**
10/11/20	Initial Rate Sheet created	SEW