

ATTACHMENT 4 – STATUS OF ENERGY OPTIMIZATION MEASURES (EOMs)

Energy Efficiency - Anderson Hydro Facility						
No.	Project / Measure	Recommendation	Energy (MWh/Yr)	Estimated Cost	Completion Date (* projected)	Status (January 2017)
1	Continue to perform preventive maintenance and update operational procedures to optimize generation and improve reliability	Implement	N/A	As part of existing O&M tasks	On-Going	On-going (preventative maintenance and testing performed regularly)

Energy Efficiency – Pumping Plants						
No.	Project / Measure	Recommendation	Energy (MWh/Yr)	Estimated Cost	Completion Date (* projected)	Status (January 2017)
2	Pacheco Investigate optimizing air cooling flow in the Electrical Room	Perform investigation	TBD	\$4,000	FY16	Complete
3	Pacheco Operate more efficient pumps at PPP and manage pump operations closer to full speed	Implement	3,196	\$17,500	FY15	Complete
4	Pacheco Provide Operators via SCADA a display of wire to water efficiency for the pumping plant. This will allow for feedback on strategies that have an impact on energy use.	Implement	N/A	\$3,000	FY15	Complete

¹ The Energy Optimization Measures (EOMs) were recommended by the Energy Optimization Plan, a comprehensive energy audit conducted by Black & Veatch consultant in 2013.

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Energy Efficiency – Pumping Plants						
No.	Project / Measure	Recommendation	Energy (MWh/Yr)	Estimated Cost	Completion Date (* projected)	Status (January 2017)
5	Pacheco Replace lights with energy efficient types.	Implement	3.12	\$23,000	FY15	Complete
6	Coyote Investigate HVAC Control setting	Perform investigation	TBD	\$3,000	FY16	Complete
7	Coyote Investigate optimizing air cooling flow in the Electrical Room	Perform investigation	TBD	\$3,000	FY16	Complete
8	Coyote Investigate pump curves and system operation to optimize pumping efficiency.	Perform investigation	TBD	\$6,000	FY17*	In progress
9	Coyote Provide Operators via SCADA a display of wire to water efficiency for the pumping plant. This will allow for feedback on strategies that have an impact on energy use.	Perform investigation	TBD	\$3,000	FY14	Investigation Complete (implementation dependent on completion of ASD upgrade project)
10	Coyote Install occupancy sensors on lighting systems to turn off fluorescent lights when building is unoccupied.	Implement	0.5	\$6,000	FY16	Complete

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No.	Project / Measure	Recommendation	Energy (MWh/Yr)	Estimated Cost	Completion Date (* projected)	Status (January 2017)
11	Coyote Investigate replacing existing lights with high energy efficient ones.	Perform investigation	TBD	\$6,000	FY15	Complete
12	Coyote Evaluate installation of higher efficiency variable speed drives	Completed evaluation.	TBD	\$6,000	FY13	Investigation Complete (CPP ASD upgrade project has been validated – awaiting funds)
13	Coyote Investigate HVAC system replacements.	See Item No. 12	TBD	See Item No. 12	FY13	Investigation Complete (HVAC to be replaced during CPP ASD upgrade project)

Energy Efficiency – Treatment Plants						
No.	Project / Measure	Recommendation	Energy (MWh/Yr)	Estimated Cost	Completion Date (* projected)	Status (January 2017)
14	Rinconada Investigate filter media backwashing operations to enhance filter runs.	Perform investigation	TBD	\$6,000	TBD	Deferred (until during/after RWTP RIP design and commissioning)

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Energy Efficiency – Treatment Plants						
No.	Project / Measure	Recommendation	Energy (MWh/Yr)	Estimated Cost	Completion Date (* projected)	Status (January 2017)
15	Rinconada Review flow requirements for the plant water system to see if pressure settings or number of pumps running can be reduced during the day or during periods of low demand.	Needs further analysis	TBD	\$4,000	TBD	Deferred (until during/after RWTP RIP design and commissioning)
16	Rinconada Investigate Operations Building HVAC control settings and temperature adjustment during the day.	Perform investigation	TBD	\$6,000	TBD	Deferred (until during/after RWTP Seismic design and commissioning)
17	Rinconada Modify operation of the Rinconada Finished Water Booster System to keep the VFD driven pump above 80 percent speed which is a more efficient operating point	Needs further analysis	TBD	\$500	TBD	Deferred (until during/after RWTP RIP design and commissioning)
18	Rinconada Investigate replace older motors on equipment with new motors with higher efficiency where applicable.	Perform investigation	TBD	\$4,000	TBD	Deferred (until during/after RWTP RIP design and commissioning)
19	Rinconada Investigate Operations Building HVAC system replacements.	Perform investigation	TBD	\$8,000	FY18*	Deferred (postponed until after completion of RWTP seismic upgrade project)
20	Santa Teresa Investigate Operations Building HVAC control settings.	Perform investigation	TBD	\$4,000	FY16	Complete

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Energy Efficiency – Treatment Plants						
No.	Project / Measure	Recommendation	Energy (MWh/Yr)	Estimated Cost	Completion Date (* projected)	Status (January 2017)
21	Santa Teresa Prevent plant water pumping system from cycling on and off so often (e.g. hydro pneumatic system tune-up).	Implement	2.0	\$8,000	FY13	Complete
22	Santa Teresa Perform maintenance on all ozone generators and replace dielectrics, operate the ozone systems at the highest ozone concentration possible while maintaining the minimum gas flows requirements	Needs further study	TBD	\$4,000	FY16	Complete
23	Santa Teresa Investigate optimization of backwash set points to reduce energy usage (reduce backwash duration, flow rate and filter to waste volume)	Perform investigation	TBD	\$4,000	FY17*	In progress
24	Santa Teresa De-energize equipment not needed	Implement	0.5	\$2,500	FY14	Complete
25	Santa Teresa Evaluate the frequency and duration of backwash operations for filter cleaning to see if this can be optimized.	Perform investigation	TBD	\$4,000	FY16	Complete

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No.	Project / Measure	Recommendation	Energy (MWh/Yr)	Estimated Cost	Completion Date (* projected)	Status (January 2017)
26	Santa Teresa Investigate ways to optimize backwashing pumping operations including operation at BEP.	Perform investigation	TBD	\$3,000	FY16	Complete
27	Santa Teresa Replace lights with energy efficient types in Operations Building and around the site.	Implement	0.6	\$50,000	FY16	Complete
28	Santa Teresa Investigate replacement of older motors with new higher efficiency motors (Example, flocculation mixer motors)	Perform investigation	TBD	\$4,000	FY16	Investigation Complete (upgrades to premium efficiency motors to occur through on-going maintenance and capital projects)
29	Santa Teresa Investigate Operations Building HVAC system replacements.	Perform investigation	TBD	\$8,000	FY16	Complete
30	Penitencia Investigate Ozone Generation Building HVAC control settings.	Perform investigation	TBD	\$4,000	FY16	Complete
31	Penitencia Investigate Ozone Generation Building air flow.	Perform investigation	TBD	\$3,000	FY16	Complete

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Energy Efficiency – Treatment Plants						
No.	Project / Measure	Recommendation	Energy (MWh/Yr)	Estimated Cost	Completion Date (* projected)	Status (January 2017)
32	Penitencia De-energize equipment not needed	Implement	1.0	\$1,500	FY14	Complete
33	Penitencia Investigate plant water pumping system to utilize newer pumps.	Completed investigation.	N/A	\$6,000	FY13	Investigation Complete
34	Penitencia Perform maintenance on all ozone generators and replace dielectrics, operate the ozone systems at the highest ozone concentration possible while maintaining the minimum gas flows requirements	Needs further study	TBD	\$4,000	FY16	Complete
35	Penitencia Investigate optimization of backwash set points to reduce energy usage (reduce backwash duration, flow rate and filter to waste volume, increase the target filter head pressure that triggers the backwash process, consider influent characteristics and number of optimal duty filters)	Perform investigation	TBD	\$3,000	FY16	Complete
36	Penitencia Investigate replacement of older motors with new higher efficiency motors (Example, rapid and flocculation mixer motors)	Perform investigation	TBD	\$3,000	FY15	Investigation Complete (upgrades to premium efficiency motors to occur through on-going maintenance and capital projects)

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No.	Project / Measure	Recommendation	Energy (MWh/Yr)	Estimated Cost	Completion Date (* projected)	Status (January 2017)
37	Penitencia Investigate using VFD on reclaim pump instead of throttling valve to control flow.	Perform investigation	TBD	\$4,000	FY17*	In progress

Energy Efficiency – Buildings						
No.	Project / Measure	Recommendation	Energy (MWh/Yr)	Estimated Cost	Completion Date (* projected)	Status (January 2017)
38	HQ Add hot water reset to boiler	Completed	0	\$3,000	FY13	Complete
39	HQ Replace outdoor lighting with energy efficient technologies	Implement	3.0	\$35,000	FY17*	In progress
40	HQ Replace existing HVAC control system with same as used throughout the rest of the campus	Implement	5.0	\$150,000	FY15	Complete
	HQ Add CO2 sensors to control intake air					

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Energy Efficiency – Buildings						
No.	Project / Measure	Recommendation	Energy (MWh/Yr)	Estimated Cost	Completion Date (* projected)	Status (January 2017)
41	HQ Cooling Tower Replacement with new CVHS chiller	Perform investigation	TBD	\$4,000	FY17*	In progress
42	HQ Replace chiller	Perform investigation	TBD	\$4,000	FY17*	In progress
43	HQ Add VFDs on chilled and heating water pumping systems	Needs further analysis	TBD	\$5,000	FY17*	In progress
44	HQ Replace lighting controls system	Implement	5.0	\$15,000	FY14	Complete
45	HQ Install sub-metering for the individual buildings fed by the Headquarters Bldg service to support detailed evaluation of building energy use	Completed	0	\$50,000	FY13	Complete
46	HQ Replace Boiler	Implement	0	\$250,000	FY16	Complete
47	Admin Add hot water reset to boiler	Completed	0	\$2,500	FY13	Complete
48	Admin Replace outdoor lighting with equivalent higher efficiency technologies	Implement	2	\$20,000	FY17*	In progress

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Energy Efficiency – Buildings						
No.	Project / Measure	Recommendation	Energy (MWh/Yr)	Estimated Cost	Completion Date (* projected)	Status (January 2017)
49	Admin Install sub-metering for the individual buildings to support detailed evaluation of building energy use	Completed	0	\$50,000	FY13	Complete
ESTIMATED TOTAL			3,219	\$817,500		