

EUGENE WATER & ELECTRIC BOARD



TO:	Commissioners Simpson, Brown, Helgeson, Manning and Mital
FROM:	Bert Dunn, Interim Manager of Power Operations
DATE:	February 09, 2016
SUBJECT:	Annual Power Market and Operations Update
OBJECTIVE :	Information Only

Issue

The purpose of this backgrounder is to provide an annual update of wholesale power markets and Power Operations activities.

Background

The Power Operations department manages EWEB power supply and wholesale market activities consistent with utility financial objectives and in accordance with Board Policy contained in SD8, and as further described in the EWEB Energy Risk Management Procedures.

Discussion

Market Price Update

Wholesale market prices have continued to fall given a mix of increasing supply¹ and arrested demand. Supply is being bolstered by continued renewable development² and low cost natural gas prices³ due to unprecedented shale gas production⁴. In the northwest, continued precipitation has improved the hydro generation overlook for 2015, which has its own impact on wholesale markets.

In the chart below shows forward curves over time. A forward curve is a strip of prices for future periods where one could reasonably expect to be able to trade at a point in time. The first forward curve was taken at the end of 2007 and we've added an additional forward curve for each year after that.



https://www.eia.gov/todayinenergy/detail.cfm?id=24492

² https://www.eia.gov/todayinenergy/detail.cfm?id=24792

³ <u>https://www.eia.gov/dnav/ng/hist/rngwhhdM.htm</u>

⁴ https://www.eia.gov/dnav/ng/ng_prod_shalegas_s1_a.htm

Surplus Position Hedging Update

The chart below shows EWEB's surplus market position for 2016-2020 based on 90% hydro planning. The top of the chart indicates EWEB's original surplus market position. The red band represents unhedged energy surplus. The black line reflects a desired volume of hedging RMC would like to achieve over time.

Power Operations sells a portion of EWEB's surplus position up to five years in advance. This provides two benefits: 1) it reduces financial exposure related to market prices; and 2) it results in sales executed at various times which diversifies the sales price by "dollar cost averaging" through time. This strategy results in near term years being fully hedged while year five is the least hedged, with interim years somewhere in between. Beyond five years Power Operations does not hedge any surplus energy.

The value of all current executed hedges for forward periods is approximately \$20M of forward value when compared to today's market. Said another way, EWEB has benefited by an estimated \$20M compared to not hedging for the period from today through 2019.



Power Operations Update

Power Operations core function is to efficiently shape EWEB's resource portfolio to our retail customer load. Because of the resource/load mix there are often opportunities for staff to create additional value from wholesale market activities outside of the hedging activities described above. These activities are summarized below for 2016.

- <u>Trade Performance:</u> This work relies of price spreads between day ahead and realtime markets. In 2014, this spread was close to \$5, this year the spread has collapsed to \$1. This will make this work more challenging than in years past.
- <u>Hydro Optimization:</u> We are shaping the storage capability of the Carmen and Slice resources in anticipation of changing market conditions. This work benefits from price spreads between Peak and Offpeak products. Unfortunately, with prices as low as they are, the spreads between the two products have collapsed. However, volatile factors like El Nino weather, and uncertain river regulation could leave some opportunities to expand value.
- <u>Transmission Savings</u>: We are developing new ways of dispatching remote resources. One of the benefits of this work is the reduction in the amount of transmission and ancillary services required to support them.
- <u>Client Services</u>: This year, in addition to providing existing scheduling services, Power Operations is adding consulting services for an existing partner utility looking to expand their portfolio.
- <u>REC Revenues:</u> Capturing the value of RECs generated by renewable facilities in our portfolio. Responding to new RPS legislation. Evaluating opportunities in emerging carbon markets. Reviewing the structure of our Green Power Program.
- <u>Structured Trading:</u> Expanding on work conducted in 2014 with Stateline and in 2015 with Foote Creek, staff is reviewing contracts for opportunities to renegotiate or restructure the disposition of the resource. Opportunities include natural gas and wind resource management

For perspective the value of these activities for 2015, as measured by our performance metrics, was about \$4.7 Million. Looking ahead for 2016 we expected somewhat less value due to changes in market conditions.

Requested Board Action - None

EUGENE WATER & ELECTRIC BOARD



TO:	Commissioners Simpson, Brown, Helgeson, Manning, and Mital
FROM:	Mel Damewood, Engineering Manager
DATE:	February 19, 2015
SUBJECT:	EL1 Capital Report for Q4 and Year End 2015.
OBJECTIVE:	Information Only

Issue

As per EWEB's EL1 Financial Policy that was approved on February 4, 2014, EWEB staff has prepared and attached the 2015 Year End Capital Report for Electric, Water, and Shared Services for the Board.

Background

According to Financial Policy EL1:

Throughout the year, staff will provide the Board with quarterly financial reports that compare actual results with budget. Additionally, staff will provide the Board with quarterly updates for all current year projects on the Capital Improvement Plans. General Capital Renewal and Replacement projects (Type 1) will be reported by category (e.g., substations, shared IT infrastructure, transmission & distribution mains). Infrastructure Rehabilitation & Expansion (Type II) and Strategic Projects (Type III) will be reported individually. Type II and III projects are further defined as those that are projected to be greater than \$1 million for the life of the project.

Management has attached three reports, Electric, Water and Shared Services Capital Q3 results for the Board's review.

Discussion

The year-end or 4th quarter 2015 EL1 report is a summary of EWEB's performance for 2015 for capital funded projects. It is also a good indicator, for projects that span multiple years, a time to reflect on the progress of scope, schedule, and budget of those projects as we start working in the context of the 2016 budget year.

As noted on the EL1 sheets for each reporting area, the actual spending figures are based upon unaudited year-end financial reports. Although there is not anticipated any major changes due to the audit, management will report back to the Board if significant differences are found.

Water

As noted in the Q3-2015 EL1 report and in correspondence with the Board in December of 2015, Water Capital had two Type 1 projects that went significantly over budget, but did not require Budget Amendments due to overall management of the Capital Budget. Management still kept the status in red to signify that for the year we went over the Type I budget, even though it is resolved, it is a reminder of overall performance in those areas.

For water Type 2 projects, several projects are over initial plan estimates, this is primarily due to the addition of seismic upgrades for each of those projects that was not accounted for in planning estimates, but was accounted for in the annual budgets. The LTD EmX Project for water was approximately 98% complete at the end of 2015, and EWEB is properly collecting all charges for related work from LTD in a timely manner.

Overall, Water had a \$14.97 million budget for capital, and pre-audit spending of \$13.37 million. This was 89% of budget, and the variance was primarily due to not purchasing property for AWS.

Electric

Type 1 projects are moving forward with some advanced spending on PUC and neutral upgrade work, trending ahead of schedule due to delays in the LTD EmX project for electric. In Type 2 projects, the Leaburg Roll Gate Projects are trending on schedule and budget, and Roll Gate #3 should start construction this late spring. Significant underspending occurred with the LTD EmX project, which has been delayed due to property and easement acquisitions. Also, the Downtown Network project is moving forward, but costs are under-reported due to pre-capitalization of transformer purchases, which was the only work on the DT Network in 2015. Design of the Network will accelerate in 2016. For Type 3, the Carmen Smith Relicensing Project spent less than anticipated as well.

Overall, the 2015 Electric capital budget was \$27.07 million and pre-audit expenditures amounted to \$17.25 million, or 64%.

Shared Services

Type 1 projects typically experienced under-runs for shared services, except for fleet. For IT, projects were purposely slowed down as internal resource adjustments were made. For Buildings and Land, the elevator project went back for redesign due to bids being well over budget and deferral of the fire system upgrade. For Type 2 projects, WAM is being closed out on the capital side, and came in at budget. AMI is moving forward and the CIS project is just starting up. The river front project also soon will be leaving the capital budget and expenditures for that project will show up on the O&M budget.

Overall, Shared Services had a 2015 capital budget of \$9.92 million and had pre-audit expenditures of \$4.83 million, or 49% of budget.

Recommendation and Action

This is an information item only, no action required. If you have any questions or wish to make

comments on the reports please contact Mel Damewood a 541-685-7145 or email at <u>mel.damewood@eweb.org</u>

Water Capital Projects Quarterly Status Report 2015-Q4

<u> Type 1 - General Capital</u>			2015			
Project		Budget	YTD Actual	Q3 Year-End Projection	Status/Comments	
Source - Water Intakes &	Filtration Plant	\$575,000	\$622,000	\$600,000	Includes AWS expenditures through second quarter. These were charged as Type 3 work for rest of year.	
Mains - Replacements, Im	nprovements, & Trans.	\$4,307,500	\$5,508,000	\$5,800,000	 Higher than anticipated main replacement costs combined with several opportunity and emergent projects lead to higher than anticipated expenditures. 	These categories will match the Capital Improvement Plans (CIPs) submitted by Water & Electric.
Services and Meters		\$927,000	\$1,670,000	\$1,880,000	 Increased development and shift of service replacement costs from O&M to Capital caused expenditures to increase above budget. 	Type 1 - General Capital is budgeted Year-by-Year for recurring capital expenditures from January through December. Typical Type 1 Capital includes categorized collections of projects of less than \$1 million.
Pump Stations		\$751,000	\$519,000	\$538,000	 Includes new Shasta 1150 pump station and emergent work at Santa Clara. Limited resources affected schedule on Shasta 1150 	Typical examples include "main replacements" . This work typically involves dozens of jobs that add up to \$3- \$3.5 million per year.
Reservoirs		\$24,000	\$0	\$0	Nothing occurred in 2015.	

Type 2 Rehabilitation & Expansion Projects			2015			Project Total			Schedule		
	Project	Budget	YTD Actual	Q3 Year-End Projection	Initial Plan	To-Date Actual	Project-End Projection	Start	Initial Planned Completion	Projected Completion	Status/Comments
	Raw Water Intake Improvements	\$1,200,000	\$1,396,000	\$1,160,000	\$6,292,000	\$7,323,798	\$7,326,000	2011	YE-2013	YE-2015	Intake 1 Upgrades complete, Construction at Intake 2 essentially complete. Costs exceeded initial plan as esismic upgrades were added to scope. Minor follow on work will be treated as Type 1 in 2016. (Initial Plan - 2011 CIP)
	Hayden Bridge Filter S1-S6 Upgrades	\$1,452,500	\$872,000	\$860,000	\$7,713,000	\$4,909,690	\$8,160,000	2011	YE-2017	YE-2016	Upgrade of Filters N1-N6 Complete. Construction of upgrades to Filters S1-S6 in progress. Siesmic improvements added to project which increased cost (Initial Plan - 2011 CIP)
	Hayden Bridge Seismic Upgrades	\$480,000	\$472,000	\$430,000	\$1,215,529	\$1,117,067	\$1,710,000	2014	YE-2015	YE-2018	Phase 1 (Basins and Filters) is complete. Phase 2 (Headhouse) deferred to 2017-2018. Phase 1 costs more expensive than anticipated. (Initial Plan - 2013 CIP)
	Distribution System Scada/PLC Upgrades	\$315,000	\$207,000	\$195,000	\$3,079,780	\$317,109	\$2,040,000	2013	YE-2016	YE-2019	Multi-Year upgrade project. 2014 first significant year of work. Developed standard and completed upgrade of first pump station. Currently working on the Crest System. (Initial Plan 2013 CIP)
	Willamette 800 Reservoir No.1 Replacement	\$633,000	\$11,000	\$10,000	\$1,639,760	\$137,850	\$1,770,000	2013	YE-2014	YE-2017	 After evaluation, project changed from rehab to a replacement. Construction initially pushed back to 2015- 2016. Construction further delayed to 2016-2017 to help manage other overages and emergent work. (Initial Plan 2013 CIP)
	LTD EMX	\$2,600,000	\$1,589,000	\$2,100,000	\$0	\$2,617,862	\$3,280,000	2014	2015	Q1-2016	• EWEB mostly complete on water side. Only minor work remaining for Q1 2016.

Type 3 - Strategic Projects & Programs			2015		Project Total			Schedule				
	Project	Budget	YTD Actual	Q3 Year-End Projection	Initial Plan	To-Date Actual	Project-End Projection	Start	Initial Planned Completion	Projected Completion	Status/Comments	
	Alternative Water Supply	\$1,702,000	\$500,000	\$1,700,000	\$52,707,167	\$500,000	\$67,000,000	2014 with Planning	YE-2021	YE-2021	Activites to date were minor and were tracked under Type 1 Work. This changed in 2015 as work ramped up. Property costs included in projections for 2015 however purchases did not occur. In negotiation at year end. Cost projection may change in 2016 as estimates are futher refined.	

Total Water Capital (This Report)

\$14,970,000 \$13,370,000 89%

Notes 1. Financials are based on year-end un-audited reporting. Any substantial adjustments during the year-end audit will be noted on the next EL-1 Report

Capital "EL1" Report: Electric, 2015-Q4 (Year-End)

<u> Type 1 - General Capital</u>	2015	thru Q4 (Year-End))		Note - Chang	es from previou	is report(s) a	re in BOLD		
Capital Category	Budget (Includes Amendments)	YTD Actual	Year-End Projection (as of Q3)	Status/Comments	5					
Electric Infrastructure - Generation	\$1,200,000	\$914,671	\$900,000		Some rollover of reflect in April Tru Total includes rer	2015 work to 2016 v ue-Up CIP adjustmer noval of \$428,280 re	vill occur due to nts only if necess eclassified to Roll	implementation ary, absorption Igate #3 Re-Build	delays, will is possible. I. (ZINNIKER)	In the future, these categorie. Water & Electric. Type 1 - General Capital is bu
Electric Infrastructure - Substations & Telecom	\$2,000,000	\$2,012,900	\$1,950,000	•	The scope, schedule, and budget were nearly on target, with the completion of transmission breaker projects at Hilyard and Prairie, and the controls (RTU) replacement at Monroe. To meet budget and schedule during storm season, approximately \$150K of work was deferred to 2016. (LAWSON)					through December. Type 1 Co million. Typical examples incl work typically involves many
Electric Infrastructure - Transmission & Distribution	\$8,200,000	\$6,429,197 (2)	\$7,000,000	•	Due to delays in t neutral updates, was lower than e including individu	the LTD project, infra were ahead of scheo xpected. Transmissi al pole replacement	astructure renew dule and over bu on work was ligh ts (LAWSON/FRA	al projects, inclu dget. Customer t as expected (~ .SER)	uding PUC and driven capital \$112K), mostly	Type 2 projects have "discrete \$1MM during the project life.
Type 2 Rehabilitation & Expansion Projects	2015	thru Q4 (Year-End))		Project Total			Schedule		
Project	Budget (Includes Amendments)	YTD Actual	Year-End Projection (as of Q3)	Initial Plan	To-Date Actual	Project-End Projection	Start	Initial Planned Completion	Projected Completion	Status/Comments
Leaburg Roll Gate #2 Re-Build	\$1,600,000	\$803,156	\$1,450,000	\$1,600,000	\$3,014,060	\$2,950,000	Jul-2012	Jun-2014	Feb-2015	Substantial completion attained i 2016. (ZINNIKER)
Leaburg Roll Gate #1 Re-Build	\$2,000,000	\$1,915,346	\$2,000,000	\$2,000,000	\$1,915,346	\$2,000,000	Mar-2015	Nov-2015	Dec-2015	Substantial completion attained i in 2016. (ZINNIKER)
Leaburg Roll Gate #3 Re-Build	\$400,000	\$428,280	\$500,000	\$1,550,000	\$428,280	\$1,550,000	Dec-2015	Nov-2016	Nov-2016	Work scheduled to start in June w
LTD EmX Project (Electric)	\$3,370,000	\$782,097	\$800,000	\$5,700,000	\$1,349,816	\$7,548,000	Sep-2013		Nov-2016	EWEB electric work will be delaye and the contractor to work beyor months. (THOMAS)
Upriver Re-Configuration/Holden Ck. Substation	\$500,000	\$103,765	\$139,000	\$3,000,000	\$114,965	\$5,700,000	Jan-2014	Oct-2015	Jul-2017	With Board approval, the transfor 2015 for approximately \$1.8 milli schedule supports energization in
Downtown Distribution Network	\$1,000,000	\$131,436 (2)	\$500,000	\$15,000,000	\$4,587,145	\$20,000,000	Sep-2010	Dec-2015	Dec-2019	New technology still not released Network (NW); deferring NW vs. completed 2016 Q2. In 2016, wor configuration. (FRASER)
<u>Type 3 - Strategic Projects & Programs</u>	2015	thru Q4 (Year-End))		Project Total			Schedule		
Project	Budget (Prior to April Amendments)	YTD Actual	Year-End Projection (as of Q3)	Initial Plan	To-Date Actual	Project-End Projection	Start	Initial Planned Completion	Projected Completion	Status/Comments
Carmen Smith License Implementation	\$6,800,000	\$3,731,553	\$5,000,000	\$135,000,000	\$37,861,156	\$181,000,000	May-2009	Dec-2021	Dec-2025	Settlement Agreement re-negotia NPV projections based on update the exception of crane rehabilitat
Total Electric Capital (This Report)	\$27,070,000	\$17,252,401	64%							

Note(s) 1. Financials are based on year-end un-audited reporting. Any substantial adjustments during the year-end audit will be noted on the next EL-1 Report.

2. Distribution transformers are being capitalized when received in inventory, therefore some projects in T&D and Downtown network are understated.

es will match the Capital Improvement Plans (CIPs) submitted by

Idgeted Year-by-Year for recurring capital expenditures from January apital includes categorized collections of projects of less than \$1 Iude "pole replacements" as part of Transmission & Distribution. This small projects that up to \$1.2-\$1.7 million per year.

e" scopes, schedules (launch through completion), and cost over

in February 2015, final construction work and system adjustments to occur in

in November 2015, punch list and final commissioning activities to complete

with final completion expected by the end of 2016. (ZINNIKER)

ed because of a lack of property rights needed to release EWEB Operations nd the existing right of way, pushing more work into next year and winter

rmers and control house/switchgear purchases were approved at the end of ion. The design is progressing with construction in 2016. BPA's project n 2017. (LAWSON)

d or demonstrated to allow greater customer generation in a Secondary radial decision, and slowing NW vs. radial planning. NW master Plan to be rk planned to break apart hospital 480V NW grid into three spot-NW

ation efforts (of scope) are on-going with the intention of improving project ed forward power pricing forecasts. Carmen Plant work remains on track with tion (contract termination). (ZINNIKER/BOYLE)

Capital "EL1" Report: Shared Services, 2015-Q4

Тур	<u>e 1 - General Capital</u>		2015 - Q4			Note - Ch	anges from pr	evious report(s) are in BOLD			
	Capital Category	Budget	YTD Actual	Year-End Projection (as of Q3)	Status/Commen	ıts						
	General Plant - Information Technology (I.T.)	\$2,752,000	\$215,662	\$1,865,970	•	IS Capital was und which delayed son project deferrals to	er target due to th ne purchases, a shi o 2016. (BARTON)	e end of the WISCA ift in 2015 project w	contract by the State ork from Capital to C	e of Oregon in Q3 D&M, and several		In the future, these c by Water & Electric. Type 1 - General Cap
	General Plant - Buildings & Land Management	\$1,900,000	\$740,296	\$1,300,000	•	HQ HVAC Project c back to design folk (Simmons)	completion carried owing out of budg	over to 1st quarter et bids. HQ Fire Sys	2016. HQ Elevator L tem Upgrade deferre	Upgrade referred ed to 2016.		less than \$1 million. Transmission & Distr to \$1.2-\$1.7 million p
	General Plant - Fleet Capital	\$1,713,000	\$1,664,818	\$1,267,118	•	All vehicles/equip completed on Bud	ment for electric o get. (Lentsch)	perations were rece	ived and completed	in 2105. All		over \$1MM during ti
Тур	e 2 Rehabilitation & Expansion Projects		2015			Project Total			Schedule			
	Project	Budget	YTD Actual	Year-End Projection (as of Q3)	Initial Plan	To-Date Actual	Project-End Projection	Start	Initial Planned Completion	Projected Completion	Sta	ntus/Comments
	WAM	\$1,432,000	\$1,349,885	\$1,432,000	\$9,264,919	\$8,810,028	\$9,010,028	Jun-2013	Nov-2014	Jul-2016	C	Primary efforts related but are being charged to components remain. Th Phase A in Q3 2016. (BA
	AMI Information Technology & Integration	\$2,023,000	\$849,522	\$1,400,000	\$6,475,700	\$878,302	\$6,475,700	May-2015	Dec-2017	May-2018		Project on track per stat that may or may not co
	Customer Information System (CIS) Replacement	\$0	\$0	\$0	\$9.7M	\$0	n/a	Sep-2016	Jan-2018	Jun-2018		2015 work was O&M. C
	River-Front Property Development	\$100,000	\$0	\$106,973	\$400,000	See Comment(s)	n/a	Feb-2006	n/a	2017		\$2.5M transferred to th Preparing agreements f removed from the EL-1
Tot	al Shared Services Capital (This Report)	\$9,920,000	\$4,820,183	49%								

Note(s) 1. Financials are based on year-end un-audited reporting. Any substantial adjustments during the year-end audit will be noted on the next EL-1 Report.

categories will match the Capital Improvement Plans (CIPs) submitted

pital is budgeted Year-by-Year for recurring capital expenditures from cember. Type 1 Capital includes categorized collections of projects of Typical examples include "pole replacements" as part of ribution. This work typically involves many small projects that add up per year.

"discrete" scopes, schedules (launch through completion), and cost he project life.

to WAM Business Stabilization continue with the WAM Advancement Project, o O&M and not Capital. Only minor additional capital work such as nis work will be closed out with the planned completion of WAM Stabilization ARTON)

Itus reporting. Unspent funds reflect work and invoices currently in process omplete December 31. If not, funds will need to be carried over. (Armstead)

Capital execution will begin in 2016. (Barton)

he O&M project budget to reflect \$ spent to date for previous 10 years of work. for surplus property disposition. This is no longer a Type II project and will be 1 report in 2016. (Newcomb)



EUGENE WATER & ELECTRIC BOARD

Relyonus.

TO:	Commissioners Simpson, Brown, Helgeson, Manning and Mital
FROM:	Mel Damewood, Engineering Manager; Frank Lawson, Systems Engineering Supervisor; Richard Jeffryes, Senior Engineer; Chris Jones, Associate Engineer
DATE:	February 3, 2016
SUBJECT:	Electric System Reliability
OBJECTIVE:	Information Only – Electric Master Planning Preamble Series

Introduction

In April 2016, EWEB will present the Board with a long-term electric system plan that will focus on transmission and distribution infrastructure. In preparation, a series of memoranda will provide background information on topics relevant to this planning effort, including assessments of different parts of the system, the factors that affect reliability and resiliency, and future technology trends. This is the third informational memorandum in the series, following memos on "overbuilt" and "underbuilt", and electric system resiliency.

Discussion

The Impact of Reliability

A major differentiator between electricity providers is the reliability of delivery. The product (electricity) is "on-demand": it needs to be continuously available, it is presently difficult to store in significant quantities, and disruptions are costly. Understanding the impact of reliability on customers, along with understanding the factors that affect reliability, are key drivers of EWEB's electric system planning effort.

Reliability Measurements

EWEB, like most U.S. utilities, measures reliability using standard methods developed by the Institute of Electrical and Electronics Engineers (IEEE). While IEEE Standard 1366 defines twelve different measurements, the most commonly reported are System Average Interruption Frequency Index (SAIFI), which is the average number of disruptions per customer per year, and System Average Interruption Duration Index (SAIDI), which is the average time of disruption per customer. These standard measures exclude large storms, as these types of events (termed Major Event Days) are not reflective of general system reliability.

Causal Analysis

Electric system reliability is affected by system design, capital replacement, system operating practices, equipment operation and maintenance practices, territory topology, and weather conditions. For example, in the Eugene metro area, EWEB's alternate-source (i.e. "redundant") transmission & distribution design allows for single transmission line outages without loss of power to customers, and for easy re-distribution of power within the distribution system (a.k.a.

"backfeeding"). Comparatively, the McKenzie River Valley has less redundancy, longer lines, wooded terrain, and funneled winds that result in reliability numbers four to six times worse than in the metropolitan area.

EWEB's maintenance programs, including equipment inspection and tree trimming, eliminate some operational or situational causes of outages. All transmission corridors are trimmed every two years, except for the Carmen Smith line which is trimmed annually. Overhead distribution is trimmed every four years, with vegetation management crews returning more often (every two years) to circuits with vegetation "hot spots".

Equipment maintenance and replacement is an integral part of EWEB's evolving asset management program. In some cases, EWEB attempts to proactively replace high-impact assets before they fail. Transmission breakers, that fail unsafely, and substation power transformers that serve thousands of customers are examples of equipment that EWEB routinely maintains, tests, and replaces. Other lower-impact equipment, including distribution transformers that serve few customers, are replaced responsively after failure.

Customer Impact

Outages affect customers in a variety of ways, including impacts on health and safety, communications, social inconvenience, and economics. Electricity has become a critical commodity, relied on for personal and economic vitality. In our electric system planning effort, EWEB is considering these varied impacts. For example, the economic impact to our customers differs depending on the outage location, time of day, and duration. Using data from Berkeley National Labs and EWEB's modeling system, the estimated costs of outages to customers can be predicted. For example, if the Oakway substation along Coburg Road were to have a one-hour midday outage, the 2,421 customers (including 612 commercial) would experience an estimated economic loss of between \$2-4 million. The same outage at a residential substation in south Eugene (e.g. the Dillard substation area), the economic loss to the 2,979 customers (2,904 residential, 75 commercial) would be around \$400,000. Comparing these figures to EWEB's lost revenue of less than \$1,000 in each case shows that the community as a whole, not EWEB, bears the primary cost of outages, both to economic vitality and quality of life. EWEB's investments in improved reliability thus have the potential to serve as community investments with wide-ranging positive impacts.

Benchmarks

EWEB's system reliability, using SAIFI (incidents per year) and SAIDI (outage minutes per year), compares favorably to aggregated national statistics. EWEB's reliability ranks in the top 94 of the more than 1,230 utilities surveyed by the American Public Power Association (APPA). However, these statistics vary widely by state, and by type of utility. Public power utilities (primarily municipals) had consistently better reliability than rural cooperatives and investor-owned utilities. In Oregon, for example, EWEB is near the mean of public utilities in outage frequency (0.41 vs. 0.43 incidents/year), but was significantly slower to make repairs (59 vs. 32 minutes/year), potentially due to the reliability impact of EWEB's lower-density McKenzie River Valley and a lack of distribution system automation. A summary of EWEB reliability benchmarks for public power utilities are as follows.

Table: Comparison of Public Power Utilities (excludes IOUs and Co-Ops)

Territory	No. of Utilities	SAIFI	SAIDI		
		Incidents/Year	Minutes/Year		
EWEB	1	0.41	59		
U.S.	502	0.86	48		
Oregon	10	0.43	32		
Washington	21	1.02	121		
California	22	0.54	37		

Source: APPA RP3 Survey

Planning Impact

Understanding the reliability impact of design, capital investment, territorial profile, and asset management is a key criterion in EWEB's electric system planning. Reliability, along with safety and EWEB's obligation-to-serve, will be the basis for prioritizing "compulsory" levels of infrastructure replacement. However, going forward reliability-based investments will be evaluated both at a system level, and based on the impacts to our customers. Design changes, equipment maintenance, and replacement strategies will balance the benefits of improved reliability and cost with the added intent of preparing our system for future new products, advances in technology, and evolving industry trends.

TBL Assessment

This memorandum does not contain a TBL analysis.

Recommendation

No specific recommendations are made in this Board memorandum. However, Management recommends that the Board consider the issues raised in this memorandum as the Strategic Plan is updated, Master Plans are adopted, and ten-year CIPs and annual budgets are considered and approved.

Requested Board Motion/Action

No Board action is requested in this Board memorandum.





EUGENE WATER & ELECTRIC BOARD

Relyonus.

TO:	Commissioners Simpson, Brown, Helgeson, Manning and Mital
FROM:	Steve Newcomb, Environmental Manager (RPG #1135), Karl Morgenstern, Environmental Supervisor and David Donahue, Environmental Specialist
DATE:	February 18, 2016
SUBJECT:	Pentachlorophenol Plume Associated with International Paper Mill Complex
OBJECTIVE:	Information Only

Issue

Provide Board an update concerning potential drinking water threats associated with the pentachlorophenol plume in groundwater near the McKenzie River.

Background

For the past 20 years, the Oregon Department of Environmental Quality (DEQ) has been working with both the Weyerhaeuser Company (Weyerhaeuser) and the International Paper Company (IP) to address the pentachlorophenol (PCP) plume originating from the Springfield mill site at 801 North 42nd Street. Wood treatment practices using PCP occurred on site until approximately 1987. Weyerhaeuser discovered soil contamination in the area after removing a sawmill facility in 1991. Weyerhaeuser signed a consent order with the DEQ in September 1995, agreeing to investigate the contamination and identify potential solutions to protect human health and the environment. To be protective of the Springfield Utility Board (SUB)/Rainbow Water District (RWD) well field, Weyerhaeuser installed a carbon filtration system in 1996 to treat water from the SUB/RWD wells should PCP be detected.

In September 2002, DEQ approved a Remedial Design/Remedial Action Work Plan (RD/RA) for the site and has been tracking the implementation of this plan. The RD/RA work plan requires continued monitoring and reporting on effectiveness of institutional controls at the site to minimize exposure to residual soil and sediment contamination, operation and maintenance of the well field treatment system (as necessary), and monitoring and reporting on the progress and concentrations of the groundwater PCP plume as it migrates to the northwest toward the SUB/RWD supply wells and the McKenzie River.

Ongoing groundwater monitoring of the PCP plume is conducted by PES Environmental, Inc. (PES) on behalf of IP. Prior to 2012, monitoring wells were sampled for chlorinated phenolic compounds on a monthly basis and the results were provided to IP, SUB, RWD, DEQ and EWEB. However, beginning in July, 2012, PES began collecting samples on a semiannual basis from a select number of monitoring wells after DEQ approved proposed monitoring changes submitted by PES on behalf of IP. Analytical results from the monitoring wells are now sent only to IP and DEQ, although IP recently approved the release of data to EWEB in February, 2016. The

SUB/RWD wells and the well field treatment system continue to be sampled on a monthly basis when the systems are in production. Analytical results from the wells and associated treatment system are sent to IP, SUB, RWD, DEQ and EWEB on a monthly basis. EWEB does not provide funding for the monitoring.

Summary of Analytical Results

As previously stated above, only a select number of on-site monitoring wells are currently sampled semiannually by PES. With regard to 2015 data, the highest concentrations originate from a monitoring well located near the center of the IP complex. Values reported for this well in 2015 were 37 micrograms per liter (μ g/L) and 52 μ g/L. Looking at all available data since 2001, the peak concentration reported for this particular well was 320 µg/L in 2001. Overall, most sites appear to be experiencing a downward trend in concentrations, with many reporting non-detect values during their respective last sampling event. Of notable exception are two down-gradient monitoring wells located between Keizer Slough and the McKenzie River. Although concentrations appear to have leveled off, and may in fact be declining, concentrations in 2015 for both sites range between 11 μ g/L and 29 μ g/L. Please note a new low-flow purging and sampling procedure (LFPS) was introduced in 2014 to collect groundwater samples from on-site monitoring wells, with approval from DEQ. Advantages of using the LFPS to collect samples can include smaller purge volumes and associated disposal costs, and better representation of ambient aquifer conditions (in terms of lower turbidity and reduced aeration). Results were compared with the standard purge sampling procedure (SPS), which had been used previously. At sites where results compared favorably, the LFPS procedure is to be used. At sites that did not compare favorably, samples will be collected using the prior SPS procedure. It should be noted that where results did not compare favorably, the LFPS procedure often reported concentrations lower than the SPS procedure.

Since 2001, over 300 samples have been collected by PES from three SUB/RWD wells (#1, #2, #3) down-gradient of the plume and adjacent to the McKenzie River. During this time there have been a total of 7 PCP detections. Please note the U.S. Environmental Protection Agency maximum contaminant level (MCL) for PCP is 1 μ g/L for drinking water. Of the 7 detections reported, 2 were from well #1 in 2007 and 2015 (.082 μ g/L and .092 μ g/L respectively). The other 5 detections were all reported from well #2, which included the maximum observed value of .21 μ g/L in 2008. The remaining four detections were from 2007 (.16 μ g/L), 2008 (.097 μ g/L) and 2015 (.089 μ g/L and .194 μ g/L). No detections were reported for well #3. As expected, most detections have occurred during the second half of the monitoring period, in line with model predictions showing a slow progression of the plume to the northwest and towards the well field.

EWEB Hayden Bridge staff and Drinking Water Source Protection staff have been collecting water samples from stormwater sources in the vicinity of the plume and from raw water at the drinking water plant on a regular basis since 2002. Although Hayden Bridge staff collected raw water samples at the drinking water plant prior to 2000, only data collected since 2000 is included in this review. PCP has been sampled at the intake a total of 148 times since 2000. During this time, there have been no detections above the reporting limit (RL). The RL typically falls around .08 μ g/L for most PCP samples. A total of 90 samples have been analyzed for PCP from sites associated with Springfield urban stormwater runoff. From those 90 samples, 19 PCP detections have been recorded, although over half are considered estimated values since the detected values fall below the RL. Concentrations range from .078 μ g/L to .8 μ g/L, all below the MCL for PCP. The maximum value observed originated from the 42nd stormwater channel, but was flagged by the analyzing laboratory as an estimated value. A total of 8 detections were associated with locations adjacent to

or near the plume. However, the other 11 detections came from stormwater sources not associated with the plume. The occurrence of PCP in stormwater channels not associated with IP's property suggests the presence of PCP is likely ubiquitous in urban landscapes.

Discussion

At this time, based on data collected to date, staff do not believe the PCP plume poses a serious threat to EWEB's drinking water quality. Although PCP concentrations are still significant in several down-gradient monitoring wells, concentrations generally appear to be decreasing. It is likely that biodegradation, dispersion and soil adsorption are contributing to this trend. In addition, the McKenzie is likely a "losing" river in this reach, meaning the river is losing water to the shallow aquifer as it enters deeper alluvial deposits (as opposed to gaining large groundwater inputs with potential contaminants). Finally, there is a significant dilution factor when you consider the large volume of McKenzie water mixing with localized groundwater inputs. The resulting concentrations should be significantly reduced, and likely beyond conventional analytical detection limits. However, as the plume continues to migrate towards the northwest, staff will continue to monitor the McKenzie River and stormwater sources in the area for signs of surface water impacts.

Recommendations

This memo is for informational purposes only. Staff will continue to monitor the situation and assess new ways to evaluate potential threats to the McKenzie River from the PCP plume.

Requested Board Action

No formal action is requested at this time.



EUGENE WATER & ELECTRIC BOARD

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TO:	Commissioners Simpson, Brown, Helgeson, Manning and Mital
FROM:	Mark Maguire & Sherry Schumacher, EWEB Safety & Health Team Members
DATE:	February 16, 2016
SUBJECT:	Safety Performance and Workers Compensation Savings
OBJECTIVE:	Information Only

Issue

We are excited to share how workplace safety and health efforts and consistently low injury rates have resulted in a dramatic premium savings on our Workers Compensation Insurance. As a result of reduced workplace injuries, EWEB has achieved an Experience Rating Modifier (ER Mod) of .65. This is a remarkable accomplishment that translates into a 35% premium discount over the average policyholder with a 1.0 ER Mod, saving EWEB an estimated \$160,000 in insurance costs for 2016. EWEB now places in the top 2% of our insurance carrier's "book of business" representing over 46,000 Oregon employers. Refer to the attached *Workers Compensation Insurance 2016 Renewal Summary (Nov 2015)*.

Background

EWEB has been refining and building a best practices safety program for nearly 15 years. Back in 2002 our safety record was substandard, there was concern over workplace injury rates, and insurance rates were high. In response to this concern, the Safety Working Group (SWG) was formed that includes managers of high exposure workgroups in the utility, as well as safety & health team representatives. The purpose of SWG is to add a level of management support and oversight to safety program initiatives designed to improve organizational safety practices, reverse injury trends, and emphasize prevention measures. In the early 2000s, EWEB averaged about 40 OSHA recordable injuries annually. That figure has now stabilized at under 20/yr.

Discussion

The success of our safety program is based on multiple factors--quality safety trainings, intensive accident review efforts, pre-job tailboard meetings, improved ergonomic tools and equipment, etc. Examples of prevention programs to support employee wellness include early intervention nursing and physical therapy services, health screenings, and stretching programs. The final piece of the puzzle is aggressive claims management efforts to ensure that injured workers receive prompt medical care and are back to work at the earliest opportunity.

The utility has received numerous safety awards over the past several years, and we have reached the maturity level of a best practices safety program. Safety is embedded in our culture and is truly institutionalized in our business operations – safety is no longer "what we do", it's "who we are". And more important is the number of employees returning home safely to their families each day.

Workers Compensation Insurance 2016 RENEWAL SUMMARY

EWEB's safety and prevention efforts continue to make remarkable impacts to our workers compensation program. Our strong focus on keeping workers safe, reduced injuries, and proactive claims management strategies have created a perform storm for cost savings when combined with insurance rate reductions in the state of Oregon.

Based on estimated 2016 payrolls, our insurance renewal figure for a fully insured plan is \$258,336 – almost a historical record, and a figure we haven't seen since 2000 when payrolls were 40% lower than they are today. Highlights below:

- Managing losses we are positioned to achieve our lowest ever claim frequency with only 15 claims filed as of 11/19/15. While celebrating fewer injuries, there is cautionary mention on *claim severity* with 5 injuries (including 3 backs) representing 94% of incurred costs.
- Experience Rating Modifier (ER Mod) our ER Mod dropped from .71 to .65 in 2016. This is an all-time low, beating our previous record mod rate of .67 in 2010. SAIF has provided a breakdown of their policyholder Mod Rates, and EWEB ranks in the top 2% of all accounts (see reverse).
- Insurance Rates Continue to Decline -- Oregon has been ranked 9th for low work comp insurance in the nation, with rates dropping the last 3 yrs in a row. Oregon employers continue to embrace safety management efforts to prevent injuries, causing premium rates to drop another 5.3% in 2016. All of EWEB's (4) class code rate categories declined in 2016.
- Group Discount EWEB continues to benefit from the public employer group discount, although based on market factors it was adjusted from 8% in 2015 to 4% in 2016.
- We retain the best possible pricing from SAIF EWEB continues to receive "select" rate tier pricing from SAIF. SAIF underwriters closely monitor EWEB's loss control programs and performance. Our commitment to workforce safety and health rewards us with the lowest premiums available. Our insurance costs and claim history is summarized below:

	PRORATED	INCURRED		AVG CLAIM		
YEAR	PREMIUM	LOSSES	# CLAIMS	COST	ER MOD	
2011	506,229	437,594*	26	16,830	.76	
2012	474,903	66,494	19	3,499	.76	
2013	465,918	67,732	18	3,762	.83 -	2013-2015 will
2014	375,127	161,275*	23	7,011	.71 >	be the 3 yr look
2015 YTD	267,245	126,111	15	8,282	.71 ^J	2017 insurance

*High dollar claims include \$320K in 2011 & \$123K in 2014.

CARRIER QUOTES

Other insurance carriers will only bid if EWEB is seriously considering a move from SAIF. SAIF remains the market leader in workers compensation in Oregon, insuring approximately half of Oregon employers with over a 99% retention rate. EWEB continues to receive competitive pricing and substantial dividend payouts from SAIF annually, approaching \$1 million since 2010.

SAIF Dividend History	2015	\$ 85,004 \$161 627
	2014	\$101,027 \$140.761
	2012	\$189,431
	2011	\$170,695
	<u>2010</u>	<u>\$232,276</u>
	Total	\$979,794

RECOMMENDATION

Renew on a fully insured plan with SAIF Corporation. The cost of workers' compensation insurance remains extremely affordable, especially when you consider the offsetting dividend reimbursements. EWEB we can purchase a no-risk plan for \$258K. EWEB will also renew the supplemental "out of state" policy for \$740 to ensure employees who may travel to non-reciprocating states have coverage.

