

**PUBLIC UTILITY DISTRICT NO. 1 OF CHELAN COUNTY
327 N. WENATCHEE AVENUE
WENATCHEE, WA 98801**

REGULAR COMMISSION MEETING

November 7, 2016

AGENDA

STUDY SESSION

10:00 A.M.

1. Pledge of Allegiance and Safety Minute – Von Pope
2. Approval of the Agenda - Any item on the Regular Agenda shall be subject to transfer to the Consent Agenda upon request of any Commission member
3. 3rd Qtr. 2016 Energy Resources Update
4. 3rd Qtr. 2016 Financial and Investment Update
5. 3rd Qtr. 2016 Major Projects, Contracts and Projects Revisions
6. Annual Investment & Banking Policy
7. 3rd Qtr. 2016 District Performance Update

BUSINESS SESSION

1:00 P.M.

8. PUBLIC HEARING – Wenatchee Water System Plan
9. PUBLIC HEARING – 2017 Preliminary Budget Presentation – 1st Hearing

Consent Agenda

10. Minutes:

October 17, 2016

October 20, 2016 Special Meeting

11. Vouchers:

Accounts Payable Summary Report dated November 2, 2016:

- a) Vouchers totaling \$18,753,924.92;
- b) Approval of Customer Deposit Returns and Conservation Incentive payments dated November 1, 2016 in the amount of \$61,883.82;
- c) Approval of the net Payrolls, Warrant Nos. 234760 through 234789 and Advice Nos. 622798 through 623531 for the pay period ending 10/16/2016 in the amount of \$1,790,917.78; and
- d) Approval of Warrant Nos. 22893 through 22955 totaling \$22,297.65 for claim payments from the workers' compensation self-insurance fund for the period ending October 31, 2016.

Regular Agenda

Resolutions

12. A RESOLUTION RATIFYING FIELD WORK ORDER NO. 1, AUTHORIZING FINAL ACCEPTANCE OF WORK PERFORMED UNDER CONTRACT NO. 16-28 WITH K&N ELECTRIC, INC. OF SPOKANE, WASHINGTON AND AUTHORIZING PAYMENT OF RETAINAGE
13. A RESOLUTION AUTHORIZING AMENDMENT NO. 1 TO SERVICES AGREEMENT (SA NO. 16-099) WITH ANCHOR QEA, LLC TO PROVIDE PERMITTING ASSISTANCE
14. A RESOLUTION AUTHORIZING CONTINUATION OF SERVICES UNDER SERVICE AGREEMENT (SA NO. 13-028) WITH NORTHWEST OPEN ACCESS NETWORK (NOANET) TO PROVIDE NETWORK OPERATIONS CENTER SERVICES
15. A RESOLUTION ESTABLISHING UPDATED WATER USE EFFICIENCY GOALS FOR THE WENATCHEE, DRYDEN, OLLALA CANYON AND CHELAN RIDGE WATER SYSTEMS AS REQUIRED UNDER THE STATE MUNICIPAL WATER LAW AND REGULATIONS
16. A RESOLUTION DECLARING THAT NO BIDS WERE RECEIVED AND REJECTING BIDS FOR THE MCKENZIE-BEVERLY 115KV UPPER WHITE PINE RELOCATION AND CONSTRUCTION PROJECT (BID NO. 16-65) AND AUTHORIZING THE RELOCATION AND CONSTRUCTION BE OBTAINED BY NEGOTIATION
17. A RESOLUTION RATIFYING FIELD WORK ORDER NOS. 1 THROUGH 3 AND AUTHORIZING FINAL ACCEPTANCE OF WORK PERFORMED UNDER CONTRACT NO. 07-71 WITH WHITNEY EQUIPMENT COMPANY, INC. OF BOTHELL, WA

18. A RESOLUTION DECLARING SCHWEITZER ENGINEERING LABORATORIES INC. OF PULLMAN, WA AS THE CONTINUED SOLE SOURCE SUPPLIER OF PROTECTIVE RELAYS FOR USE AT THE DISTRICT'S HYDROELECTRIC FACILITIES AND TRANSMISSION SUBSTATIONS
19. A RESOLUTION DECLARING VIBROSYSTEM, INC. OF LONGUEIL, QUEBEC, CANADA AS THE CONTINUED SOLE SOURCE SUPPLIER OF ONLINE CONDITION MONITORING EQUIPMENT AND TECHNICAL SERVICES FOR USE AT THE DISTRICT'S HYDROELECTRIC FACILITIES AND TRANSMISSION SUBSTATIONS
20. A RESOLUTION DECLARING CONSOLIDATED ELECTRICAL DISTRIBUTORS, INC. DBA COLUMBIA ELECTRIC SUPPLY OF YAKIMA, WA AS THE CONTINUED SOLE SOURCE SUPPLIER OF ROCKWELL AUTOMATION/ALLEN BRADLEY PROGRAMMABLE CONTROLLERS FOR USE AT THE DISTRICT'S HYDROELECTRIC FACILITIES AND TRANSMISSION SUBSTATIONS
21. Proposed motion: To increase the capital project budget for the replacement of the District's phone system from \$600,000 to \$1,821,000.
22. Manager Items
23. Commission Items
24. Board Travel
25. WUPDA November meeting
26. Follow-up on Delegation of Action Items From Previous Board Meeting
27. Delegation of Action Items
28. Additional Public Comment*
29. Matters of general business as may necessarily come before the Commission
30. Executive Session: To discuss with legal counsel agency enforcement actions, litigation, potential litigation to which the District or its board is, or is likely to become, a party, and/or legal risks, as authorized by RCW 42.30.110(1)(i).

* Members of the public are encouraged to ask specific questions after each item presented. This agenda item is for additional comments/questions related to matters not on the agenda.

This agenda and resolutions (if any) may be revised by the Commission as appropriate.

RESOLUTION NO. _____

A RESOLUTION RATIFYING FIELD WORK ORDER NO. 1, AUTHORIZING FINAL ACCEPTANCE OF WORK PERFORMED UNDER CONTRACT NO. 16-28 WITH K&N ELECTRIC, INC. OF SPOKANE, WASHINGTON AND AUTHORIZING PAYMENT OF RETAINAGE

FACTUAL BACKGROUND AND REASONS FOR ACTION

The District Commission by Resolution No. 08-13325 delegated authority to the General Manager to advertise, award and execute contracts when the total contract price is \$3,000,000 or less. Authority was also granted to the General Manager and the staff to execute field work orders under certain circumstances.

On February 8, 2016, the District entered into an emergency contract (Contract No. 16-28), with K&N Electric, Inc. (Contractor) of Spokane Washington, for the Rocky Reach Bridge Crane Hoist Drum Repairs, in the amount of \$535,740. This emergency contract was authorized by Resolution No. 16-14016 and was awarded as allowed by RCW 39.04.280 and RCW 54.04.070.

The work in Field Work Order Nos. 1 and 2 consist of conditions and work not anticipated or included in the original contract but within the scope of the contract. The District's staff has executed Field Work Order Nos. 1 and 2, which are on file in the offices of the District and summarized as follows:

Field Work Order No.	Amount
1. Additional repairs; Increase to scope	\$274,400.00
2. Final Contract Price Adjustment	-\$20,708.43
Total	\$253,691.57

Field Work Order Nos. 1 and 2 result in a net increase in the contract price for a new revised total price of \$789,431.57 (excluding sales tax), which the District's Engineers recommend be ratified. Resolution No. 08-13325 provides that this type of field work order shall be presented to the Commission for approval as part of the final acceptance resolution.

District staff has determined that the completion of all contract work occurred on October 11, 2016. In accordance with the terms of the contract, retainage in an amount not exceeding 5% of the contract price has been withheld from the Contractor.

The General Manager of the District concurs with staff's recommendations that the District accept the work performed by the Contractor, ratify Field Work Order Nos. 1 and 2 and authorize the payment of retainage due the Contractor, subject to the requirements of the contract and state law.

ACTION

IT IS RESOLVED BY THE COMMISSION OF PUBLIC UTILITY DISTRICT NO. 1 OF CHELAN COUNTY, WASHINGTON, as follows:

Section 1. Field Work Order Nos. 1 and 2 to Contract No. 16-28 with K&N Electric, Inc. for the work specified above, which will result in a net increase in the purchase price of \$253,691.57, for a total revised contract price of \$789,431.57, plus Washington State sales tax, are hereby ratified.

Section 2. All the contract work required under Contract No. 16-28 was completed on October 11, 2016 and the same is hereby accepted, subject to Section 3 hereof. Payment of retainage to the Contractor in the amount determined by the District's auditor to be due is authorized to be paid to the Contractor subject to Section 3 and Section 4 hereof, and subject to the provisions and limitations of Chapter 39.12 RCW (Prevailing Wages on Public Works) and 60.28 (Liens for Labor, Materials and Taxes on Public Works).

Section 3. This resolution shall not constitute an acceptance by the District of any work performed or goods supplied pursuant to the aforementioned contract, which are not in strict compliance with the contract terms and conditions.

Section 4. After the expiration of the forty-five (45) day period for giving the District notice of lien and after receipt of the Department of Revenue's certification of the Contractor's payment of taxes, the Employment Security Department's Certificate of Payment of Contributions, Penalties and Interest on Public works Contracts and the Department of Labor & Industries' Certificate of Release of the State's Lien on Public Works contracts and the District being satisfied that taxes certified as due or to become due are discharged and the filed claims of materialmen and laborers, if any, together with a sum sufficient to pay costs of foreclosing the liens and attorney's fees, have been paid, the District's General Manager is authorized and directed to withhold from the remaining retained amounts for claims the District may have against the Contractor, and the balance shall be paid to the Contractor. In the event said taxes, claims, expenses and fees have not been paid, the General Manager is authorized and directed to withhold an amount equal to unpaid taxes and unpaid claims, together with a sum sufficient to defray the costs and attorney fees incurred in foreclosing the lien of such claims, and the balance shall be paid to the Contractor.

DATED this 7th day of November, 2016.

President

ATTEST:

Vice President

Secretary

Commissioner

Commissioner

Seal

RESOLUTION NO. _____

A RESOLUTION AUTHORIZING AMENDMENT NO. 1 TO SERVICES AGREEMENT (SA NO. 16-099) WITH ANCHOR QEA, LLC TO PROVIDE PERMITTING ASSISTANCE

FACTUAL BACKGROUND AND REASONS FOR ACTION

The District entered into a Services Agreement (SA No. 16-099) on July 26, 2016, with Anchor QEA, LLC to provide permitting assistance, in an amount not to exceed \$75,000.

District staff has identified the need for additional services for permitting assistance regarding tracking permit conditions and reporting requirements, and reviewing mitigation monitoring reports. Resolution No. 08-13325 requires that the Commission, by resolution, authorize Amendments to Service Agreements when the Amendment increases the total contract price to over \$200,000.

District staff recommends that it is in the best interest of the District to amend Services Agreement No. 16-099 with Anchor QEA, LLC to provide permitting assistance in the amount of \$150,000, for a total revised contract price not to exceed \$225,000.

The General Manager has reviewed District staff's recommendation and concurs in the same.

ACTION

IT IS RESOLVED BY THE COMMISSION OF PUBLIC UTILITY DISTRICT NO. 1 OF CHELAN COUNTY, WASHINGTON as follows:

Section 1. The General Manager is hereby authorized to execute Amendment No. 1 to Services Agreement (SA No. 16-099) with Anchor QEA, LLC to provide the additional services identified above. The revised contract price will not exceed \$225,000 without prior Commission approval. A copy of the Amendment is on file in the offices of the District.

DATED this **7th** day of **November, 2016**.

President

ATTEST:

Vice President

Secretary

Commissioner

Commissioner

Seal

RESOLUTION NO. _____

A RESOLUTION AUTHORIZING CONTINUATION
OF SERVICES UNDER SERVICE AGREEMENT
(SA NO. 13-028) WITH NORTHWEST OPEN
ACCESS NETWORK (NOANET) TO PROVIDE
NETWORK OPERATIONS CENTER SERVICES

FACTUAL BACKGROUND AND REASONS FOR ACTION

Resolution No. 12-13770 dated December 17, 2012 authorized a Services Agreement (SA No. 13-028) with NOANET to provide network operations center services, in an amount not to exceed \$1,038,149.88 for up to six years.

The agreement covers re-provisioning for the recently completed BPON to GPON upgrade project, although this was intended to address normal and routine re-provisioning as part of normal maintenance activities. District staff identified the need for additional re-provisioning services for network operations center services for the project. To accommodate the increase in re-provisioning for the BPON Upgrade project, an additional \$86,400 is needed.

District staff recommends continuation of services under Service Agreement No. 13-028 with NoaNet to provide network operations center services.

The General Manager has reviewed District staff's recommendation and concurs in the same.

ACTION

IT IS RESOLVED BY THE COMMISSION OF PUBLIC UTILITY
DISTRICT NO. 1 OF CHELAN COUNTY, WASHINGTON as follows:

Section 1. District staff is hereby authorized to expend up to \$86,400, in addition to the previously authorized funds, through December 31, 2018 under Services Agreement (SA No. 13-028) with NoaNet to provide the additional services identified above. The revised authorized amount will not exceed \$1,124,549.88 without prior Commission approval.

DATED this 7th day of November 2016.

President

ATTEST:

Vice President

Secretary

Commissioner

Commissioner

Seal

RESOLUTION NO. _____

A RESOLUTION ESTABLISHING UPDATED
WATER USE EFFICIENCY GOALS FOR THE
WENATCHEE, DRYDEN, OLLALA CANYON AND
CHELAN RIDGE WATER SYSTEMS AS
REQUIRED UNDER THE STATE MUNICIPAL
WATER LAW AND REGULATIONS

FACTUAL BACKGROUND AND REASONS FOR ACTION

The Washington State Legislature passed the Municipal Water Law in 2003. This law directed the Department of Health (DOH) to adopt rules establishing water use efficiency requirements for all municipal water suppliers. The Water Use Efficiency rules were intended to help conserve water for the environment and future generations. The state legislature recognized that water efficiency rules would improve public health by improving water system efficiency and reliability. DOH has established the Water Use Efficiency Rule which is included in WAC Chapter 249-290.

The Water Use Efficiency Rule affects all municipal water suppliers operating community water systems with 15 or more residential connections. The rule requires municipal water suppliers to (1) collect data, forecast demand, evaluate leakage, evaluate rate structures that encourage water use efficiency and evaluate or implement water use efficiency measures as part of a water system plan; (2) meet a state distribution system leakage standard in order to minimize water loss in the distribution system; and (3) set water use efficiency goals through a public process and report annually on performance to customers and the state DOH.

The Water Use Efficiency Goals were initially adopted via Resolution No. 07-13134 for the Wenatchee System on July 9, 2007. Water Use Efficiency goals for the Dryden, Ollala Canyon, and Chelan Ridge water systems were initially adopted on November 24, 2008 via Resolution No. 08-13405. As part of the 2016 Wenatchee Water Comprehensive Plan Update, staff is recommending establishing new goals for all of the systems.

To initiate consideration of requirements set forth in the Water Use Efficiency Rule, District staff made presentations to the Commission on October 3, 2016 and October 17, 2016. The presentations described the proposed goals and efficiency measures developed by PUD staff and set forth a date for public comment and hearing. On October 21, 2016, a legal advertisement notifying customers of an opportunity to submit public comment with regard to water use efficiency appeared in The Wenatchee World. In addition, display advertisements inviting public comment and participation were placed in the Lake Chelan Mirror, Cashmere Record, and Leavenworth Echo on October 19 and October 26, and The Wenatchee World on

October 23 and October 30. These advertisements indicated that public comment was due by November 4, 2016 to Ron Slabaugh, Water and Wastewater Manager.

On November 7, 2016, the properly noticed public meeting was held. Staff made a presentation to the Commission identifying staff recommendations relating to adoption of measures and goals required under the Water Use Efficiency Rule as described in WAC 246-290-800, WAC 246-290-810, WAC 246-290-820, WAC 246-290-830, and WAC 246-290-840. Those recommendations constitute the water use efficiency program for the Wenatchee, Ollala Canyon, Dryden and Chelan Ridge water systems, and are contained herein as Exhibit A.

ACTION

IT IS RESOLVED BY THE COMMISSION OF PUBLIC UTILITY DISTRICT NO. 1 OF CHELAN COUNTY, WASHINGTON that:

Section 1. Pursuant to the Water Use Efficiency Rule (specifically contained in WAC 246-290) and the Municipal Water Law, it is determined that it is in the best interest of the District to adopt the updated efficiency measures and goals as outlined in the water use efficiency program (attached hereto as Exhibit A).

Section 2. Water use efficiency measures and goals shall be evaluated annually as stipulated in the Municipal Water Use Efficiency rule and applicable statutes.

DATED this 7th day of November 2016.

President

ATTEST:

Vice President

Secretary

Commissioner

Commissioner

Seal

Exhibit A

WATER USE EFFICIENCY PROGRAM

EFFICIENCY PROGRAM

General

The water use efficiency rule was promulgated as part of the 2003 Municipal Water Law. The water use efficiency rule requires that small water systems (under 1,000 connections) prepare and implement a water use efficiency program no later than January 22, 2009. The District owns and operates three small water systems. These include Chelan Ridge (ID # 12350 U) Ollala Canyon (ID # 63408 1), and Dryden (ID # 20100 6). A water use efficiency program was developed and goals adopted for these systems on November 24, 2008. An analysis and update to the water use efficiency program for each of these systems is provided herein.

Water Use Efficiency Measures

The water use efficiency rule requires that purveyors implement a specified number of water use efficiency measures, based on the number of connections served by the water system. The District is required to implement at least one water use efficiency measures for each of the small water systems.

There are two basic criteria that must be met to establish the eligibility of a measure. (1) The measure must focus on encouraging customers to use water efficiently, and (2) The measures must not be mandatory; i.e. must not be required by WAC 246-290.

Chelan County PUD's existing water use efficiency program consists of several water use efficiency measures. Many of these measures were first implemented between 2000 and 2002. These measures are discussed below.

Mandatory Measures

The following WUE measures must be implemented:

Install production (source) meters: WAC 246-290-496(1). This work is complete.

Install consumption (service) meters: WAC 246-290-496(2). This work is complete. The District converted water meters to an AMR system in spring 2007. Automated meter reading is improving the District's ability to detect leaks early.

Perform meter calibration: WAC 246-290-496(3). This measure is a program to test and/or calibrate water meters on a regular basis. The testing/replacement schedule developed is as follows:

<u>Meter Size Testing/Replacement Criteria</u>	
5/8 inches	15 years or 2,500,000 gallons
1 inch	15 years or 3,250,000 gallons
1 ½ inches	10 years or 5,600,000 gallons
2 inches & larger	10 years or 10,400,000 gallons

The District has the ability to query meter data, and identify meters that need to be tested and calibrated prior to their scheduled replacement date. The District's existing staff will complete the work. Costs to implement this measure will be covered by the District's existing operations and maintenance (O&M) budget. Increased revenue generated by accurate meters is anticipated to exceed costs to implement this measure.

Implement a water-loss control action plan to control leakage: WAC 246-290-820(4). This is discussed in more detail below.

Educate customers regarding how they can use water efficiently at least once per year: WAC 246-290-810(4)(f).: The District prepares and sends a monthly newsletter via email to its customers. Several times each year, the newsletter provides tips on how to conserve water and informs customers about District programs.

The following WUE measures must be evaluated:

Evaluate rates that encourage water demand efficiency: (WAC 246-290-100(4)(j)(iv) and 246-290-105(4)(l)). Rates are one of the most important and effective WUE measures at the District. Rates are structured in tiers; as use decreases, so do costs. Effective April 1, 2016, monthly rates are as follows:

First 3,000 gallons – \$2. 50 per 1,000 gallons
 3,001 to 10,000 gallons – \$3. 35 per 1,000 gallons
 Over 10,000 gallons – \$4. 20 per 1,000 gallons
 5/8 inches Meter basic charge – \$31.25

Evaluate reclamation opportunities: Reuse of reclaimed water is administered by the Washington departments of Health and Ecology through the Water Reclamation and Reuse Standards (September 1997). Reclaimed water is wastewater treated to varying levels based on the intended use.

Typical uses of reclaimed water include irrigation, impoundments, groundwater recharge by surface percolation, commercial and industrial uses, and stream flow augmentation. The required level of treatment for each reclaimed water use is based primarily on the risk of human exposure to pathogenic microorganisms.

Opportunities for reuse of reclaimed water within the service areas of these small water systems are very limited. The capital and ongoing costs to reclaim water from domestic sewage are very high, particularly for small systems. Many customers in the Dryden and

Ollala Canyon service areas are currently provided irrigation water from separate irrigation systems. There is no potential source of reclaimed water within a reasonable distance of the Chelan Ridge system.

Non-Mandatory Measures

There are two basic criteria that must be met to establish the eligibility of a measure. (1) The measure must focus on encouraging customers to use water efficiently, and (2) The measures must not be mandatory; i. e. must not be required by WAC 246-290.

Individual meter monitoring: Customers are informed through the District's email newsletter and website of the option to borrow or buy a monitor and track water use from inside their homes. The monitor can display water use during intervals defined by the customer, such as, for 1 day or for when a lawn is being watered. The District supplies a worksheet to help consumers understand and compare their consumption.

The water meter monitors meet both eligibility criteria and are therefore a viable WUE measure.

Water meter data recording: The District also purchased data recorders that can be programmed to record the customer's meter reading at defined intervals (every minute, and/or hourly, etc.). Graphical output illustrates customer usage during the specific dates and times the recorder was installed.

The water data recorders meet both eligibility criteria and are therefore a viable WUE measure.

Xeriscape: The District's peak water use occurs during the summer irrigation season. To reduce reliance on domestic water for landscape irrigation, the District promotes xeriscape, or drought-tolerant landscaping. Programs include:

1. Riverfront Demonstration Garden – In cooperation with the Washington State University/Chelan County Master Gardeners, the District maintains a demonstration garden that consists of more than 70 different drought-tolerant plants and grasses. The garden is located along the popular Apple Capital Loop Trail, which fronts the Columbia River.
2. Printed guide – The District provides a full-color plant identification brochure for garden visitors and the general public.
3. District Headquarters Xeriscape Garden – Customers visiting District headquarters in the City of Wenatchee (City) are treated to two small-scale gardens with landscaping featuring drought-tolerant plants and grasses.
4. KPQ Home and Garden Show – Xeriscape and water conservation are among the themes promoted by the District at the annual Home and Garden Show the second weekend in March.
5. Seminars/tours – The District promotes the local Master Gardener's program which includes an annual plant sale featuring Xeriscape plants, educational seminars, and guided tours of the Riverfront Demonstration Garden.

6. Website – The District’s website includes extensive information on Xeriscape gardening, with full-color photos of 73 plants and grasses. <https://www.chelanpud.org/conservation/water-conservation/xeriscape/xeriscape-plants>
7. Social media – Xeriscape landscaping is promoted through the District’s social media channels including the Lightly e-newsletter, Chelan PUD blog, Facebook and Twitter.

The xeriscaping program meets both eligibility criteria and is therefore a viable WUE measure.

Comprehensive Website: The District’s website (<http://www.chelanpud.org/water-conservation.html>) includes detailed water conservation information on the following subjects:

1. Indoor water conservation
2. Lawn Tips
3. Outdoor Water Audit
4. Water leaks
5. Water use calculator
6. Xeriscape
7. Daily water saving tip
8. Water – Use it Wisely
9. Water Conservation Links

The District’s comprehensive website provides advanced consumer education to complement the general education required by the rule. For this reason, the District’s comprehensive website is a viable WUE measure.

Outdoor water audits: Residential outdoor water audits are offered on an as-requested basis by water department staff. The water audit program meets both eligibility criteria and is therefore a viable WUE measure.

Notifying Customers about Leaks on Their Property: If an excessive amount of water flows through a meter, an alarm alerts District staff to a potential problem. The District mails customers a notice informing them of the potential leak, with a list of potential causes for the customers to investigate. Educating customers about fixing the leaks within their homes or on their property counts as a WUE measure (WAC 246-290-810(4)(d)).

Summary: The District’s existing WUE program includes the following mandatory and non-mandatory measures. The symbols in brackets () indicate the water use category supported by the respective measure (I = indoor; O = outdoor; ICI = industrial/commercial/institutional, A = All):

Mandatory Measures:

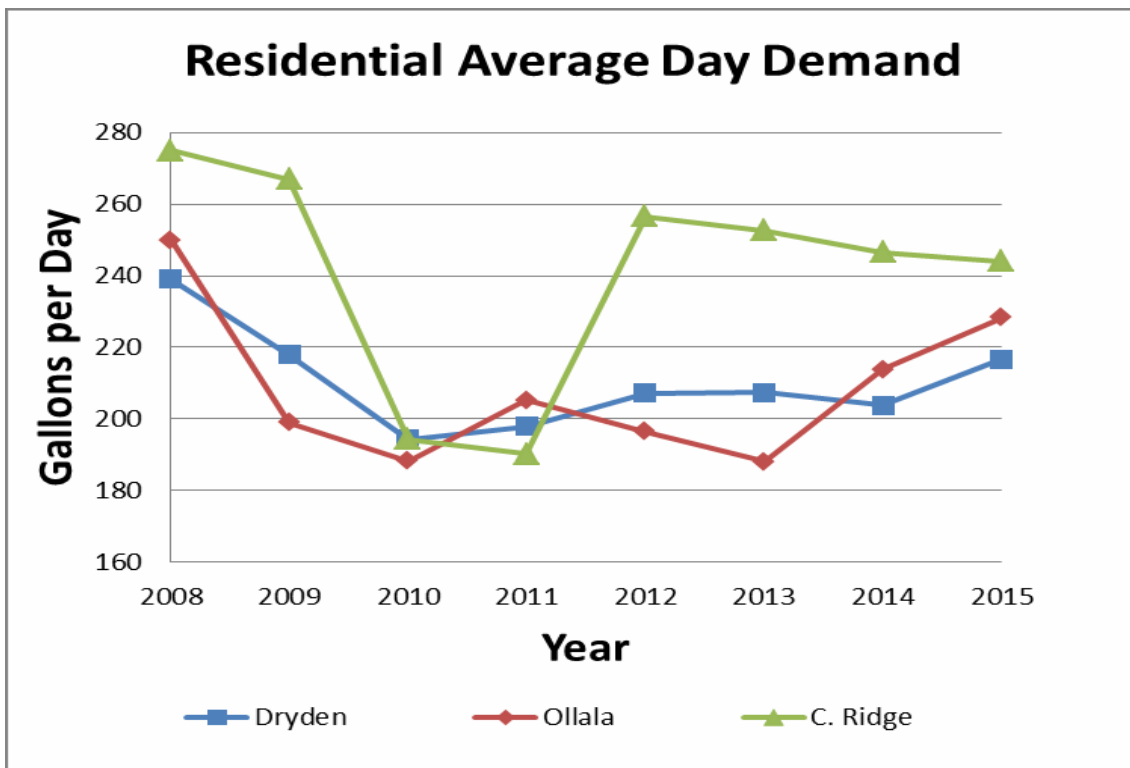
1. Source Meters (A)
2. Service Meters (A)
3. Meter Calibration Program (A)
4. Water Loss Control Action Plan (A)
5. Yearly Customer Education (A)
6. Conservation Rates (A)

Non-Mandatory Measures:

1. Individual Water Meter Monitoring (A)
2. Water Meter Data Recording (A)
3. Xeriscaping Program (O)
4. Comprehensive Website (A)
5. Outdoor Water Audits (O)
6. Notifying Customers about Leaks on Their Property (A)

Past Water Savings

Past water savings was estimated by comparing water use before implementation of efficiency measures to water use today. The historical residential water use is illustrated below.



Ollala Canyon: The average consumption per residential connection was 250 gallons per capita-day (gpcd) in 2008. Average consumption from 2009 through 2015 varied between 188 gpcd and 228 gpcd. Estimated water saved between 2009 and 2015 is 2.8 million gallons.

Dryden: The average consumption per residential connection was 239 gallons per capita-day (gpcd) in 2008. Average consumption from 2009 through 2015 varied between 194 gpcd and 218 gpcd. Estimated water saved between 2009 and 2015 is 3.6 million gallons.

Chelan Ridge: The average consumption per residential connection was 275 gallons per capita-day (gpcd) in 2008. Average consumption from 2009 through 2015 varied between 190 gpcd and 267 gpcd. Estimated water saved between 2009 and 2015 is 3.0 million gallons.

Water Use Efficiency Goals

The District has selected a water use efficiency goal for each system that includes a measurable outcome in terms of water production or consumption. The selection of these goals considered the water system's forecasted demand and water supply characteristics. Goals for each system are:

Ollala Canyon: Maintain the 3-year residential average day demand less than 250 gallons per connection per day through 2022.

Dryden: Maintain the 3-year residential average day demand less than 250 gallons per connection per day through 2022.

Chelan Ridge: Maintain the 3-year residential average day demand less than 275 gallons per connection per day through 2022.

The goals for each system are intended to maintain consumption at the current relatively low levels. Using the data provided in the Washington State Department of Health's Water System Design Manual (Figure D-1), typical average day demand for these communities would be about 600 gpd per connection. In comparison, the current average day demand for these systems is less than 50 percent of typical values. In addition, these systems have adequate source capacity and water rights. No further reduction in water consumption is considered necessary at this time.

The goals for each system were established using a public process in accordance with Chapter 246-290-830 WAC. The District adopted these goals and this Water Use Efficiency Program in Resolution No. XX approved by the District's Board of Commissioners on YY.

New Water Use Efficiency Measures

It is anticipated the existing water use efficiency measures will support meeting the goals established for each system. No new water use efficiency measures are proposed.

Evaluation

The small cost to administer the existing water use efficiency measures is negligible relative to the water utility's annual budget.

The importance of conservation cannot be overstated. Reducing water consumption will extend the life of infrastructure from the source to the reservoir. The District believes the qualitative benefits to society outweigh the costs of any conservation measure outlined here. Chelan PUD serves a rapidly growing area with increasing demands for utilities and services. Conservation of resources helps preserve a quality of life in the county that includes safe drinking water and water for agriculture, power generation and fish.

The marginal cost to produce water is currently unknown. It is anticipated the cost per customer to add source capacity is very high.

Schedule and Budget

The WUE measures were first implemented between 2000 and 2009 and as part of the previous water use efficiency program for the District's water systems. Anticipated ongoing costs to maintain the existing measures is negligible compared to the District's O&M budget, and will be included in the District's annual budget.

Projected Water Savings

Water saved due to implementation of the water use efficiency measures will maintain consumption at current, relatively low levels. It is anticipated that maintaining accurate water meters will reduce the calculated value for distribution system leakage. However, no true water savings (i.e. reduction in demand) will result from meter maintenance.

Program Evaluation

This water use efficiency program will be evaluated in the annual water use efficiency report prepared for each system. The program will be reevaluated annually and modified, if needed, to meet the selected water use efficiency goals.

Distribution System Leakage

Distribution system leakage (DSL) was determined using the formula identified in Chapter 246-290-820 WAC. Three year average DSL (2013-2015) for each system is summarized below.

System	Distribution System Leakage
Ollala Canyon	3.0%
Chelan Ridge	2.7%
Dryden	36.7%

With the exception of Dryden, all systems meet the 10 percent maximum allowed leakage standard. A water loss control action plan for the Dryden system is discussed below.

WATER LOSS CONTROL ACTION PLAN

General

Chapter 246-290-820 WAC requires that water systems with leakage in excess of the 10 percent standard prepare a water loss control action plan. The calculated leakage for Dryden exceeded 30 percent when the District's 2009 water use efficiency plan was developed. The 2009 plan included a water loss control action plan which was implemented in the following years. Despite efforts to control water loss, the calculated 3-year average (2013-2015) leakage for Dryden was 36.7 percent. A discussion of water loss control activities is provided below.

Data Accuracy and Collection

The leakage calculation is based on the formula provided in Chapter 246-290-820 WAC as follows:

$$\text{DSL} = [(\text{TP}-\text{AC})/(\text{TP})] \times 100$$

Where: DSL = percent distribution system leakage
TP = total water produced and purchased AC =
authorized consumption

Total water produced is obtained from the source meter located in the Dryden pump house. The source meter was replaced with a new magnetic flow meter in 2015.

Authorized consumption includes:

1. Metered water sales from residential, commercial, industrial and interdepartmental accounts. These quantities are obtained from the District's billing system.
2. Hydrant meter sales. These quantities are obtained from the District's billing system.
3. Estimated water used in the District's flushing program.
4. Estimated water used for construction. This volume is calculated based on newly installed water main volume, newly constructed reservoir volume (filling, flushing), etc.
5. Estimated water flowed from hydrants by the local fire districts.
6. Estimated water used in fire fighting. The District estimates this amount by observing pumping rates and reservoir drawdown rates obtained from its telemetry system during the time of the fire(s). Water used in the hours or days following the major fire event for cleanup is estimated.

The following example from 2007 illustrates a typical DSL calculation:

Authorized Consumption:

Metered water sales	4,790,600 gal
Hydrant meter sales	225,700 gal
Flushing program	10,000 gal
Construction water	0 gal
Fire Dept. flushing	20,000 gal
Fire fighting	0 gal

AC (2007) 5,046,300 gal

TP (2007) 7,153,800 gal

DSL = $[(7.153-5.046)/7.153] \times 100 = 30$ percent

The estimated quantities do not substantially impact the DSL calculation. Increasing or decreasing these estimates by 50 percent impacts the DSL calculation approximately 0.2 percent.

The District completed an automated meter reading project for Dryden in 2006, which included replacement of all of its meters. A random sample of meters were removed and tested in 2013 and were found to be accurate. The District is certain the customer meters are not a source of error in the DSL calculation

Hydrant meters are inspected and tested annually.

Control Methods

Methods anticipated and implemented to reduce DSL are listed and discussed below.

Data Collection and Analysis: Continue to collect customer meter data and hydrant meter data. Obtain estimates of water used for fire-fighting and hydrant flushing. As stated previously, varying estimates do not significantly change the DSL calculation

Visual Audit: Visit each water meter chamber, combination air valve, flushing hydrant, fire hydrant and main line valve and check for visual leaks. Repair any leaks found. Visual inspections were completed in 2012 and 2014 concurrent with a system wide leak detection effort. No visual leaks were found.

Distribution Leak Detection: A leak detection company was hired in 2012 and again in 2014 and the entire distribution system was tested using acoustic methods. No leaks were found. It's important to note the Dryden system PVC distribution piping has a dampening effect on any sound produced by leaking water.

Storage Leak Detection: The District hired a dive company in 2011 to evaluate leakage of the concrete reservoir. A diver entered the reservoir and injected a small quantity of food-grade dye near every pipe penetration and construction joint in the tank. No leaks

were found. In 2013, the District isolated the reservoir from the distribution system and monitored the water level for a full working day. No change in water level was recorded. The District is certain the reservoir is leak-free.

Production well check valve leakage: In 2013, the District isolated the production wells from the distribution system during a single night and monitored the rate of change of reservoir level during the early morning hours when water usage should be very small. The rate of reservoir drawdown remained the same as when the wells were not isolated from the distribution system indicating no leakage through the check valves back to the wells.

Unauthorized connections: The District contemplated the potential for unauthorized connections to the distribution system. Similar to metered connections, the water use pattern of an unauthorized connection would be expected to vary over time. For example, the drawdown rate of the reservoir in a small primarily residential system like Dryden typically increases in the late morning and evening, and decreases or stops in the early morning hours (e.g. 1:00 to 4:00 a.m.) The drawdown of the Dryden reservoir in the early morning hours is fairly consistent and approximately equal to the calculated average leakage of 5 gpm. In addition, the entire distribution system was replaced in 1982 and any unauthorized connections would have been eliminated at that time. Based on this analysis, it is almost certain there are no unauthorized connections to the Dryden system.

Analysis

The District has invested considerable resources and evaluated every feasible source of distribution system leakage since the initial water use efficiency program was prepared and goals adopted in 2009. It's important to note that although the percentage leakage is high (about 40%) the actual quantity is relatively low (about 5 gpm). The District will continue to collect and analyze data and perform visual audits of the system. Any leaks discovered will be repaired promptly. No other efforts are proposed at this time.

SOURCE WATER

Ollala Canyon

The Ollala Canyon water system is supplied from one spring captured by a collection box. The collection box diverts the water into a wet well. Water is pumped from the wet well to a reservoir. Excess water overflows the wet well into a pond, and flows down the canyon. Chlorine is injected at the pumphouse to provide disinfection.

Dryden

The Dryden water system is a groundwater source tapped in a well field with two sources drilled approximately 55 feet deep. This groundwater source is located on the west side of town, approximately 200 feet from the Wenatchee River. This well field has excellent water quality and quantity. The capacity of each well is 85 gpm. Chlorine is injected at the wellhouse to provide disinfection.

Chelan Ridge

The Chelan Ridge water system is a groundwater source with one well drilled approximately 120 feet deep. This groundwater source is located at Lake Chelan State Park, approximately 200 feet from Lake Chelan. The well pump capacity is 350 gallons per minute. Chlorine is injected at the wellhouse to provide disinfection.

Water quality consistently meets primary drinking water standards, as summarized below.

Water Quality Analysis

SUBSTANCE	HIGHEST LEVEL ALLOWED (MCL*)	OLLALA CANYON	DRYDEN	CHELAN RIDGE	POTENTIAL SOURCES
Barium (ppm)	2	0.04	0.035	0.05	Erosion of natural deposits
Fluoride (ppm)	4	0.07	0.07	0.30	Erosion of natural deposits; discharge from fertilizer and aluminum factories
Nitrate (ppm)	10	0.07	0.07	0.07	Runoff from fertilizer use; leaching from septic tanks, sewage; erosion of natural deposits
Chloride (ppm)	250	7.7	3.4	0.67	Variable and dependent on chemical composition of water
Sulfate (ppm)	250	8.1	7.5	2.1	Erosion of natural deposits; mine drainage wastes
Conductivity (umhos/cm 25 deg.)	700	296	260	130	Presence of ions; on their total concentration, mobility and on the temperature of measurement
Total Dissolved Solid (ppm)	500	154	140	84	Matter suspended or dissolved in water
Hardness (mg/l)	Not regulated	138	114	44.5	High concentration of calcium and magnesium ions.
Total Trihalomethanes (TTHM)	80	29.8	0.40	1.7	By-products of drinking water chlorination
Total Haloacetic acid (HAA5)	60	6.7	15	1.2	By-products of drinking water chlorination

Water Rights

Ollala Canyon: Under water right # S3-00974P, the District is authorized to withdraw 161.6 gpm and 73.4 acre-ft per year from the spring source. Currently, the spring source supplies approximately 50 gpm. According to 2007 source meter data, 7.4 acre feet were pumped into the distribution system. Based on this analysis, the existing water right is adequate for this system.

Dryden: Under water right # G4-27929C, the District is authorized to withdraw 150 gpm and 74 acre-ft per year from the wells. Currently, one well discharging 85 gpm can adequately supply the system. According to 2007 source meter data, 22 acre feet were pumped into the distribution system. Based on this analysis, the existing water right is adequate for this system.

Chelan Ridge: Under water right # S3-00974P, the District is authorized to withdraw 161.6 gpm and 73.4 acre-ft per year from the spring source. Currently, the spring source supplies approximately 50 gpm. According to 2007 source meter data, 7.4 acre feet were pumped into the distribution system. Based on this analysis, the existing water right is adequate for this system.

Reliability Analysis

Ollala Canyon: Clean water from the spring source flows by gravity into the clear well below the pump house. A single pump transfers this water to the concrete drinking water storage tank. The pump capacity (30 gpm) far exceeds the maximum daily demand of the system. The District maintains a spare pump that can be installed in approximately ½ day in the event the installed pump fails. In the event of an extended power outage, the single pump can be powered by a 5 kW portable gasoline powered generator.

Dryden: The wellhouse consists of two wells, each with a capacity of approximately 85 gpm. One well is capable of supplying the maximum daily demand of the system. The second well and pump is available for redundancy. The well house is provided with an auxiliary power connection and transfer switch. In the event of an extended power outage, the wells can be powered by the District's portable diesel generator.

Chelan Ridge: The single well has a capacity of approximately 350 gpm, and is capable of supplying the maximum daily demand of the system. The District has budgeted purchase of a new pump and motor that will be stored in the District's warehouse. In the event of a pump or motor failure, the District will contract with a local well driller/outfitter to perform the necessary repairs. The storage reservoir will provide several days water to customers while repairs are made.

CHAPTER 4

WATER USE EFFICIENCY PROGRAM

EFFICIENCY PROGRAM

Current Water Use Efficiency Measures

The Public Utility District No. 1 of Chelan County's (District) existing water use efficiency (WUE) program consists of several water use efficiency measures. Many of these measures were first implemented between 2000 and 2002. These measures include the following:

Conservation rates: Rates are structured in tiers; as use increases, so do costs.

System-wide automated meter reading and individual meter monitoring: In a \$1.4 million upgrade, the District converted water meters to an automated meter reading (AMR) system, finishing in spring 2007. AMR has improved the District's ability to detect leaks early. If an excessive amount of water flows through a meter, an alarm alerts District personnel to a potential problem. The District mails customers a notice informing them of the potential leak, with a list of potential causes for the customers to investigate.

As part of the AMR conversion, the District purchased water meter monitors for customers' use. Customers can borrow or buy a monitor and track water use from inside their homes. The monitor attaches with a magnet to a customer's refrigerator (or any location in the home), and captures signals from the transmitter on the water meter. The monitor displays the current reading on the water meter and can display water use during intervals defined by the customer, such as for one day, or for when a lawn is being watered. The District supplies a worksheet to help consumers understand and compare their consumption.

Finally, the District also purchased data recorders as part of the AMR conversion. The data recorders can be programmed to record the customer's meter reading at defined intervals (every minute, and/or hourly, etc.). The recorder can store over 20,000 data points. These recorders can be installed near the customer's meter to collect usage data. Software provided from the AMR vendor is used to extract and display the data in graphical format. The graph illustrates customer usage during the specific dates and times the recorder was installed. The data recorders can be an invaluable tool for educating customers about their water use.

Xeriscape: The District's peak water use occurs during the summer irrigation season. To reduce reliance on domestic water for landscape irrigation, the District promotes xeriscape, or drought-tolerant landscaping. Programs include:

1. Riverfront Demonstration Garden – In cooperation with the Washington State University/Chelan County Master Gardeners, the District maintains a demonstration garden that consists of more than 50 different drought-tolerant plants and grasses. The garden is located along the popular Apple Capital Loop Trail, which fronts the Columbia River.

2. District Headquarters Xeriscape Garden – Customers visiting District headquarters in the City of Wenatchee (City) are treated to a small-scale garden with landscaping featuring 20 drought-tolerant plants and grasses.
3. KPQ Home and Garden Show – Xeriscape and water conservation are the themes promoted by the District at the annual Home and Garden Show the second weekend in March. For the past 4 years, the District has sponsored a popular, free presentation by gardening expert, Ciscoe Morris, of Seattle, with emphasis on drought-tolerant plantings.
4. Workshops – The District sponsors at least one public workshop each year on various aspects of water conservation, including irrigation practices and Xeriscape.
5. Website – The District’s website includes extensive information on Xeriscape gardening, with full-color photos of 53 plants and grasses.

Lightly email newsletter: The District prepares and sends a monthly newsletter via email to its customers. Several times each year, the newsletter provides tips on how to conserve water and informs customers about District programs.

Comprehensive website: The District’s website (<http://www.chelanpud.org/water-conservation.html>) includes detailed water conservation information on the following subjects:

1. Indoor Water Conservation
2. [Lawn Tips](#)
3. [Outdoor Water Audit](#)
4. Water Leaks
5. Water-use Calculator
6. Xeriscape
7. Daily Water-saving Tip
8. [Water](#) – Use it Wisely
9. [Water Conservation Links](#)

Note that the “Water - Use It Wisely” link directs consumers to a national website on water conservation. The District is a partner in the award-winning Water - Use It Wisely campaign, which gives the District access to professional marketing tools.

Outdoor water audits: In summer 2004, the District developed a pilot program to perform 25 residential outdoor water audits for high-use customers. A consultant was hired to conduct these first audits. Later, water department staff took over the responsibility of offering these audits on an as-requested basis.

Summary: The District’s existing WUE program includes the following measures:

1. Conservation rates.
2. Customer leak detection and notification.
3. Customer water meter monitoring.
4. Customer water meter data recording and reporting.
5. Xeriscaping program.
6. Lightly email newsletter.
7. Comprehensive website.
8. Outdoor water audits.

Past Water Savings

Past water savings was estimated by comparing water use before implementation of efficiency measures to water use today. The historical residential and commercial water use is illustrated in **Figures 4-1** and **4-2**, respectively.

The goal in the District's last comprehensive water system plan WSP was to reduce water consumption per customer by 5 percent by 2014. In 2014, the average third tier consumption per residence was 29 percent less than the baseline 2006 data. Over 300 million gallons (MG) of water was saved between 2007 and 2014.

The average consumption per residential connection decreased from 250 gallons per residential equivalent residential unit (ERU) in 2007 to 206 gallons in 2014 (an 18 percent reduction). Similarly, the average consumption per commercial/industrial connection decreased from 1,800 gpd in 2007 to 1,739 gallons per day (gpd), a 3 percent reduction. Since commercial/industrial uses account for 42 percent of the total usage, the aggregate reduction is about 12 percent.

Figure 4-1: Average Residential Customer Usage

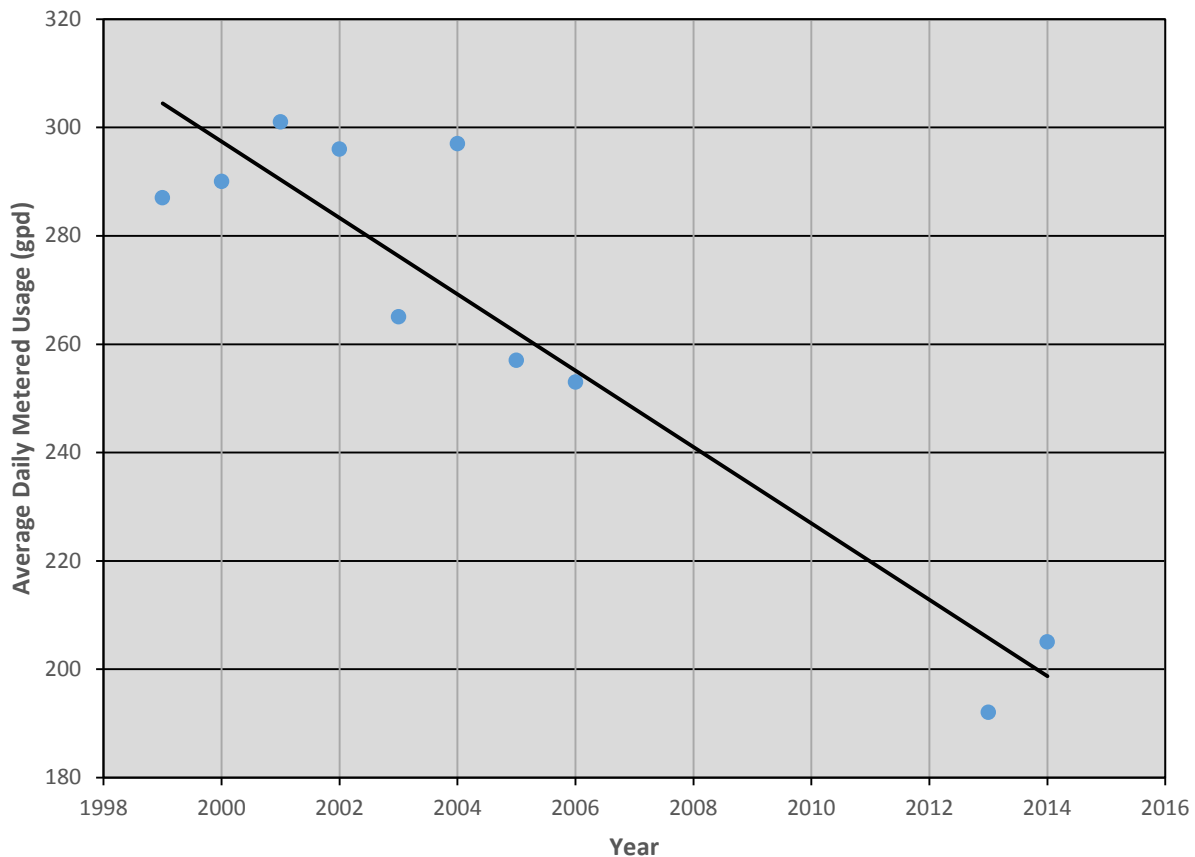
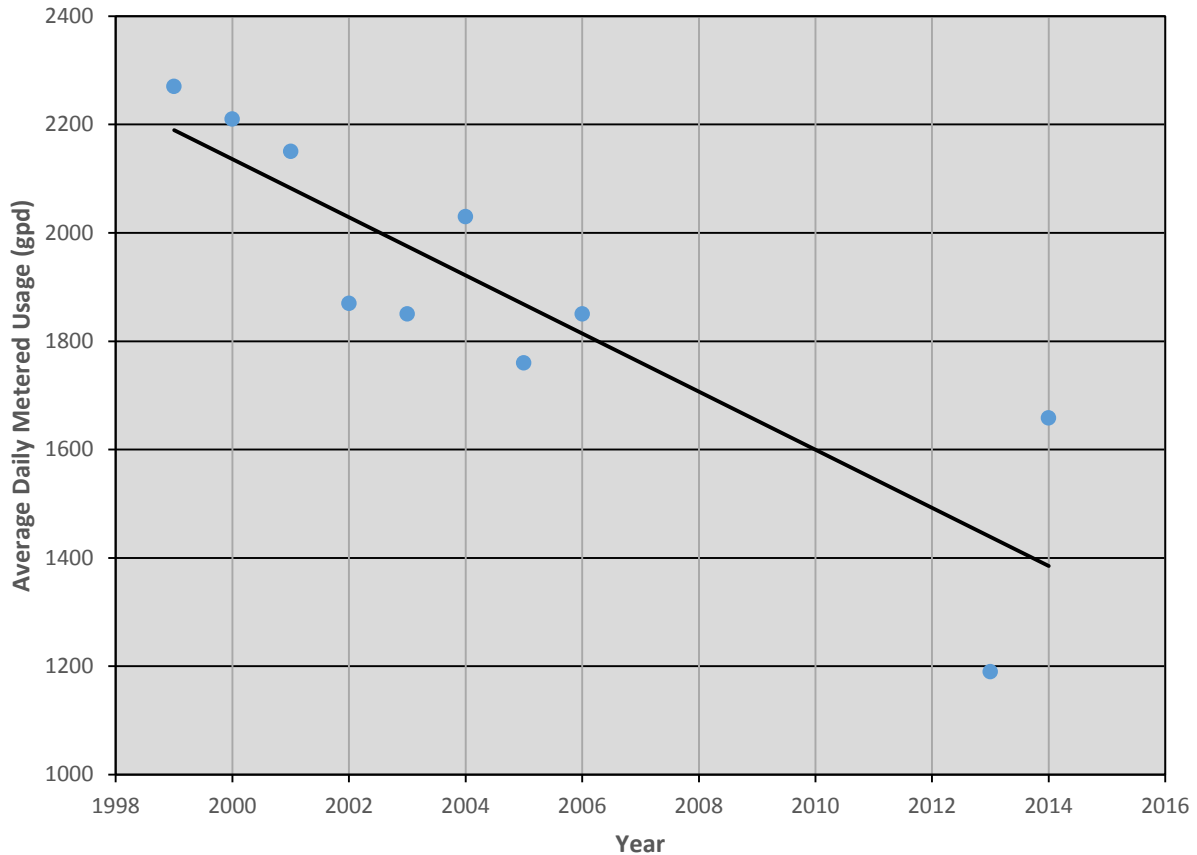


Figure 4-2: Average Commercial Customer Usage



The current average annual residential consumption (approximately 206 gpd per ERU) is considerably less compared to other eastern Washington communities. The District's past conservation efforts and programs, and the availability of separate irrigation water to many residences, contribute to the relatively low residential water use.

Seasonal Variation in Customer Class

For water systems with 1,000 or more connections, seasonal data must be collected to describe the variations in water consumption trends Washington Administrative Code (WAC) 246-290-100(4)(b)(ii)(D)).

Figures 4-3, 4-4 and 4-5 provide variation in consumption for residential, commercial, and industrial users. It is clear from these tables that industrial users have the highest increase during the summer,

and due to percentage of the total volume, summer industrial use drives peak demands. Since industrial demands are heavily weighted in fruit processing, and the timing of fruit processing follows harvest, it may be difficult to reduce this peak usage.

Figure 4-3: Residential Usage (gpd)

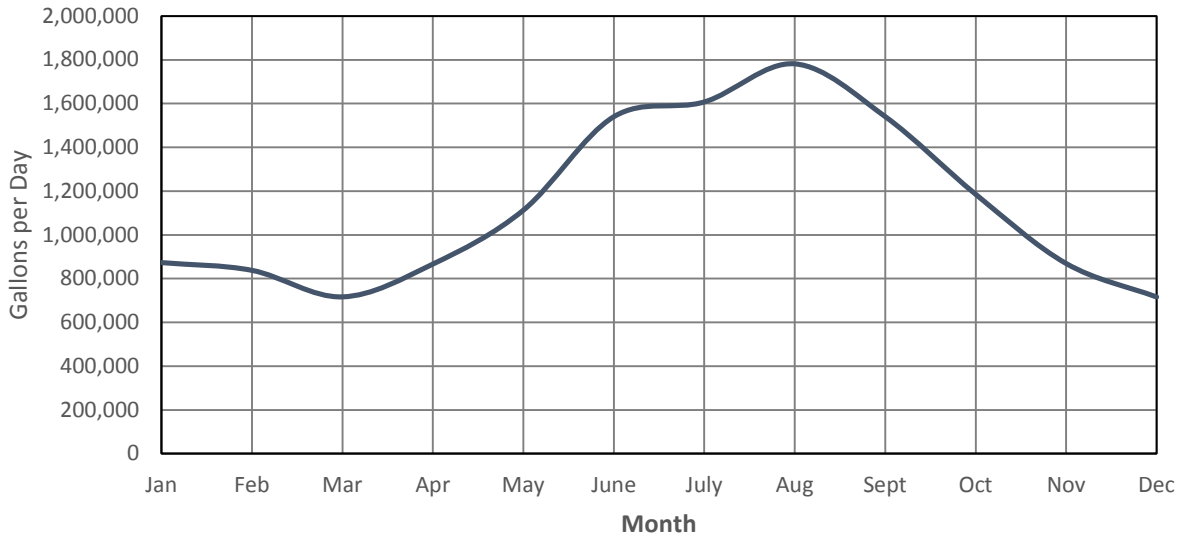


Figure 4-4: Commercial Usage (gpd)

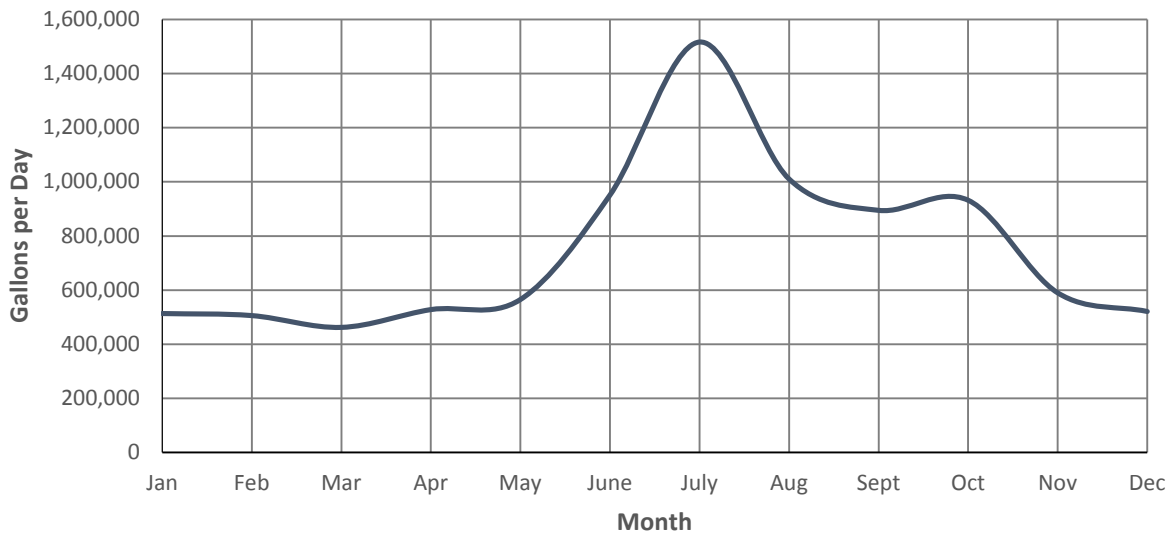
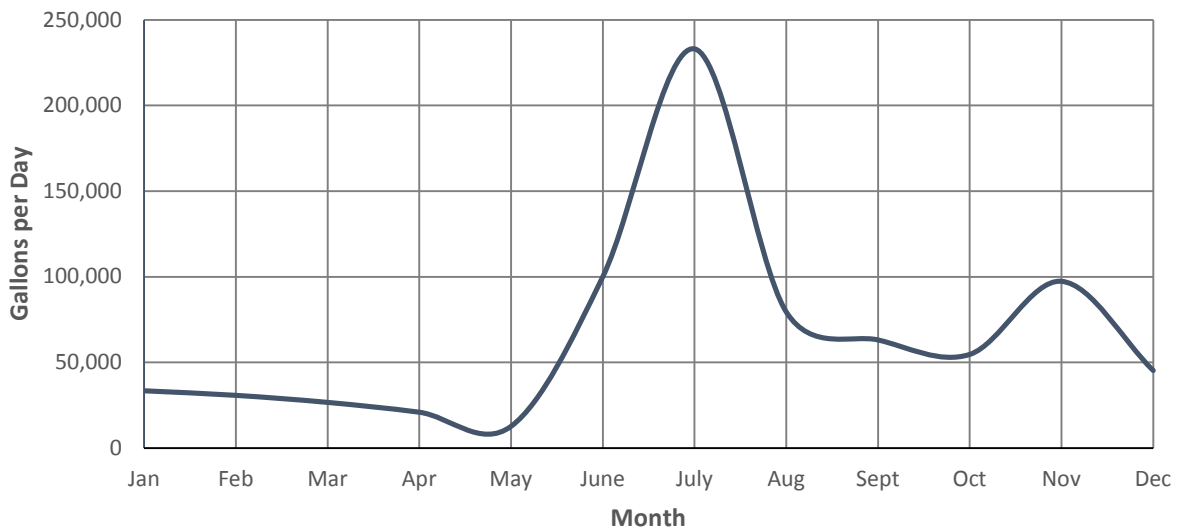


Figure 4-5: Industrial Usage (gpd)



Mandatory Measures

The following WUE measures must be implemented:

Install production (source) meters: WAC 246-290-496(1). This work is complete.

Install consumption (service) meters: WAC 246-290-496(2). This work is complete. The District converted water meters to an AMR system in spring 2007. Automated meter reading is improving the District’s ability to detect leaks early.

Perform meter calibration: WAC 246-290-496(3). This measure is a program to test and/or calibrate water meters on a regular basis. The testing/replacement schedule developed is as follows:

<u>Meter Size Testing/Replacement Criteria</u>	
5/8 inches	15 years or 2,500,000 gallons
1 inch	15 years or 3,250,000 gallons
1 ½ inches	10 years or 5,600,000 gallons
2 inches & larger	10 years or 10,400,000 gallons

The District has the ability to query meter data, and generate work orders for meters that need to be tested and calibrated prior to their scheduled replacement date. The District’s existing staff will complete the work. Costs to implement this measure will be covered by the District’s existing operations and maintenance (O&M) budget. Increased revenue generated by accurate meters is anticipated to exceed costs to implement this measure.

Implement a water-loss control action plan to control leakage: WAC 246-290- 820(4). This is discussed in more detail below.

Educate customers regarding how they can use water efficiently at least once per year: WAC 246-290-810(4)(f).: **Lightly email newsletter:** The District prepares and sends a monthly newsletter via email to its customers. Several times each year, the newsletter provides tips on how to conserve water and informs customers about District programs.

The following WUE measures must be evaluated:

Evaluate rates that encourage water demand efficiency: (WAC 246-290-100(4)(j)(iv) and 246-290-105(4)(l)). Rates are one of the most important and effective WUE measures at the District. Rates are structured in tiers; as use increases, so do costs. Effective April 1, 2016, monthly rates for the greater Wenatchee area system are as follows with 2007 rates in parenthesis:

First 3,000 gallons – \$2.50 (\$2.10) per 1,000 gallons
 3,001 to 10,000 gallons – \$3.35 (\$2.90) per 1,000 gallons
 Over 10,000 gallons – \$4.20 (\$3.70) per 1,000 gallons
 5/8 inches Meter basic charge – \$31.25 (\$25.00)

Evaluate reclamation opportunities: (WAC 246-290-100(4)(f)(vii)). The City is considering the long-term use of reclaimed water from its wastewater treatment plant and has installed purple pipe along portions of the waterfront in pursuit of that goal. This reclaimed water could potentially reduce irrigation demand on portions of the District's 930 pressure zone. The District will track that use and consider participating in the City's potential future reclaimed water project based on capacity and cost-effectiveness. Additional considerations for use of reclaimed water are provided in **Section 4.5** of this WSP.

Non-Mandatory Measures

The District is required to implement six non-mandatory water use efficiency measures. These measures and their eligibility as water use efficiency measures are discussed below.

There are two basic criteria that must be met to establish the eligibility of a measure. (1) The measure must focus on encouraging customers to use water efficiently, and (2) The measures must not be mandatory; i.e. must not be required by WAC 246-290.

Individual meter monitoring: Customers are informed through the District's email newsletter and website of the option to borrow or buy a monitor and track water use from inside their homes. The monitor can display water use during intervals defined by the customer, such as, for 1 day or for when a lawn is being watered. The District supplies a worksheet to help consumers understand and compare their consumption.

The District also purchased data recorders that can be programmed to record the customer's meter reading at defined intervals (every minute, and/or hourly, etc.). Graphical output illustrates customer usage during the specific dates and times the recorder was installed.

The water meter monitors and the water data recorders each meet both eligibility criteria and are therefore each viable WUE measures.

Xeriscape: The District's peak water use occurs during the summer irrigation season. To reduce reliance on domestic water for landscape irrigation, the District promotes xeriscape, or drought-tolerant landscaping. The program is described in more detail above.

The xeriscaping program meets both eligibility criteria and is therefore a viable WUE measure.

Comprehensive Website: The District's website includes detailed water conservation information, as previously described.

The District's comprehensive website provides advanced consumer education to complement the general education required by the rule. For this reason, the District's comprehensive website is a viable WUE measure.

Outdoor water audits: Residential outdoor water audits are offered on an as-requested basis by water department staff. The water audit program meets both eligibility criteria and is therefore a viable WUE measure.

Notifying Customers about Leaks on Their Property: If an excessive amount of water flows through a meter, an alarm alerts District staff to a potential problem. The District mails customers a notice informing them of the potential leak, with a list of potential causes for the customers to investigate. Educating customers about fixing the leaks within their homes or on their property counts as a WUE measure (WAC 246-290-810(4)(d)).

Summary: The District's existing WUE program includes the following mandatory and non-mandatory measures. The symbols in brackets () indicate the water use category supported by the respective measure (I = indoor; O = outdoor; ICI = industrial/commercial/institutional, A = All):

Mandatory Measures:

1. Source Meters (A)
2. Service Meters (A)
3. Meter Calibration Program (A)
4. Water Loss Control Action Plan (A)
5. Yearly Customer Education (A)
6. Conservation Rates (A)

Non-Mandatory Measures:

1. Individual Water Meter Monitoring (A)
2. Water Meter Data Recording (A)
3. Xeriscaping Program (O)
4. Comprehensive Website (A)
5. Outdoor Water Audits (O)
6. Notifying Customers about Leaks on Their Property (A)

Water Use Efficiency Goals

The District has selected the following WUE goal that includes a measurable outcome in terms of water production or consumption. The selection of this goal considered the water system's forecasted demand and water supply characteristics. The goal is to:

1. Maintain residential average day demand (ADD) (3-year) less than 210 gpd per ERU.

This goal was established using a public process in accordance with Chapter 246-290-830 WAC. The District adopted this goal and this Water Use Efficiency Program in Resolution No. (Pending) approved by the District's Board of Commissioners on (Date Pending).

Budgeting for Water Use Efficiency Measures

The importance of conservation cannot be overstated. Reducing water consumption will extend the life of infrastructure from the source to the highest reservoir.

These measures listed will be administered by the District's Energy Services group. The group estimates \$6,500 is required per year to maintain these measures. This amount will continue to be included in the District's annual budget.

The WUE measures are clearly effective and are very cost effective. The small cost to administer the existing WUE measures is insignificant compared to the water utility's annual budget.

The meter tracking and calibration program will be completed by District staff using existing resources. There will be no additional cost to implement this measure.

The District believes the qualitative benefits to society outweigh the costs of any conservation measure outlined here. The District serves a rapidly growing area with increasing demands for utilities and services. Conservation of resources helps preserve a quality of life in Chelan County (County) that includes safe drinking water and water for agriculture, power generation, and fish.

Program Evaluation

This WUE program will be evaluated in the annual WUE report. It is anticipated that progress will be made each year. The program will be reevaluated annually and modified, if needed, in an effort to meet the selected WUE goals.

DISTRIBUTION SYSTEM LEAKAGE

DSL was determined using the formula identified in Chapter 246-290-820 WAC. The calculated DSL for 2008 through 2014 is presented in **Table 4-1**.

Table 4-1 Distribution System Leakage

Year	Source Production (MG)	Water Sold (MG)	Other Authorized (MG)	Total Authorized (MG)	DSL (%)
2008	829.29	683.52	3.77	687.29	17.1%
2009	872.41	716.88	3.77	720.65	17.4%
2010	758.81	644.23	3.77	648.00	14.6%
2011	777.78	645.10	4.00	649.10	16.5%
2012	774.88	656.26	10.25	666.51	14.0%
2013	773.51	659.44	10.25	669.69	13.4%
2014	772.66	713.30	10.25	723.55	6.4%
2015	783.88	722.47	15.75	738.22	5.8%

Calculated leakage for 2005 and 2006 was 18.3 percent and 15.2 percent respectively. This has been reduced significantly. The 2013 to 2015 3-year average DSL is about 8.5%.

The following work has been done to address DSL:

2006-2007: The District installed new water meters as part of its automated meter reading project. Installation of new meters did not significantly reduce calculated DSL.

2009: The District discovered unauthorized consumption through fire service lines to some customers, and worked with those customers to decommission those lines.

2010: The District discovered and repaired several distribution leaks.

2011: The District began leak detection efforts in one pressure zone using listening equipment, but found no significant leaks.

2011: The District repaired several significant leaks that rose to the ground surface (typical for a water system this size and age).

2012: The District installed additional system meters and calculated loss in smaller, compartmentalized sections of the system. Meters were added at the following locations: PS/RES1, S Wenatchee Reservoir, Circle Street Reservoir, Sleepy Hollow booster pump station (BPS) and Lower Skyline BPS. Lester Road BPS, while mentioned in the 2007 plan, is already metered. The Squilchuck and Olds Station areas exhibited greater leakage than others.

2012: The District hired a leak detection company, and the Squilchuck and Olds Station areas were checked in 2012 and 2013. Several leaks estimated at 50 gallons per minute (gpm) total were discovered and subsequently repaired. These repairs should theoretically reduce calculated leakage by 2 to 3 percent in future years.

2012: The District has also begun evaluating the accuracy of the meters replaced in 2007. This testing program will continue in future years.

2013: Additional leak detection work was completed. Between 2011 and 2013, approximately 25 percent of the system had been analyzed, and several leaks have been found and repaired.

2013: The District identified and replaced several inaccurate meters serving large-consumption customers.

2014: Additional leak detection work was completed and leaks were fixed. The District is on track to leak-detect the entire system in 10 years.

2014: The District identified and replaced additional inaccurate meters serving large consumption customers.

2015: Additional leak detection work was completed and leaks were fixed.

2015: Two water main replacement projects in the Squilchuck area eliminated approximately 15 gpm leakage.

SOURCE WATER

Water Quality

The District's source water is obtained solely from the Regional Facilities pursuant to the Regional Contract. The Regional facility well field provides water from four wells. The well field is located 1,400 feet north of the Rocky Reach Dam and approximately 800 feet from the east bank of the Columbia River. The wells pull water from the Rocky Reach aquifer (also known as Eastbank Aquifer), at a depth of approximately 225 feet. The aquifer is bounded to the south by a grout wall constructed in the east abutment of the Rocky Reach Dam. The aquifer is bounded to the east by bedrock, and to the west and north by the Columbia River.

The aquifer is a saturated stratum of unconsolidated deposits that allow water to move to the wells. Most of the water flows into the aquifer from the Columbia River. The recharge area is considered to lie north of the Rocky Reach Dam. Source water quality is addressed in the Regional Water System Plan

Water Rights

The Regional Facilities share the aquifer with the District's Eastbank Hatchery. The maximum day demand (MDD) of the current hatchery operations is 48 cfs. The water right for the hatchery is 52 cubic feet per second (cfs). The water right is non-consumptive since all the water drawn from the aquifer is discharged to the Columbia River.

A water rights and source capacity analysis for the municipal water system was performed in the 2012 Regional WSP. The analysis in the Regional plan concluded that the Regional water system "could exceed the permitted allowance of 13,277 acre feet per year (ac-ft/yr) from the East Bank Aquifer by 2018 if the assignment of each purveyor's rights is not resolved with the Washington State Department of Ecology (Ecology). It is the goal of the Regional utility to maintain at least a 20-year surplus of water rights for planned growth under the growth management act (GMA). This approach necessitates the future purchase of additional water rights, the resolution of uncertainties associated with regional water rights, and the pursuit of de-facto changes from other water systems (both domestic and irrigation) to the more reliable regional water system. "

The Regional members purchased additional water rights in 2012. The Chelan County Water Conservancy Board (Conservancy Board) approved the water rights transfer on June 14, 2012. In

2014, the City amended their WSP to reflect the recent water rights purchase held by the Regional members. The amendment was approved on April 24, 2014. A copy of the water rights analysis and water rights self-assessment (from the City WSP amendment) for the regional system is included in **Appendix L**. Also included is the Conservancy Board approval and the April 24, 2014, DOH approval letter.

In response to new population and demand projections, the Regional parties authorized the *Hydrogeologic Evaluation for the Wenatchee Regional Water Supply – Malaga – Alcoa Area*, RH2 Engineering, December 2006. This document evaluated the hydrogeologic characteristics of the area approximately between the Rock Island Dam and Malaga Water District. The study identified five aquifer sites with the potential to provide 8,000 to 15,000 gpm of potable water.

This work was further refined in the *Regional Water Supply Reliability Evaluation*, RH2 Engineering, November 2014 where 12 potential new sources were identified on both the left and right banks of the Columbia River between the Rocky Reach Dam and the Rock Island Dam. A preliminary analysis of potential aquifer yield, treatment needs, and reliability issues was prepared for each source. Three groundwater sources (aquifers) on the right bank of the Columbia River and the existing Eastbank Aquifer source were selected for further detailed evaluation. The aquifers under consideration are located near the unincorporated community of Malaga, near the Alcoa facility east of Malaga, and west of the Rock Island Dam. The capital costs for these alternatives were developed and issues related to source protection (and other criteria) for each alternative were identified. Potential well yields and probable water quality were estimated from historical pumping data and water sampling results for existing wells completed in the aquifers.

This effort was furthered in 2015, with groundwater water-level monitoring and recommendations for proceeding with exploratory drilling and pump testing, and water quality analysis to demonstrate the reliability and suitability of completing a new source of supply.

Responsibility for the source of supply analysis, water rights evaluation, water supply reliability analysis, and interties pertaining to the Regional water source is addressed by District, the City, and the EWWD under the terms of the Regional Contract as part of the Regional Facilities planning.

It is important to note that the District owns and shares its water rights used to serve its greater Wenatchee area water system as a 1/3 tenant in common with the City and EWWD. Water rights are held through the Regional Contract for common use by the City, the District, and EWWD, otherwise referred to as the Regional Facility. Therefore, it is not possible to perform a water rights self-assessment exclusively for the District's individual water system.

As previously noted, the 2012 Regional WSP estimated adequate water rights would be available through the year 2018. However, Regional demand has been relatively constant since 2012 with production of approximately 11,500 AF in 2015. Assuming a conservative growth rate of 1.5 percent annually, the Eastbank Aquifer water right alone (13,277 AF) would be adequate through 2024. Based on these analyses, adequate water rights are available for the District's current (2015) needs and 6-year (2021) needs.

Reliability Analysis

The District's source water is derived from the Eastbank Aquifer, through the Regional Facilities, which are managed by the City through the Regional Contract. Water is pumped from the aquifer by four large well pumps. Currently, only two of the four pumps operate simultaneously to meet peak demands of the District, EWWD, and City systems. The Eastbank aquifer is situated directly adjacent to Rocky Reach Dam, and the electrical substation, which provides the necessary electrical power. The reliability of the electrical system is extremely high.

In the event the Regional Facilities must be removed from service, the District's source pumping stations (Euclid Street and Hawley Street) withdraw water from the City's storage reservoirs with a combined volume of 12 MG. The District can also utilize its own reservoirs. Upper pressure zones are configured to supply lower pressure zones through pressure reducing valves (PRV). Thus, water can be transferred from upper reservoirs to lower reservoirs as needed in the event of an extended source outage. The current combined volume of the District's reservoirs is 10 MG. In comparison, the anticipated ADD at the end of the 6-year planning period (2021) is approximately 2.5 MG.

Each of the District's BPSs are configured to supply the MDD plus fire flow replenishment over a 72-hour period with the largest pump out-of-service. This is accomplished by providing 1 complete redundant pumping unit in each BPS.

RECLAIMED / NON-POTABLE WATER ANALYSIS

There are two potential activities that could reduce the demand on the Eastbank aquifer, the source of the Regional Water Supply. These include reuse of water reclaimed from public sewage and water conservation, or recycling at the Eastbank Hatchery. Each of these alternatives is discussed as follows:

Reuse of Reclaimed Water

Reuse of reclaimed water is administered by the Washington State Departments of Health (DOH) and Ecology through the Water Reclamation and Reuse Standards (September 1997). Reclaimed water is wastewater treated to varying levels based on the intended use. The treatment levels range from Class A to Class D with Class A being the highest quality.

Typical uses of reclaimed water include irrigation, impoundments, groundwater recharge by surface percolation, commercial and industrial uses, and stream flow augmentation. The required level of treatment for each reclaimed water use is based primarily on the risk of human exposure to pathogenic microorganisms.

Several of the approved uses of reclaimed water could theoretically be implemented in the City. The first step would be upgrade of the City's wastewater treatment plant to produce reclaimed water. The City's treatment plant currently discharges approximately 2.8 million gallons per day (MG/d) of treated wastewater to the Columbia River.

The City evaluated the use of reclaimed water in preparation of its General Sewer Plan. Two potential uses have been identified. These include irrigation of District parks along the City's Waterfront and melting snow that is collected and stockpiled on City property.

The City also addressed the potential for using reclaimed water in its 2012 WSP. Several industries were identified that use non-contact cooling water. These businesses were encouraged to utilize their non-contact cooling water for other purposes to reduce their water and sewer costs. The only significant potential source of reclaimed water that could be used for irrigation is from the City's wastewater treatment plant. The 2012 WSP concluded that, at this time, this re-use option would be cost-prohibitive relative to the benefit obtained.

Recycled Water

The Eastbank Hatchery operations currently draw between 20 and 48 cfs from the Eastbank aquifer. The District is studying options for recycling water within the Eastbank Hatchery. Recycling could significantly reduce the instantaneous demand on the Eastbank aquifer. It is anticipated the outcome of this study will be available for analysis in the next edition of the WSP

RESOLUTION NO. _____

A RESOLUTION DECLARING THAT NO BIDS WERE RECEIVED AND REJECTING BIDS FOR THE MCKENZIE-BEVERLY 115KV UPPER WHITE PINE RELOCATION AND CONSTRUCTION PROJECT (BID NO. 16-65) AND AUTHORIZING THE RELOCATION AND CONSTRUCTION BE OBTAINED BY NEGOTIATION

FACTUAL BACKGROUND AND REASONS FOR ACTION

On September 27, 2016 an invitation for sealed bids was published in accordance with RCW 54.04.070 and Resolution No. 08-13325 to provide McKenzie-Beverly 115kV Upper White Pine Relocation – Relocation and Construction. Bid proposals were opened on October 25, 2016 at 2:30 PM Pacific Time in the offices of the District. Six bids were received (excluding sales tax) as tabulated on Exhibit A attached.

The bids submitted by all six bidders did not meet the requirements specified in the contract documents. Two of the bidders exceeded the allowable mobilization/de-mobilization bid item of no more than five percent of total bid. One bidder proposed terms and conditions that are different than the terms and conditions required in the bidding documents. Three bidders exceeded the Engineers estimate of \$280,000 by more than 15%.

District staff has determined that all six bids were non-responsive and should be rejected. District staff also recommends negotiating a contract with the low bidders of Bid No. 16-65, rather than re-advertising the Bid. This is requested due to project time constraints caused by winter weather.

Pursuant to RCW 54.04.080, the District may procure the work on the open market and negotiate a contract rather than re-advertising if no responsive bids are received.

The General Manager of the District has reviewed District staff's recommendation and concurs in the same.

ACTION

IT IS RESOLVED BY THE COMMISSION OF PUBLIC UTILITY DISTRICT NO. 1 OF CHELAN COUNTY as follows:

Section 1. All bids received to furnish McKenzie-Beverly 115kV Upper White Pine Relocation and Construction (Bid No. 16-65) are hereby rejected.

Section 2. District staff is authorized to negotiate a contract with acceptable terms and conditions for the work described in Bid 16-65, which the General Manager (or his designee) is authorized to execute.

DATED this 7th day of November 2016.

President

ATTEST:

Vice President

Secretary

Commissioner

Commissioner

Seal

EXHIBIT A

Bidder Name City, State	Bid Bond/ Cashier's Check	Bid Amount
Potelco Inc. Sumner, WA	Yes	\$268,819.20
Summit Line Construction Heber City, UT	Yes	\$281,831.00
Michels Corp., Michels Power Division Neenah, WI	Yes	\$299,339.55
Magnum Power, LLC Castle Rock, WA	Yes	\$342,750.00
Wilson Construction Company Canby, OR	Yes	\$364,369.52
Christenson Electric, Inc. Portland, OR	Yes	\$402,072.56

RESOLUTION NO. _____

A RESOLUTION RATIFYING FIELD WORK ORDER NOS. 1 THROUGH 3 AND AUTHORIZING FINAL ACCEPTANCE OF WORK PERFORMED UNDER CONTRACT NO. 07-71 WITH WHITNEY EQUIPMENT COMPANY, INC. OF BOTHELL, WA

FACTUAL BACKGROUND AND REASONS FOR ACTION

Public Utility District No. 1 of Chelan County (District) adopted Resolution No. 07-13226 on December 17, 2007 which declared Whitney Equipment Company, Inc. (Contractor) of Bothell, WA to be the sole source supplier for Replacement Propellers for Rocky Reach Juvenile Fish Bypass System, and waived the competitive bidding requirements of RCW 54.04.070 due to the sole source designation. On December 18, 2007, the District entered into Sole Source Contract No. 07-71 with the Contractor for Replacement Propellers for Rocky Reach Juvenile Fish Bypass System, in the amount of \$89,400.

The District Commission by Resolution No. 08-13325 delegated limited authority to the General Manager and the staff to execute field work orders under certain circumstances. The work in Field Work Order Nos. 1 through 3 consists of conditions and work not anticipated or included in the original contract but within the scope of the contract as follows:

No.	Description	Amount
1	Extend contract term through the year 2013, and purchase four propellers in 2010	\$90,672
2	Purchase two propellers in 2011	\$49,870
3	Purchase two more propellers in 2011	\$49,870
Total		\$190,412

Field Work Order Nos. 1 through 3 result in a net increase in the contract price for a new revised total price of \$279,812 (excluding sales tax), which the District's Engineers recommend be ratified. Resolution No. 08-13325 provides that this type of field work order shall be presented to the Commission for approval as part of the final acceptance resolution.

District staff has determined that the completion of all contract work occurred on December 5, 2013.

The General Manager of the District concurs with staff's recommendations that the District accept the work performed by the Contractor and ratify Field Work Order Nos. 1 through 3.

ACTION

IT IS RESOLVED BY THE COMMISSION OF PUBLIC UTILITY DISTRICT NO. 1 OF CHELAN COUNTY, WASHINGTON, as follows:

Section 1. Field Work Order Nos. 1 through 3 to Contract No. 07-71 with Whitney Equipment Company, Inc. for the work specified above, which will result in a net increase in the purchase price of \$190,412, for a total revised contract price of \$279,812, plus Washington State sales tax, is hereby ratified.

Section 2. All the contract work required under Contract No. 07-71 was completed on December 5, 2013 and the same is hereby accepted.

DATED this 7th day of November 2016.

President

ATTEST:

Vice President

Secretary

Commissioner

Commissioner

Seal

RESOLUTION NO. _____

A RESOLUTION DECLARING SCHWEITZER ENGINEERING LABORATORIES INC. OF PULLMAN, WA AS THE CONTINUED SOLE SOURCE SUPPLIER OF PROTECTIVE RELAYS FOR USE AT THE DISTRICT'S HYDROELECTRIC FACILITIES AND TRANSMISSION SUBSTATIONS

FACTUAL BACKGROUND AND REASONS FOR ACTION

Pursuant to RCW 54.04.070 and 39.04.280, the District may, when there is clearly and legitimately a sole source of supply, waive the statutory competitive bidding requirements otherwise applicable to the purchase of equipment. Resolution No. 08-13325 requires that a declaration for sole source purchases over the statutory limits (\$60,000 per month) must come before the Commission for action.

The District adopted Resolution No. 11-13660 on June 13, 2011 which authorized the District to enter into a sole source contract with Schweitzer Engineering Laboratories, Inc. of Pullman, WA (SEL) for Protective Relays.

District staff has determined that it would be in the best interest of the District to continue with its designation of SEL, through its sole authorized sales representative in the State of Washington, Peak Measure, Inc., as the sole source supplier for Protective Relays, and recommends that the competitive bidding requirements of RCW 54.04.070 be waived. Staff also recommends that the District enter into a contract with SEL for up to five years in an amount not to exceed \$1,000,000 so long as the expenditures are included in the approved annual budgets.

The General Manager of the District has reviewed staff's recommendations and concurs in the same.

ACTION

IT IS RESOLVED BY THE COMMISSION OF PUBLIC UTILITY DISTRICT NO. 1 OF CHELAN COUNTY, WASHINGTON, as follows:

Section 1. The Commission declares Schweitzer Engineering Laboratories, Inc. of Pullman, WA, through its sole authorized sales representative in the State of Washington, Peak Measure, Inc., to continue to be the sole source supplier for Protective Relays.

Section 2. The competitive bidding requirements of RCW 54.04.070 are hereby waived due to the designation of Schweitzer Engineering Laboratories, Inc. of Pullman, WA as the sole source supplier for Protective Relays.

Section 3. The General Manager or his designee is authorized to enter into a contract with Schweitzer Engineering Laboratories, Inc. of Pullman, WA at a total cost not to exceed \$1,000,000 without prior Commission approval for a term not to exceed five years. A copy of the contract will be on file in the offices of the District.

Dated this 7th day of November 2016.

President

ATTEST:

Vice President

Secretary

Commissioner

Commissioner

Seal

RESOLUTION NO. _____

A RESOLUTION DECLARING VIBROSYSTEM, INC. OF LONGUEIL, QUEBEC, CANADA AS THE CONTINUED SOLE SOURCE SUPPLIER OF ONLINE CONDITION MONITORING EQUIPMENT AND TECHNICAL SERVICES FOR USE AT THE DISTRICT'S HYDROELECTRIC FACILITIES AND TRANSMISSION SUBSTATIONS

FACTUAL BACKGROUND AND REASONS FOR ACTION

Pursuant to RCW 54.04.070 and 39.04.280, the District may, when there is clearly and legitimately a sole source of supply, waive the statutory competitive bidding requirements otherwise applicable to the purchase of equipment. Resolution No. 08-13325 requires that a declaration for sole source purchases over the statutory limits (\$60,000 per month) must come before the Commission for action.

The District adopted Resolution No. 11-13660 on June 13, 2011 which authorized the District to enter into sole source contracts with VibroSystM, Inc. of Longueuil, Quebec, Canada (VibroSystM) for Online Condition Monitoring Equipment and Technical Services.

District staff has determined that it would be in the best interest of the District to continue with its designation of VibroSystM as the sole source supplier for Online Condition Monitoring Equipment and Technical Services, and recommends that the competitive bidding requirements of RCW 54.04.070 be waived. Staff also recommends that the District enter into a contract with VibroSystM for up to five years, in an amount not to exceed \$1,000,000 so long as the expenditures are included in the approved annual budgets.

The General Manager of the District has reviewed staff's recommendations and concurs in the same.

ACTION

IT IS RESOLVED BY THE COMMISSION OF PUBLIC UTILITY DISTRICT NO. 1 OF CHELAN COUNTY, WASHINGTON, as follows:

Section 1. The Commission declares VibroSystM, Inc. of Longueuil, Quebec, Canada to continue to be the sole source supplier for Online Condition Monitoring Equipment and Technical Services.

Section 2. The competitive bidding requirements of RCW 54.04.070 are hereby waived due to the designation of VibroSystM, Inc. of Longueuil, Quebec, Canada as the sole source supplier for Online Condition Monitoring Equipment and Technical Services.

Section 3. The General Manager or his designee is authorized to enter into a contract with VibroSystM, Inc. of Longueuil, Quebec, Canada at a total cost not to exceed \$1,000,000 without prior Commission approval for a term not to exceed five years. A copy of the contract will be on file in the offices of the District.

Dated this 7th day of November 2016.

President

ATTEST:

Vice President

Secretary

Commissioner

Commissioner

Seal

RESOLUTION NO. _____

A RESOLUTION DECLARING CONSOLIDATED ELECTRICAL DISTRIBUTORS, INC. DBA COLUMBIA ELECTRIC SUPPLY OF YAKIMA, WA AS THE CONTINUED SOLE SOURCE SUPPLIER OF OROCKWELL AUTOMATION/ALLEN BRADLEY PROGRAMMABLE CONTROLLERS FOR USE AT THE DISTRICT'S HYDROELECTRIC FACILITIES AND TRANSMISSION SUBSTATIONS

FACTUAL BACKGROUND AND REASONS FOR ACTION

Pursuant to RCW 54.04.070 and 39.04.280, the District may, when there is clearly and legitimately a sole source of supply, waive the statutory competitive bidding requirements otherwise applicable to the purchase of equipment. Resolution No. 08-13325 requires that a declaration for sole source purchases over the statutory limits (\$60,000 per month) must come before the Commission for action.

The District adopted Resolution No. 11-13660 on June 13, 2011 which authorized the District to enter into a sole source contract with Consolidated Electrical Distributors, Inc. dba Columbia Electric Supply of Yakima, WA (Columbia Electric) for Rockwell Automation/Allen Bradley programmable controllers, including equipment, software, support services and manuals.

District staff has determined that it would be in the best interest of the District to continue with its designation of Columbia Electric as the sole source supplier for Rockwell Automation/Allen Bradley programmable controllers, including equipment, software, support services and manuals, and recommends that the competitive bidding requirements of RCW 54.04.070 be waived. Staff also recommends that the District enter into a contract with Columbia Electric for up to five years, in an amount not to exceed \$1,000,000 so long as the expenditures are included in the approved annual budgets.

The General Manager of the District has reviewed staff's recommendations and concurs in the same.

ACTION

IT IS RESOLVED BY THE COMMISSION OF PUBLIC UTILITY DISTRICT NO. 1 OF CHELAN COUNTY, WASHINGTON, as follows:

Section 1. The Commission declares Consolidated Electrical Distributors, Inc. dba Columbia Electric Supply of Yakima, WA to continue to be the sole source supplier for Rockwell Automation/Allen Bradley programmable controllers, including equipment, software, support services and manuals.

Section 2. The competitive bidding requirements of RCW 54.04.070 are hereby waived due to the designation of Consolidated Electrical Distributors, Inc. dba Columbia Electric Supply of Yakima, WA as the sole source supplier for Rockwell Automation/Allen Bradley programmable controllers, including equipment, software, support services and manuals.

Section 3. The General Manager or his designee is authorized to enter into a contract with Consolidated Electrical Distributors, Inc. dba Columbia Electric Supply of Yakima, WA at a total cost not to exceed \$1,000,000 without prior Commission approval for a term not to exceed five years. A copy of the contract will be on file in the offices of the District.

Dated this 7th day of November 2016.

President

ATTEST:

Vice President

Secretary

Commissioner

Commissioner

Seal