

# 2012 Irrigation Rate Study

Public Utility District No. 1 of Okanogan County, Washington

March 2012



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March 12, 2012

Mr. John R. Grubich General Manager Okanogan County Public Utility District P.O. Box 912 1331 2nd Avenue North Okanogan, Washington 98840

### Subject: 2012 Irrigation Rate Study

Dear Mr. Grubich:

SAIC Energy, Environment & Infrastructure, LLC, is pleased to submit this final report of the 2012 Irrigation Rate Study for Okanogan County Public Utility District. This report sets forth and summarizes the methodology, analyses and final results of the District's review of irrigation class rate design options that resulted in the change in irrigation rates discussed herein.

The review process and the preparation of this report was a collaborative effort by District staff, the District's Board of Commissioners, concerned irrigation customers, and our staff. On behalf of SAIC, Tim Baars and I wish to express our appreciation for the friendly cooperation and assistance of those who provided the timely information and review necessary for the successful completion of this study.

Once again, we appreciate the opportunity to provide continued services to the District.

Sincerely,

SAIC Energy, Environment & Infrastructure, LLC

Richard Cuthbert

Richard W. Cuthbert Senior Consultant

SAIC Energy, Environment & Infrastructure, LLC

# Public Utility District No. 1 of Okanogan County 2012 Irrigation Rate Study

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# Background

Late in 2011 Public Utility District No. 1 of Okanogan County (the District) retained SAIC Energy, Environment & Infrastructure, LLC (SAIC) to prepare an updated costof-service analysis and alternative rate design study focusing on the District's irrigation customer class (2012 Irrigation Rate Study). Previously SAIC (then R. W. Beck, Inc.) completed the 2010 Electric System Rate Study (2010 Rate Study) that reflected test year (TY) 2010 revenue requirements and cost-of-service information for the District, and developed new rates for the District's customer classes. Changes resulting from the 2010 Electric System Rate Study were adopted by the District's Board of Commissioners in Resolution No. 1506, which was approved in May 2010.

The District currently offers electric service to customers in its irrigation customer class on a seasonal basis for irrigation or drainage and incidental farm use. This seasonal service is offered during the irrigation season between April 1 and October 31 each year. The irrigation rates adopted by the Board in May 2010 are shown in Table 1-1 below. These include rates that were in effect during the 2011 irrigation season.

Table 1-1
Okanogan County PUD
May 2010 Adopted Irrigation Customer Class Rates

		May 2010 Adopted Rates				
		Effective Date:				
	Ja	an. 2011	J	an. 2012	J	an. 2013
Base Rates (1)						
Facilities Charge All HP	\$	2.00	\$	3.00	\$	4.00
Seasonal Energy Charge All kWh	\$	0.02838	\$	0.02733	\$	0.02659
Cost of Power Adjustment (COPA) (2) All kWh	\$	0.00240	\$	0.00240	\$	0.00240
Percent Change in Revenue				9.5%		9.5%

(1) The adopted base rates were approved by the Board on May 4, 2010.

(2) The Cost of Power Adjustment was implemented on December 1, 2011.

During the 2010 rate review process a number of operational issues impacted the data available for the irrigation customer class and limited the design of irrigation rates.

Horsepower (HP) ratings for each pump rather than customer demand levels (in kilowatts) were the only records available for the capacity requirements of the irrigation customers, and there was no monthly meter data available for customers with pumps served at less than 75 HP. Because of these limitations, the District's Board elected to keep the existing irrigation class rate structure in place in the adopted 2010 rates.

By the end of 2010, the District had installed Advanced Metering Infrastructure (AMI) meters that now provide monthly demand and energy readings for every irrigation customer during the irrigation season. With this additional information, the Board committed to review the irrigation class rate structure using the detailed AMI billing information now available.

The primary goals of the 2012 Irrigation Rate Study were: (1) to update the cost-ofservice information developed in the 2010 Rate Study to reflect the irrigation customer class information available from the AMI meters (including monthly energy (kWh) and demand (kW) information for all irrigation customers), and (2) to use this new cost-of-service information to develop alternative rate design options for the District to consider that would meet the District's rate design policy objectives. Based on its review of this information, the District's Board will consider use of an alternative rate design option to be effective for the 2012 and 2013 irrigation seasons.

# **Objectives**

The District identified the following objectives for the 2012 Irrigation Rate Study:

- Provide the District's staff and Board with updated test year (TY) 2010 costof-service information for the irrigation customer class that reflects the 2011 monthly demand and energy billing data.
- Develop revenue-neutral alternative rate options for the irrigation customer class that align with the District's policy and rate design guidelines.
- Review these alternative rate design options with a group of irrigation customers in rate review meetings.
- Develop alternative irrigation customer class rate design options for the District's Board to review, with a goal of either reaffirming the rates adopted in 2010 or adopting new irrigation rates to be effective during the 2012 and 2013 irrigation seasons.

# The Rate Review Process

Using the more detailed AMI monthly meter data for energy and demand levels for the irrigation customer class, the 2010 cost-of-service analysis was updated for the irrigation customer class using TY 2010 cost-of-service information and 2011 monthly energy and demand levels. These results were used to develop new TY 2010 cost-of-service based unit cost estimates for the irrigation class.

Using this more detailed cost-of-service unit cost information, a number of alternative rate design options were developed and evaluated in conjunction with District staff. A number of these rate design options were presented and reviewed with the group of irrigation customers in two meetings held in January and February 2012. Following these meetings and review discussions, the various rate design options were refined and three alternative rate design options for the irrigation customer class were developed for consideration by the District's Board.

On March 6, 2012, the District's Board adopted<sup>1</sup> a revised rate design structure for rates effective during the 2012 and 2013 irrigation seasons.

# **Report Organization**

This report is organized into four sections plus appendices. General information including background and objectives of the study are provided in Section 1. An overview and statistics on the irrigation customer class are presented in Section 2. The results of updating the cost-of-service analysis from the 2010 Rate Study for the irrigation customer class are summarized in Section 3. A discussion related to the rate design principles, alternative rate design options reviewed by the group of irrigation customers, and a presentation of the Board-adopted rates are provided in Section 4.

<sup>&</sup>lt;sup>1</sup> Public Utility District No. 1 of Okanogan County, Resolution No. 1538, March 6, 2012.

### Overview

Electrical service for the irrigation customer class is applicable to customers "for irrigation or drainage and incidental farm use" during the irrigation season that lasts from April 1 to October 31. Meters are read and billed on a monthly basis during the seven months of the irrigation season, with one meter reading in April to account for any inter-seasonal energy usage.

Figure 2-1 shows the monthly energy sales to the irrigation customer class during 2011.





Energy sales to the irrigation customer class generally peak in the latter months of the summer when customers need to run their pumps more often. Energy usage during the June through September period accounts for about 82 percent of the total class usage during the year. Inter-seasonal usage (November through March) is accounted for in March (billed in April) and accounts for about 1.5 percent of the total energy sales to the class.

# Irrigation Customer Class Descriptive Statistics

In 2011, the irrigation customer class included connections to approximately 1,235 meters or accounts. These accounts represent service to approximately 745 customers. Most customers served in the irrigation customer class (about 77 percent) are served with one meter. Of the remaining customers, most have between 2 and 10 meters, with a small number of customers having more than 10 meters (see Table 2-1 below).

Number of	Customore	Percent of	Cum Percent
Meters	Cusiomers	Total	
1	571	77%	77%
2	88	12%	88%
3	36	5%	93%
4	22	3%	96%
5	5	1%	97%
6	7	1%	98%
7	5	1%	99%
8	2	0%	99%
9	5	1%	99%
11	1	0%	100%
15	1	0%	100%
20	1	0%	100%
40	1	0%	100%
	745	100%	

Table 2-1	
Okanogan County PUD	
Irrigation Customer Class Meters and Customers (CY 20	11)

Of the 1,235 meters or accounts, about 86 percent are associated with pumps with horsepower ratings below 50 HP. Above this level, most pumps are between 50 HP and 650 HP, with a small number of pumps having higher horsepower ratings than this level. Figure 2-2 displays a distribution of irrigation meters based on horsepower ratings.

Figure 2-3 shows the distribution of irrigation customers based on the average monthly demand levels (as measured in kilowatts) for 2011. Most meters have demand levels on average below 150 kilowatts, with fewer than 100 meters having demand levels that exceed this level.



Figure 2-2 Okanogan County PUD Irrigation Customer Class Distribution by Horsepower (CY 2011)





# **Overview and Methodology**

The 2010 Electric System Rate Study included a cost-of-service analysis based on the District's test year (TY) 2010 information. This cost-of-service analysis for the District's TY 2010 revenue requirements was prepared based on the general framework developed in the January 1992 "NARUC Electric Utility Cost Allocation Manual" (NARUC Manual).

The process of developing a cost-of-service analysis for the District included the functionalization, classification and allocation of the District's TY 2010 revenue requirements in collaboration with District staff. For functionalization, the revenue requirements were organized by function including production, transmission and distribution. Administrative and general costs were primarily functionalized based on labor ratios and plant ratios. Each of the functionalized revenue requirement items was classified into demand, energy or customer components. The classified revenue requirements were then allocated to each customer class using an average-and-excess method and allocation factors developed for each class. Estimated revenues at existing rates for each customer class were compared to the cost-of-service results to determine the percentage rate change necessary for average customer class rates to increase or decrease in order for the customer class to achieve its cost-of-service level. Unit demand, energy and customer costs were also developed for use in the rate design process.

The results of the District's TY 2010 cost-of-service analysis were updated to reflect 2011 irrigation customer class billing units, including monthly billed demand and energy data for the irrigation customers based on the AMI meter data. Updated unit demand, energy and customer cost estimates were calculated for the irrigation class using this information, to be used in the design of alternative rate design options for this class.

# Updated TY 2010 Cost-of-Service Analysis Results

The summary results of the updated TY 2010 cost-of-service analysis for the irrigation customer class are summarized in Table 3-1 below. Updated unit cost results are shown in Table 3-2. Detailed information on the calculation of the updated TY 2010 cost-of-service analysis for the irrigation class along with updated unit cost estimates are provided in Appendix A.

Table 3-1	
Okanogan County PUD	
Summary of Irrigation Class Cost-of-Service Result	ts
(TY 2010)	

	Allocated Cost
Component	of Service
Production	\$2,865,353
Transmission	\$54,513
Distribution	\$1,296,770
Total	\$4,216,636
Fixed Costs	\$2,374,373
Variable Costs	\$1,842,263
Total	\$4,216,636

### Table 3-2 Okanogan County PUD Summary of Irrigation Class Unit Costs (TY 2010)

		Cost-of-Service Unit Costs					
					2012 Irrigation	Ra	te Study
		20	10 Electric				
		Sys	stem Rate	Cu	stomer Cost in		Separate
Cost Component	Units	Study		Fac	ilities/Demand	Cu	stomer Cost
Customer Cost	\$/month		n/a		n/a	\$	42.50
Energy Cost	\$/kWh	\$	0.01974	\$	0.02226	\$	0.02226
Facilities Cost	\$/HP	\$	7.67	\$	7.41	\$	6.50
-OR-							
Demand Cost	\$/kW		n/a	\$	13.46	\$	11.50

The updated irrigation class unit costs shown in Table 3-2 reflect the same total allocated cost of service amount shown in Table 3-1, but show the average unit costs based on the new detailed 2011 information including monthly billed demand and energy usage data. Customer costs represent the costs associated with metering, billing and customer service. The facilities or demand costs recover the fixed costs associated with the distribution, transmission, and generation facilities necessary to produce electricity and constitute the majority of the costs of the system. Finally, the energy cost represents the variable cost of producing electricity (e.g., fuel, purchased power, etc.). The majority of the costs associated with providing service to the irrigation customer class are fixed, and are reflected in the relatively high customer, facilities and demand unit costs and correspondingly low energy unit cost.

# **Comparison to Existing Rates**

The unit costs shown in Table 3-2 represent the average cost of service necessary to serve each irrigation customer in terms of their customer, facility, demand and energy needs or usages. For all of the District's irrigation customers during 2011, Figure 3-1 compares average monthly customer bills calculated using the Table 3-2 unit costs with the average monthly customer bills calculated using the rates effective during the 2011 irrigation season. The dispersion in customer bills for a given demand level reflects the variation in actual customer bills that results from the current rate structure as compared to the District's costs of providing service to the irrigation customers.



Figure 3-1 Okanogan County PUD 2011 Irrigation Class Rates versus TY 2010 Cost-of-Service Based Rates

As shown in Figure 3-1, most irrigation customers with average monthly demand levels less than 10 kW were paying significantly lower monthly bills than would result from cost-of-service based unit cost rates. Additionally, there is significant variation in individual customer cost recovery levels: some irrigation customers were paying much less than the District's cost to provide them service while other irrigation customers were paying more than their cost of service. Reducing these inequities associated with the current irrigation rate structure was a primary focus of the study and is discussed in more detail in the next section of the report.

## Overview

The primary focus of the 2012 Irrigation Rate Study was to review the existing irrigation class rate structure given the policy and rate design guidelines of the District in light of the new AMI billing information available for the irrigation class. Specifically, the District was interested in reviewing rate design options that would (1) be revenue neutral for the irrigation class as a whole, (2) more closely reflect the District's cost of service for the irrigation class, (3) be more equitable for irrigation customers, and (4) provide better incentives for customers to use electricity efficiently.

# Policy and Rate Design Guidelines

The District's policy and rate design guidelines developed in the 2010 Electric System Rate Study were used in the development of the alternative rate options for the irrigation customer class:

Financial Integrity:	Rates must preserve the District's financial integrity to allow for future capital investments and to meet the financial targets of the utility.
Cost-of-Service Based:	Rates should generally reflect and be consistent with the cost of providing electric service to each customer class.
Rate Stability:	Rate adjustments should, to the extent possible, promote stable rates for customers and avoid large changes in rates.
Simplification:	The rate structure should be simple and easily understood by customers.
Equity:	The rates should be equitable and, to the extent practicable, reflect the cost to provide service.
Reliability of Service:	The District's rates should provide adequate funding to support the District being able to continue to provide reliable service to its customers.
Efficiency/Conservation:	The rate structure should help encourage conservation and the efficient use of electricity.

Based on the updated cost-of-service analysis and discussion with District staff, the primary concerns with the existing irrigation rate structure centered on cost-of-service variability as well as rate inequity and inadequate efficiency/conservation pricing signal concerns.

# Alternative Rate Design Development

A number of alternative rate design options for the District's irrigation customer class were reviewed that on a revenue-neutral basis would better align with the District's policies. This included developing rate options that better reflect the cost of service, be more consistent with the rates for other customer classes, provide greater fixed cost revenue recovery, encourage the efficient use of electricity by customers, and are easier for customers to understand.

Concerns had been raised by irrigation customers that the horsepower-based facility charge provided no incentive for efficiency improvement to facilities or to improved operational efficiency. Additionally, anecdotal information indicated that a number of irrigation pumps had been replaced with larger horsepower pumps that were not reflected in the District's records and the District had no ability to verify the correct horsepower of customer pumps. AMI metering added in 2010 allowed the District to change from the existing horsepower-based facility charge to a kW-based demand charge that would more accurately charge customers based on their actual demand requirements and would also provide incentives to irrigation customers to improve their operational efficiency.

As part of the rate design development, a number of rate structure elements were reviewed and analyzed by the District and SAIC staff in conjunction with input from the group of irrigation customers. Among the observations and concerns determined from this review were the following:

- Horsepower-based Facility Charge: The District's current use of a horse-power-based facility charge recovers an amount per horsepower that is independent from the actual demands placed on the system by the customer. While this charge consistently recovers fixed costs well, it does not provide an incentive for irrigation customers to install more efficient equipment to reduce their demand levels. In addition, it is difficult for the District to verify the accuracy of the horsepower records, given that there is no automatic method for measuring changes in pump ratings made by customers.
- **Kilowatt-based Demand Charge:** The availability of billed demand data from the AMI meters gives the District the ability to bill its irrigation customers on an actual demand usage basis. Recovering fixed costs on a demand basis presents a number of advantages for the District and for irrigation customers. Demand charges:
  - Provide an incentive for customers to properly size their pumps, and to install equipment that may reduce the demands on the system, including variable speed motors.
  - Provide the District with monthly information on the actual demands on the system made by irrigation customers and ensure that customers are billed accurately.

- Align better with the cost of service of the utility and are consistent with the rates charged to other customer classes.
- Reduce intra-class subsidization as a result of inaccurate horsepower records.
- Basic Charge: A basic charge recovers the costs to the District associated with the metering, billing and customer service functions provided to each customer. All other major District customer classes currently are charged a basic charge (the only exception is the Frost Control class).
- Minimum Demand Charge: A minimum demand charge is another mechanism to improve fixed cost recovery. A minimum demand charge is charged each month and is established based on cost recovery for a portion of the facilities that must be available to provide a customer with service whether the customer uses power or not.
- Minimum Seasonal Charge: A minimum seasonal charge helps the utility recover fixed facility costs by charging each customer a minimum amount for service during the irrigation season. If over the course of an irrigation season a customer does not use power sufficient to meet this minimum level, they would be charged the difference. This charge allows the utility to ensure that customers are contributing at least some portion of the fixed costs incurred by the utility whether the customer uses power or not.
- **Demand Ratchet:** A demand ratchet is a rate design structure that allows the utility to more consistently recover fixed costs over time while preserving the flexibility of a demand charge. A demand ratchet sets the customer's demand level for billing purposes at a level based on the customer's highest peak demand in the prior twelve-month period, or during the utility's prior high-cost peak period. While a demand ratchet rate structure helps the utility recover its fixed costs more consistently and more fairly from customers, it adds complexity to the rate structure and can be difficult for customers to understand and accept.

District management and SAIC staff reviewed various combinations of the above listed rate elements internally and with the group of irrigation customers. Rate structures were evaluated in accordance with the policy and rate guidelines of the District, including increased support for fixed cost recovery, incentivizing customers to efficiently size their pumps or install demand reducing equipment, and better alignment of cost recovery with the District's cost of service. In addition, attention was given to the potential bill impacts on customers of various usage levels for the rate options reviewed. While all of the rates were designed to recover the same amount of revenue, some customers would see significant changes in their bills under certain rate design options depending on their usage characteristics.

After this review process, it was concluded that a combination of a basic charge, demand charge, and seasonal energy charge would better fulfill the District's ratemaking policy goals while providing the simplest and fairest rates to the irrigation customers.

# **Adopted Rate Options**

Table 4-1 summarizes for the irrigation class the rates for 2011–2013 adopted in May 2010, cost-of-service based rates developed from the unit cost analysis, and the March 2012 adopted rates for 2012 and 2013.

Table 4-1
Okanogan County PUD
Irrigation Class May 2010, Cost of Service, and March 2012 Rates for 2011–2013

	2011 Rates					2012	es	2013 Rates					
		Adopted May 2010		Updated Cost of Service		Adopted May 2010		Adopted Mar. 2012		Adopted May 2010		Adopted Mar. 2012	
Schedule No. 6 Irrigation													
<u>Base Rates</u> Basic Charge (\$/meter)	\$	-	\$	42.50	\$	-	\$	12.00	\$	-	\$	12.00	
Facilities Charge All HP (\$/HP)	\$	2.00	\$	6.50	\$	3.00	\$	-	\$	4.00	\$	-	
Demand Charge All kW (\$/kW)	\$	-	\$	11.50	\$	-	\$	3.00	\$	-	\$	3.00	
Seasonal Energy Charge All kWh (\$/kWh)	\$	0.02838	\$	0.02226	\$	0.02733	\$	0.03280	\$	0.02659	\$	0.03720	
Cost of Power Adjustment (2) All kWh (\$/kWh)	\$	0.00240	\$	-	\$	0.00240	\$	0.00240	\$	0.00240	\$	0.00240	

(1) Adopted May 2010 rates were approved by the Board in Resolution No. 1506, May 4, 2010; adopted March 2012 rates were approved by the Board in Resolution No. 1538, March 6, 2012.

(2) The cost of power adjustment (COPA) was implemented on December 1, 2011.

Both the May 2010 adopted irrigation rates for 2012 and 2013 as well as the rates adopted by the Board in March 2012 reflect the policies and rate guidelines considered by the District's management and the group of irrigation customers. Additionally, the newly adopted rate structure includes rate elements that provide certain advantages over the current adopted rates. These include:

- A basic charge that is consistent with rates charged to other District customers, is consistent with cost of service, and helps recover some of the costs associated with billing, metering and customer service.
- The replacement of the facilities charge based on horsepower with a demand charge based on kilowatt (kW) requirements. The demand charge provides for a lower level of fixed cost recovery to the horsepower-based facility charge for the District, but the demand charge would provide an incentive for customers to size their pumps correctly, would benefit customers that install variable speed pumps to reduce their demand levels, would give the District more accurate information on customer demand requirements, and would more fairly bill customers based on actual usage.

• A continuation of the seasonal energy charge but the charge is increased moderately to allow the overall revenue level to remain the same compared to the previously adopted 2012 and 2013 rates. This would also provide a usage-based incentive for customers to use energy more efficiently.

Demand ratchets and minimum demand charges were considered as part of the rate options review but it was concluded that these rate design options would add considerable complexity to the rate structure and would hinder customer understanding of the rates without corresponding increases in fixed cost recovery.

Figures 4-1 and 4-2 show the District's irrigation customer average bill impacts for both the May 2010 adopted 2012 irrigation rates and the March 2012 adopted rates as compared with customer bills based on TY 2010 cost-of-service based unit costs. As shown in these figures, the newly adopted rates result in reduced bill variability for similar customer demand levels and is closer to cost-of-service revenue recovery than the HP-based irrigation rates.



Figure 4-1 Okanogan County PUD TY 2010 COS Rates versus May 2010 Adopted 2012 Rates



Figure 4-2 Okanogan County PUD Y 2010 COS Rates versus March 2012 Adopted 2012 Rates

Table 4-2 shows the bill impacts for a sample of irrigation customers using 2011 billing data under the May 2010 adopted rates, cost-of-service based rates, and the March 2012 adopted rates. More detailed bill impacts taken for a larger sample of customers are provided in Appendix B. As shown in these analyses, there are considerable variations in bill impacts for the District's irrigation customers. Generally, lower usage customers will see relatively larger bill impacts from the March 2012 adopted rates because these customers' bills currently are much lower than cost-of-service levels. In most cases, this is the result of the addition of a basic charge for irrigation customers, which has the largest impact on low usage customers. Typically, the monthly bill impacts for customers using 10 kW or less is \$20 or less, and in all cases the bills under the March 2012 adopted rates are less than cost-of-service based levels.

	Monthly	Monthly	20	11 Rates				2012	Rat	es	2013 Rates			
	Billed	Billed				Updated								
	Demand	Energy	Ado	opted May		Cost of	Ac	lopted May	Ad	opted Mar.	Add	opted May	Ad	opted Mar.
Horsepower	(kW)	(kWh)		2010		Service		2010		2012		2010		2012
1	1	330	\$	12	\$	56	\$	13	\$	25	\$	14	\$	27
4	1	731	\$	30	\$	71	\$	34	\$	41	\$	37	\$	44
8	3	218	\$	22	\$	87	\$	29	\$	30	\$	36	\$	31
20	5	529	\$	56	\$	110	\$	76	\$	45	\$	95	\$	47
100	32	4,363	\$	334	\$	513	\$	430	\$	263	\$	526	\$	282
225	199	75,017	\$	2,759	\$	3,997	\$	2,905	\$	3,249	\$	3,075	\$	3,579
950	351	129,684	\$	5,892	\$	6,964	\$	6,706	\$	5,629	\$	7,560	\$	6,200

### Table 4-2 Okanogan County PUD Sample Customer Bill Impacts for 2012

## Inter-seasonal Usage Charge

As discussed previously, a small amount of irrigation class energy is used during the inter-seasonal period from November 1 to March 31. During 2011 this represented approximately 892,000 kWh (1.5 percent) of total energy sales for the year, or an average monthly usage of only 144 kWh per irrigation account.

Currently, the District reads the irrigation customer meters in early April and bills for the energy used during the inter-seasonal period on the April bill. No facilities charge is included in this bill, and the energy is billed at the standard irrigation energy rate plus the cost of power adjustment. With the newly installed AMI meters, the District can now read energy and demand levels during the inter-seasonal period. However, the standard irrigation rates are not designed for inter-seasonal usage as the District faces higher generation and purchased power costs during the winter period that are not adequately reflected in the low energy rates charged to the irrigation customers during the irrigation season.

To maintain the current administrative simplicity of billing customers one time for inter-seasonal usage and still adequately and fairly recover the costs to serve these customers, the District reviewed the impact of a flat energy charge (that would be inclusive of both fixed and variable costs to serve these customers) for inter-seasonal usage. The average all-inclusive energy rate for the irrigation class based on the TY 2010 cost of service results (calculated by dividing the class' revenue requirement by total energy sales) was approximately 7.0 cents per kilowatt hour. This average unit cost includes both the energy and demand costs.

To approximate a more equitable cost recovery rate for the inter-seasonal period, the District has adopted energy rates equal to the Schedule No. 3 Small General Service energy charges of 5.730 cents/kWh in 2012 and 5.855 cents/kWh in 2013 (including the cost of power adjustment) that would be charged for all energy usage over the

5-month inter-seasonal period. The May 2010 adopted inter-seasonal energy rates, cost-of-service based rates, and March 2012 adopted inter-seasonal irrigation rates are shown in Table 4-3.

Table 4-3
Okanogan County PUD
May 2010 Cost-of-Service and March 2012 Inter-Seasonal Irrigation Class Rate

	May 2010 Adopted Inter-Seasonal Rates			C	OS Based	March 2012 Adopted Inter-Seasonal Rates				
Irrigation Customer Class		2011		2012		Rates		2012		2013
Off Season Energy Rate (\$/kWh)	\$	0.02838	\$	0.02733	\$	0.07029	\$	0.05730	\$	0.05855
Cost of Power Adjustment (\$/kWh)	\$	0.00240	\$	0.00240	\$	-	\$	0.00240	\$	0.00240
Total	\$	0.03078	\$	0.02973	\$	0.07029	\$	0.05970	\$	0.06095

(1) Alternative inter-seasonal irrigation rates are equal to the adopted energy rates for the small general service customer class.

# Minimum Seasonal Charge

As discussed previously, a policy guideline that was important in the rate design review for the irrigation customer class was to improve or maintain adequate fixed cost recovery. The District's engineers expressed concerns about the District making significant facility investment costs for certain large irrigation load customers that might elect to only use their irrigation pumps a few times during the irrigation season or not at all in certain years. Unless some minimum amount of fixed cost recovery is collected from these large irrigation customers, other District customers necessarily would be charged for these facility costs that were made to service specific irrigation customers.

To address this concern, the District adopted a minimum seasonal charge that would be applicable to irrigation customers with pumps equal to or greater than 500 HP (approximately equivalent to 375 kW). A customer will be subject to a minimum seasonal charge applicable at the end of the irrigation season if the customer's actual payments to the District for irrigation service during the 7-month irrigation season were lower than the calculated minimum seasonal charge for the customer.

Under the March 2012 adopted rates, a minimum seasonal charge would be calculated using a demand estimate based on the higher of the service's highest demand reading during the current irrigation season or 75 percent of the HP rating of the service times \$21 per kW (\$3/kW times 7 months).

As an example of this minimum seasonal charge, a 500 HP service (equivalent to a maximum 375 kW demand) would have a minimum seasonal charge of \$7,875 per year (375 kW times \$21/kW). If this customer's total monthly charges during the irrigation season were \$5,500, then this customer would be charged the difference between the minimum season charge and the total monthly charges, or \$2,375. The minimum seasonal charges will be the same in both 2012 and 2013 because the demand charge does not change from 2012 to 2013.

Any minimum seasonal charges will be added to an irrigation customer's final bill of the irrigation season. During 2011, there were 14 accounts with pumps greater than 500 HP. However, none of these irrigation services would have been impacted by the minimum seasonal charge, so the adoption of this rate structure element for the irrigation customer class would be consistent with the minimum charge element applicable to other customer classes and may impact customers in the future if they elect to use their facilities only occasionally.

### Okanogan County PUD 2012 Irrigation Rate Study Calculation of Updated Irrigation Customer Class Unit Costs Test Year 2010

Line		2010 Electric System Rate Study			2012 Irrigation Rate Study				
<u>No.</u>	Cost Component		Cost of Service		Cost of Service				
1	Production	•		•					
2	Energy	\$	1,842,263	\$	1,842,263				
3	Demand		1,023,090		1,023,090				
4	Customer		-		-				
5	Total Production Costs	\$	2,865,353	\$	2,865,353				
6	Transmission								
7	Energy	\$	-	\$	-				
8	Demand		54,513		54,513				
9	Customer		-		-				
10	Total Transmission Costs	\$	54,513	\$	54,513				
11	Distribution								
12	Energy	\$	-	\$	-				
13	Demand		836,698		836,698				
14	Customer		22,706		22,706				
15	Streetlights		-		-				
16	Irrigation		-		-				
17	Meter Reading		17,798		17,798				
18	Meters		171,788		171,788				
19	Customer Accounting		104,819		104,819				
20	Customer Service		33,628		33,628				
21	Demand Secondary		90,858		90,858				
22	Customers Secondary		18,474		18,474				
23	Total Distribution Costs	\$	1,296,770	\$	1,296,770				
24	Total Cost-of-Service	\$	4,216,636	\$	4,216,636				
25	Normalized Boyonyos under Existing Poter								
20	Rotail Pateo	5	¢つ つつつ つ∩1		¢0 000 001				
20	Seles for Bosels		φ2,322,301 ¢506.901		φ2,322,301 ¢506 901				
21	Sales for Resale		0,000 (101 (101		Φ0,000,091 Φ0,000,404				
20	Total Normalized Revenues		\$2,829,191		\$2,829,191				
29	Over/(Under) Cost-of-Service		(\$1,387,445)		(\$1,387,445)				
30	Percent Difference in Retail Rates		-59.7%		-59.7%				
31	Billing Units								
32	Customer-Months		8,428		8,645				
33	kWh - Adj		67,638,979		59,985,888				
34	kW-Months - Adj		n/a		176,424				
35	Horsepower per Season		309,433		320,326				
36	Unit Costs								
37	\$/Customer-Month		n/a	\$	42.50				
38	\$/kWh	\$	0.01974	\$	0.02226				
39	\$/kW-Month		n/a	\$	11.50				
40	\$/Horsepower	\$	7.67	\$	6.50				
41	Fixed Costs (\$/Customer-Month)	\$	281.72	\$	274.65				
42	Variable Costs (\$/kWh)	\$	0.01974	\$	0.02226				

Irrigation Rate Design Final Appendix A 3/9/2012

#### Okanogan County PUD 2012 Irrigation Rate Study Sample of Irrigation Account Bill Impacts (Based on Calendar Year 2011 Billing Data)

						ļ	i I	2011 Average Monthly Bills		2012 Average	Monthly Bills	2013 Average	Monthly Bills
							í F	May-10	COS	May-10	Mar-12	May-10	Mar-12
Line		Billed D	Demand (kW)	Ratio	Energy	y (kWh)	Load Factor	Adopted	Based	Adopted	Adopted	Adopted	Adopted
No.	HP	Total	Avg Monthly	kW/HP	Total	Avg Monthly	kWh/AveKW	Rates	Rates	Rates	Rates	Rates	Rates
1	1	4	1	51%	2,312	330	89%	12	56	13	25	14	27
2	3	12	2	59%	551	79	6%	8	65	11	20	14	20
3	4	8	1	27%	5,116	731	93%	30	71	34	41	37	44
4	5	21	3	59%	3,645	521	24%	26	88	30	39	35	41
5	5	16	2	47%	3,030	433	25%	23	79	28	34	33	36
6	5	3	0.5	10%	1,473	210	59%	16	53	21	21	26	22
7	8	24	3	46%	1,528	218	9%	22	87	29	30	36	31
8	10	53	8	76%	8,554	1,222	22%	58	157	66	78	75	83
9	10	54	8	77%	9,898	1,414	25%	64	163	72	85	81	91
10	11	51	7	67%	34,511	4,930	92%	174	237	180	208	187	229
11	15	119	17	114%	39,401	5,629	45%	203	364	212	261	223	286
12	20	34	5	24%	3,702	529	15%	56	110	76	45	95	47
13	25	185	26	106%	73,997	10,571	55%	375	581	389	463	406	510
14	30	155	22	74%	20,898	2,985	18%	152	364	179	184	207	197
15	40	220	31	79%	48,887	6,984	30%	295	560	328	352	362	383
16	67	322	46	69%	122,564	17,509	52%	673	962	722	766	776	843
17	75	340	49	65%	150,773	21,539	61%	813	1,081	865	916	924	1,011
18	100	227	32	32%	30,542	4,363	18%	334	513	430	263	526	282
19	150	499	71	48%	204,828	29,261	56%	1,201	1,514	1,320	1,256	1,448	1,385
20	225	1,391	199	88%	525,119	75,017	52%	2,759	3,997	2,905	3,249	3,075	3,579
21	400	1,575	225	56%	655,450	93,636	57%	3,682	4,715	3,984	3,983	4,314	4,395
22	500	2,159	308	62%	719,928	102,847	46%	4,166	5,879	4,558	4,557	4,982	5,010
23	950	2,456	351	37%	907,788	129,684	51%	5,892	6,964	6,706	5,629	7,560	6,200
24	1,200	3,368	481	40%	1,930,716	275,817	78%	10,890	11,716	11,800	11,164	12,796	12,378
25	1,450	6,072	867	60%	2,826,384	403,769	64%	15,328	19,007	16,354	16,827	17,505	18,604

Appendix C P.U.D. No. 1 of Okanogan County, Resolution No. 1538, March 6, 2012

### **RESOLUTION NO. 1538**

#### A Resolution Revising the District's Irrigation Service Rate Schedule

**WHEREAS,** District Resolution No. 832 and subsequent amendments have set forth the General Policy Provisions and Electric Rate Schedules of the District; and

**WHEREAS,** District Resolution No. 1517 adopted the latest amendments to the General Provisions and Electric Rate Schedules of the District; and

WHEREAS, the Commission directed staff to analyze the option to switch from horsepower based irrigation rates to demand based irrigation rates; and

WHEREAS, the District has completed a review of the irrigation rates and the use of demand based rates; and

WHEREAS, it is the District's goal to establish irrigation rates which more closely reflect the rate structure of other classes of customers within the District; and

WHEREAS, staff has recommended the Commissioner adopt the attached Service Schedule No. 6 – Irrigation, which convert the Irrigation Service rate class from horsepower based rates to demand based rates;

**NOW, THEREFORE, BE IT RESOLVED** that the Board of Commissioners of Public Utility District No. 1 of Okanogan County hereby adopts and approves the rates and effective dates as set forth in the District's Irrigation Service Schedule No. 6, attached hereto and made a part of this Resolution.

**PASSED AND APPROVED** this 6<sup>th</sup> day of March, 2012.

Trish Butler, President

David A. Womack, Vice President

Ernest J. Bolz, Secretary

APPROVED:

Michael D. Howe, Legal Counsel

#### P.U.D. NO. 1 OF OKANOGAN COUNTY

### **SERVICE SCHEDULE NO. 6**

### **IRRIGATION SERVICE**

<u>Applicable</u>: Electrical service for irrigation, drainage and incidental farm use. Schedule is based on continuous service for the irrigation season of April 1 through October 31.

Rates:		<u>April 1, 2012</u>	Jan. 1, 2013
Basic Ch	arge (\$/month)	\$12.00	\$12.00
Seasonal All En	Energy Charge ergy (\$/kWh)	\$.03280	\$.03720
Inter-Sea All En	sonal Energy Charge ergy (\$/kWh)	\$.05730	\$.05855
Demand All kW	Charge V (\$/month)	\$3.00	\$3.00

<u>Cost of Power Adjustment (COPA)</u>: Resolution 1506 approved in 2010 included a provision authorizing rate adjustments due to changes in the cost of purchased power. Rates will be automatically adjusted to reflect any increase or decrease in the cost of power from contracted power sources within thirty (30) days of the District incurring such increase or decrease, unless suspended by a Resolution of the Board of Commissioners.

<u>Minimum Seasonal Charge</u>: In order to ensure adequate fixed cost recovery from large irrigation customers, there shall be a minimum seasonal charge for service installation of 500 horsepower, or greater. The charge will be calculated using a demand estimate based on the higher of the service's highest demand reading during the current irrigation season, or 75 percent of the horsepower rating of the service, times the current demand rate times 7 months.

<u>General Provisions</u>: Service under this schedule is subject to the General Provisions in accordance with Resolution No. 832 of the District.

Effective Date: Effective for all energy usage, basic charges and minimums billed on or after the above referenced dates.

*Revised 04/10/01 – Resolution No. 1209 Revised 10/30/01 – Resolution No. 1225 Revised 03/09/04 – Resolution No. 1274 Revised 05/04/10 – Resolution No. 1506*