2018 BUDGET

Including:

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- ***Comparative Capital Budget***
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Reliable Public Power Provider

December 12, 2017

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OVERVIEW

TAB 1

To: Benton PUD Commissioners

From: Chad Bartram, General Manager

Date: December 12, 2017

Re: 2018 Budget

Benton PUD's 2018 Preliminary Budget was presented to the Commission at a public hearing on Monday, November 6, 2017. The Preliminary Budget was a first draft of the District's proposed expenditures for the coming year. Since then, staff has reviewed the budget assumptions, including the latest net power cost projection, and no significant changes were identified. The proposed 2018 Budget includes the resources necessary to support our strategic anchors of safety, reliability, stewardship, customer value, and skilled workforce.

Strategic Focus

Our core priorities remain public and employee safety, system reliability and resiliency, and customer value. We must continue to perform well in these areas to remain our customers' Trusted Energy Partner. Nonetheless, utilities in the northwest and across the country are facing many new challenges. The electric industry is changing as technology and regulatory policy combine to have significant impacts on electric markets and the utility business model. These new challenges include:

- Ensuring that hydropower's benefits are fully recognized including low-cost energy, winter/summer capacity, carbon-free emissions, the ability to respond quickly to load changes, voltage support, and resiliency in responding to major disasters. Further, we must help lead efforts to protect the Snake River Dams as these are critical assets to the Northwest, as well as our power portfolio.
- Significant uncertainty relative to carbon and/or renewable legislation and how each might affect customer retail rates.
- System and data resiliency – there is a renewed focus on the need for utilities to plan and invest time and resources to ensure the capability to recover from major events whether they are natural or manmade.
- Gaining knowledge in new technologies such as electric vehicles, solar, and battery storage. Further, we must maximize the value of existing systems through the implementation of utility analytics that maximizes the value of vast amounts of data for both utility operations and customers.

While there is a significant degree of uncertainty in the direction of our industry, Benton PUD is well-positioned at this time of change. Our financial health is solid. We have a conservative debt profile, adequate reserves, and our retail rates remain below the median of comparable benchmark utilities.

Further, our comparisons to APPA benchmarks remain favorable and our customers-per-employee trend-line is at all-time highs.

Below are some key highlights of our 2018 Budget.

Overview

Over the past three years, Benton PUD has increased retail rates in order to keep pace with rising power costs. Benton PUD's net power costs have increased by $17.0 million, or about 26%, since 2012. BPA is the main driver for the increase having increased wholesale rates by nearly 33% since 2011. For decades, BPA has used sales of surplus energy to offset the rates charged to utilities. Reduced power prices for surplus power sales have resulted in less wholesale revenues. Like BPA, Benton PUD also uses sales of surplus energy to offset power costs, and the decline in surplus power prices has impacted us as well. While power costs continue to rise, Benton PUD plans to use financial reserves to forego a rate increase in 2018 and will evaluate the need for an increase in 2019.

Despite recent retail rate increases, our customers' average bills remain below the median of benchmark Northwest utilities, and are significantly below other regions of the United States. Currently, the District's average retail bills are near the bottom third of comparable Northwest utilities.

In addition to rising power costs, the 2018 Budget includes a slight decrease in staffing and a modest increase in O&M expenses. The 2018 O&M Budget is 2.5% higher than the 2017 Original O&M Budget. After adjusting for scope additions, the 2018 O&M Budget (excluding Broadband) is 1.7% higher than the 2017 Original Budget (see schedule at the end of this memo).

The District's capital plan includes significant investments in transmission and substation infrastructure to increase reliability for customers and accommodate growth in our service territory. Knowing these significant investments could put increased pressure on retail rates, District staff issued bonds to finance the increased level of net capital expenditures. This plan reduced the retail rate pressure while also better aligning the cost of the infrastructure with the benefit received by existing and future customers.

The following sections include more detail on each of the District's key budget categories.

Net Power Expenses

Net power expenses currently represent about 58% of the District's expenditures. Net power expenses include the gross expense of purchased power and transmission net of the revenue from selling surplus energy into the market.

The 2018 Budget has been prepared in compliance with the District's financial policies which call for conservative power supply planning assumptions that are consistent with prudent utility practices. The District employs a Monte Carlo analysis that projects 1,000 possible outcomes and selects the budget amount that represents a 75% probability that the net power budget will be achieved.

Over the last several years, net power costs have continued to rise for nearly all Northwest utilities driven by three key factors: 1) increases in BPA wholesale rates, 2) reductions in revenues from the sale of surplus power, and 3) state-wide mandates related to renewable energy targets.

Benton PUD shares the concerns expressed by a number of Northwest utilities regarding rising power costs. We continue to be actively involved in efforts to mitigate the potential impacts of legislation and rules that impact power costs and customer retail rates. Further, we are an active participant in efforts to monitor and influence BPA budgets and rates.

Overall, 2018 net power costs are expected to be $1.7 million, about 2.1% higher than the 2017 original budget. The main driver for the increase is the recent BPA wholesale rate increase of 5.4% for power effective October 1, 2017. BPA, similar to Benton PUD, has seen declining revenue from surplus sales due to low market prices and was a significant portion of the overall BPA wholesale rate increase.

The 2018 Budget does not include any impacts related to the potential for 1) a BPA spill surcharge related to the U.S. District Court ruling for an additional spill test in 2018 or 2) a BPA Cost Recovery Adjustment Clause (CRAC) related to a BPA calculation error in the most recent rate case, or 3) potential carbon legislation. At this point in time, staff believes reserves can be used to avoid any rate impact of items 1 and 2 in 2018. Item 3 (carbon legislation) is a significant unknown in 2018 and it is difficult to estimate rate impacts.

Staffing

Projected full-time equivalent (FTE) staffing levels are expected to decrease in 2018 by approximately one quarter of an FTE from the 2017 budget. Total 2018 salary and wages expense are expected to increase by 2.4% from the 2017 budget. The following details the labor increase:

- Base Labor 2.5%
- Overtime Wages 1.5%

Our budget and staffing plan continues a positive trend in staffing efficiencies. In 2007, our customer per employee ratio was 299. In 2016, the ratio improved to 342 customers per employee, a 14.5% improvement. The 2018 Budget ratio continues the upward trend to an estimated 350 customers per employee. This greater efficiency level is a direct result of the efforts and skills of our employees as well as our investments in technology and employee training.

Operations & Maintenance Expenses

O&M expenses currently represent nearly 16% of the District's expenditures.

Over the last several years, we have successfully managed our O&M expenses despite cost pressures associated with a growing customer base, higher employee benefit costs escalation including mandatory pension increases, and new regulatory requirements. For the last several years, our O&M "cost per customer" metric has remained well below the benchmark figures published by the APPA.

The 2018 O&M budget is 2.5% above the 2017 original budget. When looking at the electric system O&M only (backing out Broadband expenses which are tied to revenues), the increase over the 2017 original budget is reduced to 2.3%. The 2018 O&M budget also includes scope additions related to public safety/joint use corrections, kiosk leases for new customer payment options, and utility analytics. After adjusting for these scope additions, as well as periodic costs not in the 2017 budget, the increase over the 2017 original budget is further reduced to 1.7%.

Significant increases in medical premiums and state mandated pension costs have also contributed to the overall increase in O&M. Despite these increases and a number of scope additions over the past few years, the annual average increase for Benton PUD's O&M expenses has been held to 2.3% since 2014.

Broadband

Our overall broadband budget continues to reflect positive cash flows for the coming year. Although positive, net cash inflows from broadband, factoring in revenues, expenses, and capital expenditures, are expected to be lower than previous years. The 2018 broadband budget includes increased capital

expenditures related to a small/medium business buildout which is anticipated to drive increased revenue over time. This will make 2018 the eighth consecutive year that our broadband business has reflected a positive cash flow.

Positive cash flows are only part of the story. Through October 2017, Benton PUD broadband has connected 70 cell sites within its service territory, thereby helping enable 4G LTE cell services for our customers. Additionally, with the help of a federal grant facilitated by NoaNet, we are now able to serve the southern most parts of our county with our "world-class" high-speed broadband network.

Capital Projects

The 2018 Net Capital Budget is set at $18.3 million. The District has budgeted $15.1 million to increase the capacity and reliability of our transmission and distribution systems. This includes nearly $3.1 million for substation projects, for construction of a new substation, to replace equipment that has reached the end of its useful life, and to install or upgrade equipment with more advanced, reliable and safe technology. There is also $1.0 million for design of a new transmission line from Sunset Road to Dallas Road to improve reliability for residential customers in an area with significant growth in recent years. Proactive replacement of high voltage underground cable will continue to be a focus along with upgrades to distribution circuits to meet the District's standards for highly reliable service. Consistent with our Strategic Technology Plan, the District has also budgeted for communications and automation equipment to continue developing a smarter grid. Continued investments in technology will help strengthen reliability and enable crews to respond to outages more quickly.

The District continues to focus on IT infrastructure investments that strengthen capabilities to minimize the magnitude and duration of potentially disruptive events. Staff uses specific criteria established in the Business Continuity and Disaster Recovery Plan to identify projects to aid effective utility operations. Projects totaling $650,000 have been identified that will ensure redundant data and communications paths between the Kennewick and Prosser facilities, replace aging server infrastructure for critical information systems, and provide for equipment upgrades and replacements for the transmission/distribution system control center.

The District issued bonds in 2016 to assist in funding the increased capital over the next few years, which supports the District's commitment to system reliability and customer growth. Financing for our capital plan allows us to spread the cost of the long-term infrastructure investments over time and better align the cost of the infrastructure with the customers who receive the benefit.

Summary

The 2018 Budget provides for the resources necessary to accomplish the high-level priorities of safety, reliability, and customer satisfaction as well as other important initiatives that are contained within our draft strategic plan.

Operations & Maintenance Comparison - 2018 Budget vs. 2017 Budget

	2018 Budget	2017 Budget	$ Variance	% Variance
Total O&M	**$22,508,000**	**$21,949,796**	**$ 558,204**	**2.5%**
Less: Broadband (increase cost tied to increased revenues)	$ (938,415)	$ (855,812)	$ (82,603)	
Total Electric O&M	**$21,569,585**	**$21,093,984**	**$ 475,601**	**2.3%**
Less: Scope Additions				
Public Safety / Joint Use Corrections (Dock Crew)	(50,000)			
Kiosk Lease (previously in Capital budget as purchases)	(19,000)			
Utility Analytics	(30,000)			
Less: Increases Associated with Partial Year 2017 Budget				
NISC Fees (2017 Budget was prorated for partial year)	(47,000)			
Less: Periodic Costs not in 2017 Budget				
Cyber Security Assessment (every 3 years)	(45,000)			
Less: Expanded Scope in 2017 Budget				
Tree Trimming (2016 deferred 3 months, 2017 increased above normal level, 2018 back to normal level)		(75,000)		
Total Electric O&M Less Scope Additions / Other Adjustments	**$21,378,585**	**$21,018,984**	**$ 359,601**	**1.7%**

KEY ASSUMPTIONS

TAB 2

2018 BUDGET - KEY ASSUMPTIONS

REVENUES

- The 2018 Budget reflects no revenue increase in 2018.
- Gross retail energy sales of $130.4 million are based on 200 aMW of retail load.
- Sales for resale are estimated at $13.9 million.
- 710 new customer connections are included in the 2018 load forecast, medium load growth (see Tab 8) and of these new customer connections, 606 are residential.

POWER & TRANSMISSION COSTS *(see Tab 10, 2018 Power Supply Plan, Section 4, for more details)*

- **The District's net power cost is estimated using a "Risk Model or Probability of Occurrence Forecast."**
  - The purpose of the Risk Model is to define the distribution of possible outcomes taking into account changes in power cost variables.
  - The model is run 1,000 times to produce a probability curve of net power cost.
  - A conservative assumption of the 25th percentile of probability is used for budgeting purposes. Thus 75% of the model's net power cost outcomes were equal to or less than the budgeted net power cost.
  - The net power cost budget details are developed by choosing a single model result of occurrence at the 25th percentile of probability point and using its detail information.
- **Within the model, known variables were included as follows:**
  - Power costs reflect BPA's Tiered Rate Methodology.
  - The budget includes the final BPA rate increase effective October 1, 2017 and results in a 3.8% increase to the District's BPA power costs.
  - Benton's share of the Residential Exchange Settlement credit from BPA is estimated at $2.2 million.
  - The budget includes an irrigation mitigation benefit of $3.7 million in CY 2018.
  - Conservation program costs for CY 2018 are $3.1 million, offset by a nearly $3.0 million reimbursement from BPA.
  - No Cost Recovery Adjustment Clauses (CRACs) are assumed for CY 2018.
  - Court ordered additional spill test impact has not been included due to uncertainty of the cost.
  - No slice true-up credit is assumed for CY 2018.
  - Power cost assumptions include the Frederickson contract cost through the contract period.
  - Power cost forecast includes the estimated cost to meet the requirements of the Energy Independence Act (EIA).
  - No carbon cap and trade impact included in power budget.

2018 BUDGET - KEY ASSUMPTIONS

(CONTINUED)

INTERNAL DISTRICT COSTS

- Employee benefits and payroll taxes of $6.3 million are based on total District labor of $14.3 million. Employee benefit costs include the District's share of FICA, Medicare, retirement, medical, dental, life insurance, short-term disability insurance, personal leave, retirement, unemployment tax, and state industrial insurance (see Tab 5).

FINANCING

- No debt issuance is assumed in the 2018 Budget.

CAPITAL

- Capital is based on the District's five-year Capital Requirements Plan (see Tab 9).
- Includes $5.7 million for new transmission lines, new substations, and substation improvements/replacements.
- Includes $1.9 million for electrical distribution system upgrades and underground cable replacement (Five-Year Plan of Service projects).
- Includes $4.3 million for projected customer requested electrical line extensions and related distribution system improvements (710 new services).
- Includes $1.2 million for other electric distribution maintenance and trouble orders.
- Includes $1.4 million for Information Technology network reliability upgrades, security enhancements, utility analytics, and enterprise applications.
- Includes $1.5 million for equipment replacements and facilities improvements/replacements.

ANNUAL BUDGET SUMMARY

TAB 3

Comparative Operating Statement
Public Utility District No. 1 of Benton County
2018 Budget

	2018 Budget	2017 Budget	Increase/ (Decrease)	% Change
OPERATING REVENUES				
Energy Sales - Retail	$130,438,442	$128,330,591	$2,107,851	1.6%
Energy Sales for Resale	13,007,988	16,236,265	(3,228,277)	-19.9%
Transmission of Power for Others	900,000	686,424	213,576	31.1%
Broadband Revenue	2,330,324	2,080,716	249,608	12.0%
Other Revenue	1,598,503	1,585,951	12,552	0.8%
TOTAL OPERATING REVENUES	**148,275,257**	**148,919,947**	**(761,490)**	**-0.4%**
OPERATING EXPENSES				
Purchased Power	83,064,518	83,972,119	(907,601)	-1.1%
Purchased Transmission and Ancillary Services	13,234,265	13,080,181	154,084	1.2%
Conservation	137,518	666,654	(529,136)	-79.4%
Total Power Supply	96,436,301	97,718,954	(1,282,653)	-1.3%
Transmission Operation & Maintenance	184,699	177,831	6,868	3.9%
Distribution Operation & Maintenance	9,607,430	9,517,694	89,736	0.9%
Broadband Expense	938,415	855,812	82,603	9.7%
Customer Accounting, Collection and Information	4,447,495	4,216,870	230,625	5.5%
Administrative & General	7,329,961	7,181,589	148,372	2.1%
Subtotal before Taxes & Depreciation	22,508,000	21,949,796	558,204	2.5%
Taxes	13,843,000	13,340,101	502,899	3.8%
Depreciation & Amortization	10,055,082	13,168,389	(3,113,307)	-23.6%
Total Other Operating Expenses	46,406,082	48,458,286	(2,052,204)	-4.2%
TOTAL OPERATING EXPENSES	**142,842,383**	**146,177,240**	**(3,334,857)**	**-2.3%**
OPERATING INCOME (LOSS)	**5,432,874**	**2,742,707**	**2,573,367**	**98.1%**
NONOPERATING REVENUES & EXPENSES				
Interest Income	400,000	250,000	150,000	60.0%
Other Income	376,070	376,070	-	0.0%
Interest Expense	(2,705,760)	(2,933,116)	227,356	-7.8%
Debt Discount & Expense Amortization	453,710	490,142	(36,432)	-7.4%
TOTAL NONOPERATING REVENUES & EXPENSES	**(1,475,980)**	**(1,816,904)**	**340,924**	**-18.8%**
INCOME (LOSS) BEFORE CONTRIBUTIONS	**3,956,894**	**925,803**	**2,914,291**	**n/a**
CAPITAL CONTRIBUTIONS	**1,376,749**	**1,057,223**	**319,526**	**30.2%**
CHANGE IN NET POSITION	**$5,333,643**	**$1,983,026**	**$3,233,817**	**169.0%**
NET POWER	**82,528,313**	**$80,796,265**	**$1,732,048**	**2.1%**
CHANGE IN NET POSITION	**$5,333,643**	**$1,983,026**	**$3,350,617**	
Less: Gross Capital in Excess of Depreciation	(9,611,343)	(1,872,634)	(7,738,709)	
Less: Principal Payment on Outstanding Debt	(3,570,000)	(3,045,000)	(525,000)	
Plus: Non-Cash Items (Prepaid Expense Amortizations, etc.)	563,426	526,994	36,432	
ESTIMATED ADDITION/(REDUCTION) TO CASH RESERVES	**($7,284,274)**	**($2,407,614)**	**($4,876,660)**	

Comparative Capital Budget
Public Utility District No. 1 of Benton County
2018 Budget

	2018 Budget	2017 Budget	Increase/ (Decrease)	% Change
Transmission Plant:				
Land & Land Rights	$1,085,075	$100,000	$985,075	n/a
Structures & Improvements	1,387,078	0	1,387,078	n/a
Transmission Station Eq.	0	208,627	(208,627)	n/a
Towers & Fixtures	172	12,500	(12,328)	-98.6%
Poles & Fixtures	12,662	369,564	(356,902)	-96.6%
Overhead Conductor & Devices	194,553	396,065	(201,512)	-50.9%
Subtotal - Transmission Plant	**2,679,540**	**1,086,756**	**1,592,784**	**146.6%**
Distribution Plant:				
Station Equipment	3,217,408	1,150,000	2,067,408	179.8%
Poles, Towers & Fixtures	947,328	830,687	116,641	14.0%
Overhead Conductor & Devices	484,504	519,734	(35,230)	-6.8%
Underground Conduit	1,644,438	1,446,061	198,377	13.7%
Underground Conductor & Devices	2,410,357	2,175,439	234,918	10.8%
Line Transformers	1,505,641	1,189,186	316,455	26.6%
Services-Overhead	74,593	55,750	18,843	33.8%
Services-Underground	1,343,862	872,900	470,962	54.0%
Meters	248,823	200,000	48,823	24.4%
Installations On Customer Premises	0	0	0	n/a
Street Lighting Equipment	0	0	0	n/a
SCADA System	584,733	278,000	306,733	110.3%
Subtotal - Distribution Plant	**12,461,687**	**8,717,757**	**3,743,930**	**42.9%**
General Plant:				
Structures & Improvements	663,635	376,000	287,635	76.5%
Information Systems & Technology	1,060,500	1,485,464	(424,964)	-28.6%
Transportation Equipment	1,062,000	653,000	409,000	62.6%
Tools, Shop & Garage Equipment	0	15,000	(15,000)	n/a
Laboratory Equipment	94,000	17,000	77,000	n/a
Communication Equipment	5,000	6,169	(1,169)	-19.0%
Subtotal - General Plant	**2,885,135**	**2,552,634**	**332,502**	**13.0%**
Total Broadband	**1,385,586**	**960,656**	**424,930**	**44.2%**
Capitalized Allocations [(1)]	**0**	**1,540,475**	**(1,540,475)**	**n/a**
Capitalized Interest	**254,477**	**182,746**	**71,731**	**39.3%**
Total Electric Plant	**$19,666,425**	**$ 15,041,023**	**$ 4,625,402**	**30.8%**
Capital Contributions	**(1,376,749)**	**(1,057,223)**	**(319,526)**	**30.2%**
Net Capital	**$18,289,676**	**$ 13,983,800**	**$ 4,305,876**	**30.8%**

(1) 2018 capitalized allocations were applied to each of the cost categories (e.g. Transmission, Distribution, General Plant, etc.)

Comparative Budget by Activity Code
Public Utility District No. 1 of Benton County
2018 Budget

		2018 Budget	2017 Budget	Increase/ (Decrease)	% Change
Allocated Costs:					
88	Payroll Taxes	$1,077,448	$1,076,846	$602	0.1%
101	Employee Benefits	5,183,835	4,974,890	208,945	4.2%
	Allocated Cost Total	**6,261,283**	**6,051,736**	**209,547**	**3.5%**
Payroll:					
10	District Overtime Labor	663,161	653,140	10,021	1.5%
11	All Other District Labor	13,590,559	13,264,064	326,495	2.5%
	District Labor Total	**14,253,720**	**13,917,204**	**336,516**	**2.4%**
Power Cost:					
9	Purchased Power	92,675,338	94,774,637	(2,099,299)	-2.2%
	Power Cost Total	**92,675,338**	**94,774,637**	**(2,099,299)**	**-2.2%**
System Costs:					
1	Contingency	(270,000)	(270,000)	-	0.0%
12	Materials & Supplies	2,438,800	1,970,069	468,731	23.8%
13	Store Expense - Non Labor	25,000	25,000	-	0.0%
14	Small Tools & Materials	107,050	107,470	(420)	-0.4%
15	Transportation Expense-Gas&Oil	225,500	225,500	-	0.0%
16	Transportation Exp-Repair&Main	179,500	167,500	12,000	7.2%
17	Operation & Maintenance Exp	410,778	420,100	(9,322)	-2.2%
18	Misc Construction Expense	2,032,678	95,600	1,937,078	n/a
19	Tree Trimming - Contract	605,000	680,000	(75,000)	-11.0%
20	Off-the-Dock Labor	974,236	637,000	337,236	52.9%
21	Elec Construction Contracts	1,315,000	1,917,465	(602,465)	-31.4%
23	Environmental	22,000	22,000	-	0.0%
	System Cost Total	**8,065,542**	**5,997,704**	**2,067,838**	**34.5%**
General Expenditures:					
25	Maintenance of Software	888,890	809,078	79,812	9.9%
26	Computer Hardware & Equip Exp	66,000	47,000	19,000	40.4%
27	Personal Computer Software	33,500	30,700	2,800	9.1%
28	Personal Computer O&M Costs	123,700	163,700	(40,000)	-24.4%
29	Personal Computer Supplies&Exp	12,000	12,000	-	0.0%
30	Customer Service Expenses	409,682	470,682	(61,000)	-13.0%
33	Office Supplies & Expenses	68,400	65,900	2,500	3.8%
34	Insurance	559,450	549,450	10,000	1.8%
37	Grounds Care	95,000	88,000	7,000	8.0%
38	Maint of Bldg & Improvements	235,000	250,000	(15,000)	-6.0%
39	Maint of Equipment	41,770	39,000	2,770	7.1%
40	Rents	329,929	328,818	1,111	0.3%
41	Insurance Damages & Other Reim	10,000	10,000	-	0.0%
42	Business Expense & Travel	261,400	261,200	200	0.1%
43	Training Expense & Travel	273,860	266,330	7,530	2.8%
44	Other General Expenses	910,799	786,269	124,530	15.8%
45	Subscriptions & Publications	23,990	23,495	495	2.1%
46	Treasurer Expenses	425,850	391,500	34,350	8.8%
	General Expenditure Total	**4,769,220**	**4,593,122**	**176,098**	**3.8%**

Comparative Budget by Activity Code
Public Utility District No. 1 of Benton County
2018 Budget

	2018 Budget	2017 Budget	Increase/ (Decrease)	% Change
Utilities:				
50 Telephone & Answering Services	199,284	180,884	18,400	10.2%
51 Water,Garbage,Irrigation&Other	73,000	73,000	-	0.0%
Utilities Total	**272,284**	**253,884**	**18,400**	**7.2%**
Outside Services:				
60 Audit Examination - State	100,500	85,500	15,000	17.5%
61 Professional Services	1,329,570	1,522,580	(193,010)	-12.7%
Outside Services Total	**1,430,070**	**1,608,080**	**(178,010)**	**-11.1%**
Dues and Assessments:				
70 Civic & Service Organizations	18,965	18,965	-	0.0%
72 Industry Assoc Assessments	418,302	424,675	(6,373)	-1.5%
Dues and Assessments Total	**437,267**	**443,640**	**(6,373)**	**-1.4%**
Taxes:				
80 Public Utility & Excise Tax	5,175,000	4,806,000	369,000	7.7%
81 State Privilege Tax	2,669,000	2,645,000	24,000	0.9%
82 City Occupation Taxes	5,999,000	5,889,101	109,899	1.9%
Taxes Total	**13,843,000**	**13,340,101**	**502,899**	**3.8%**
Other Employee Costs:				
104 Other Employee Costs	143,924	157,944	(14,020)	-8.9%
Other Employee Costs Total	**143,924**	**157,944**	**(14,020)**	**-8.9%**
Energy Resources:				
112 Residential Conservation Exp	440,881	669,001	(228,120)	-34.1%
113 Commercial Conservation Exp	500,000	699,000	(199,000)	-28.5%
114 Industrial Conservation Exp	700,000	-	700,000	n/a
115 Agriculture Conservation Exp	275,000	220,000	55,000	25.0%
116 Non-Federally Funded Conservation	100,000	-	100,000	n/a
117 Appliance Efficiency Program	250,000	125,000	125,000	100.0%
118 Low Income Conservation	180,000	-	180,000	n/a
Energy Resources Total	**2,445,881**	**1,713,001**	**732,880**	**42.8%**
Public Information:				
119 Public Information Expenses	238,000	218,600	19,400	8.9%
Public Information Total	**238,000**	**218,600**	**19,400**	**8.9%**

Comparative Budget by Activity Code
Public Utility District No. 1 of Benton County
2018 Budget

	2018 Budget	2017 Budget	Increase/ (Decrease)	% Change
Purchased Electric Plant & Equip:				
120 Substation Xfrs & Regulators	1,384,477	-	1,384,477	n/a
121 Substation Equip & Materials	1,065,969	788,530	277,439	35.2%
122 Line Devices	452,658	416,971	35,687	8.6%
123 Transformers & Related Items	948,000	848,400	99,600	11.7%
124 Meters & Related Items	160,000	159,075	925	0.6%
125 Land & Land Rights - Electric	265,320	-	265,320	n/a
127 SCADA Communications Equipment	230,000	134,000	96,000	71.6%
128 SCADA Substation Equipment	20,000	20,000	-	0.0%
Purchased Electric Plant and Equip Total	**4,526,424**	**2,366,976**	**2,159,448**	**91.2%**
Purchased General Plant & Equip:				
131 Structures & Improvements	291,880	526,000	(234,120)	-44.5%
132 Office Equipment	7,000	7,000	-	0.0%
133 Transportation Equipment	1,062,000	653,000	409,000	62.6%
134 Tools, Shop & Stores Equipment	5,000	20,000	(15,000)	-75.0%
135 Laboratory & Test Equipment	94,000	17,000	77,000	n/a
136 Communication Equipment	455,000	245,000	210,000	85.7%
137 Capitalized Computer Software	123,000	141,000	(18,000)	-12.8%
138 Computer Equipment	602,500	413,000	189,500	45.9%
Purchased General Plant & Equip Total	**2,640,380**	**2,022,000**	**618,380**	**30.6%**
Debt Service:				
150 Principal	3,570,000	3,045,000	525,000	17.2%
151 Interest	2,090,457	2,210,650	(120,193)	-5.4%
Debt Service Total	**5,660,457**	**5,255,650**	**404,807**	**7.7%**
Other Misc. Expenditures:				
200 New Services Expenses	4,000	4,000	-	0.0%
201 New Product Expenses	3,500	3,500	-	0.0%
Other Misc Expenditures Total	**7,500**	**7,500**	**-**	**0.0%**
Grand Total	**$157,670,290**	**$152,721,779**	**$4,948,511**	**3.2%**
Depreciation:				
301 Depreciation	10,351,499	13,608,389	(3,256,890)	-23.9%
Depreciation Total	**$10,351,499**	**$13,608,389**	**-$3,256,890**	**-23.9%**

Comparative Broadband Budget
Public Utility District No. 1 of Benton County
2018 Budget

	2018 Budget	2017 Budget	Increase/ (Decrease)	% Change
Revenue	$2,330,324	$2,080,716	$249,608	12.0%
Operating Expenses	(938,415)	(855,812)	(82,603)	9.7%
Net Income (Loss)	**1,391,909**	**1,224,904**	**167,005**	**13.6%**
Broadband Capital:				
Base Capital Expenditures	(785,586)	(760,656)	(24,930)	3.3%
Small/Medium Business Initiative	(600,000)	(200,000)	(400,000)	200.0%
Capital Contributions	-	10,000	(10,000)	n/a
Net Capital Expenditures	**(1,385,586)**	**(950,656)**	**(434,930)**	**45.8%**
Net Cash from / (to) Broadband	**$6,323**	**$274,248**	**($267,926)**	**-97.7%**

Summary does not include depreciation.

SUMMARY OF REVENUES

TAB 4

COMPARATIVE REVENUES
Public Utility District No. 1 of Benton County
2018 Budget

	2018 Budget	2017 Budget	Increase/ (Decrease)	% Change
Retail Power Sales	$130,438,442	$128,694,955	$1,743,487	1.4%
Wholesale Power Sales	13,907,988	16,922,689	(3,014,701)	-17.8%
Broadband Revenues	2,330,324	2,080,716	249,608	12.0%
Other Electric Revenue	1,518,503	1,602,951	(84,448)	-5.3%
Interest Income/Other	776,070	626,070	150,000	24.0%
Capital Contributions:				
Electric Facilities	1,311,749	1,030,223	281,526	27.3%
Broadband Facilities	-	10,000	(10,000)	n/a
Total Revenue	**$150,283,076**	**$150,967,604**	**($684,528)**	**-0.5%**

COMPARATIVE REVENUES

Public Utility District No. 1 of Benton County

2018 Budget

		2018 Budget	2017 Budget	Increase/ (Decrease)	% Change
FINANCE AND BUSINESS SERVICES					
515	Interest Income	$400,000	$250,000	$150,000	60.0%
151	BAB's Subsidy	376,070	376,070	-	0.0%
560	Insurance/Claims Reimbursements	100,000	100,000	-	0.0%
TOTAL FINANCE & BUSINESS SERVICES		**876,070**	**726,070**	**150,000**	**20.7%**
CUSTOMER PROGRAMS & SERVICES					
530	Property Rental Revenue	10,000	10,000	-	0.0%
545	Other Electric Revenue	600,000	600,000	-	0.0%
TOTAL CUSTOMER PROGRAMS & SERVICES		**610,000**	**610,000**	**-**	**0.0%**
ENGINEERING/BROADBAND/POWER MGMT.					
510	Property Rental Revenue		35,000	(35,000)	n/a
	Use of Facilities Benton REA				
523	Pole Contact Revenue				
	Pole Contact Fees	437,898	477,499	(39,601)	-8.3%
	Annual Cell Site Fee with Verizon Wireless	2,400	2,400	-	0.0%
525	Capital Contributions				
	Angus Franklin Transmission	17,000	17,000	-	0.0%
	ENW Nine Canyon Harmonic Analysis	50,000		50,000	
	Joint Use Deficiency Correction CAIC	150,000		150,000	n/a
	Misc. Customer Fees (Primary, etc.)	1,094,749	1,030,223	64,526	6.3%
	Total Engineering Revenue	1,752,047	1,562,122	189,925	12.2%
Broadband					
550	Products and Services Revenue				
	Ethernet Revenue	1,298,747	1,523,071	(224,324)	-14.7%
	TDM Revenue	66,399	69,372	(2,973)	-4.3%
	Wireless Revenue	72,388	83,091	(10,703)	-12.9%
	Internet Revenue	106,239	123,540	(17,301)	-14.0%
	Access Internet Revenue	233,600		233,600	
	Broadband Revenue-Other (Incl. Fiber Leases)	552,951		552,951	
	Other Revenue		281,642	(281,642)	n/a
525	Capital Contributions				
	General	-	10,000	(10,000)	n/a
	Total Broadband Revenue	2,330,324	2,090,716	239,608	11.5%
POWER MANAGEMENT					
505	Wholesale Power Sales Revenue	13,007,988	16,236,265	(3,228,277)	-19.9%
510	Wholesale Transmission Sales Revenue	900,000	686,424	213,576	31.1%
	Total Power Management	13,907,988	16,922,689	(3,014,701)	-17.8%
TOTAL ENGINEERING/BROADBAND/POWER MGMT		**17,990,359**	**20,575,527**	**(2,585,168)**	**-12.6%**

COMPARATIVE REVENUES

Public Utility District No. 1 of Benton County

2018 Budget

	2018 Budget	2017 Budget	Increase/ (Decrease)	% Change
OPERATIONS				
Supt. of Transmission & Distribution				
550 Products and Services Revenue				
Pre-Notifier	40,750	39,562	1,188	3.0%
Safety Coordinator	115,605	104,640	10,965	10.5%
Supt. of Operations				
535 Microwave Site Rental	57,850	57,850	-	0.0%
Rattlesnake Site Rental	40,000	40,000	-	0.0%
545 Other Electric Revenue				
Windfarm Maintenance	114,000	99,000	15,000	15.2%
550 Products and Services Revenue				
SCADA Lease		20,000	(20,000)	n/a
TOTAL OPERATIONS	**368,205**	**361,052**	**7,153**	**2.0%**
NON-DEPARTMENTAL				
501 Retail Energy Sales Total	124,674,442	123,040,854	1,633,588	1.3%
503 Bad Debt Expense	(235,000)	(235,000)	-	0.0%
502 City Occupation Taxes Collected	5,999,000	5,889,101	109,899	1.9%
TOTAL NON-DEPARTMENTAL	**130,438,442**	**128,694,955**	**1,743,487**	**1.4%**
GRAND TOTAL REVENUE	**$ 150,283,076**	**$ 150,967,604**	**$ (684,528)**	**-0.5%**

LABOR STAFFING

TAB 5

Public Utility District No. 1 of Benton County
2018 Labor & Benefits Budget

District Labor	2018 Budget	2017 Budget	Increase (Decrease)	% Change
Overtime Labor - Activity 10	$663,161	$653,140	$10,021	1.5%
Regular Labor - Activity 11	13,272,505	12,934,901	337,604	2.6%
Regular Labor & Overtime	**13,935,666**	**13,588,041**	**347,625**	**2.6%**
Contingent /Part Time/Shared Positions	**318,052**	**329,164**	**(11,112)**	**-3.4%**
Total Payroll	**$14,253,718**	**$13,917,205**	**$336,513**	**2.4%**

District Labor Taxes & Benefits	2018 Budget	2017 Budget	Increase (Decrease)	% Change
Payroll Taxes - Activity 88	$1,077,448	$1,076,846	$602	0.1%
Employee Benefits - Activity 101	5,183,834	4,974,889	208,945	4.2%
Total District Labor Taxes & Benefits	**$6,261,282**	**$6,051,735**	**$209,547**	**3.5%**

District Staffing	2018 Budget	2017 Budget	Increase (Decrease)	% Change
Full Time Equivalent Positions (FTEs)	**154.75**	**155.00**	**-0.25**	**-0.2%**

Public Utility District No. 1 of Benton County
2018 Staffing Plan

Full Time Equivalent Positions (FTEs)

Directorate	2018 Budget	2017 Budget	Increase/ (Decrease)
Executive	9.75	10.25	(0.50)
Finance & Business Services	14.00	14.00	-
Engineering/Power Management	25.75	25.50	0.25
Operations	85.00	85.00	-
Customer Programs & Services	20.25	20.25	-
Authorized Positions	**154.75**	**155.00**	**(0.25)**
Less: FTEs utilized by other local utilities*	(1.35)	(1.35)	-
District Adjusted FTEs	**153.40**	**153.65**	**(0.25)**

**Positions that are shared with local utilities are Safety Coordinator & Vegatation Management).*

	Change in FTEs	(0.25)
Dept. 2 - Human Resources		**(0.50)**
HR Generalist III move from .50 to .75 FTE		0.25
HR Generalist II - Temporary for HRMS upgrade		(0.75)
Operations		**0.00**
Dept. 34 - Meter Shop		
Network Security Administrator		1.00
Dept. 18 - IT System Applications		
Application Analyst III		(1.00)
Engineering & Power Management		**0.25**
Dept. 22 - Customer Engineering		
Distribution Designer - retirement overlap		0.50
Dept. 45 - Energy Programs		
Energy Efficiency Advisor - retirement overlap in 2017		(0.25)

Public Utility District No. 1 of Benton County
Payroll Taxes and Employee Benefits Allocation Budget

Overview

The District allocates the cost of payroll taxes, employee benefits (including paid time off) over actual regular productive work hours, including overtime hours. Payroll taxes and employee benefit costs are distributed to applicable general ledger accounts via activity codes 88 and 101, respectively, by applying a percentage rate to overtime and regular labor (activity codes 10 and 11, respectively). Calculation of the percentage rate is provided below.

Labor Breakdown	2018 Budget	2017 Budget	Increase/ (Decrease)	Notes
Labor charged to Expense	$ 8,396,827	$ 8,305,221	$ 91,606	
Labor charged to Capital	2,777,601	2,753,313	24,288	
Labor charged to Warehouse & Equipment Maintenance	517,824	502,178	15,646	
Total Productive Labor	11,692,252	11,560,712	131,540	
Paid Leave - Includes Holidays and Personal Leave	$ 1,898,307	$ 1,703,353	$ 194,954	
Total Regular Labor	**$13,590,559**	**$13,264,065**	**$326,494**	
Benefits/Taxes				
Social Security	$ 870,769	$ 875,047	$ (4,278)	Refined calculation for 2018 and base wage limit was increased to $130,500.
Medicare	206,679	201,799	4,880	
State Industrial	164,011	$157,631	6,380	This represents 80% of the total L&I charges with 20% of L&I premium is paid by the employee.
Unemployment	18,000	18,000	-	The District does not pay unemployment tax but instead reimburses the State for benefits paid to former employees.
PERS	1,749,760	1,600,986	148,774	The PERS rate for 2018 is 12.70%.
Deferred Compensation	262,290	255,593	6,697	According to the Collective Bargaining Agreement, the District provides a deferred compensation match of 2%, in addition there is a $150 per month contribution to a VEBA account dependent upon the employee's participation in a wellness program.
VEBA Contribution	270,900	270,450	450	
Medical Insurance	2,241,399	2,194,808	46,591	The 2018 budget assumes a 6% increase in medical insurance and no increase for dental or vision insurance on 1/1/18. It also accounts for the change started 8/1/12 to tiered rates for employees and dependents.
Dental Insurance	199,837	201,402	(1,565)	
Vision Insurance	33,665	33,929	(264)	
Life Insurance	65,973	64,090	1,883	
STD Admin Fee	3,000	3,000	-	
Total Benefits/Taxes	$ 6,086,282	$ 5,876,735	$ 209,547	
Leave				
Change PL Liability	175,000	175,000	-	
Paid Time Off	1,898,307	1,703,353	194,954	
Leave Subtotal	$ 2,073,307	$ 1,878,353	$ 194,954	
Total Benefits/Taxes and Leave	**$ 8,159,589**	**$ 7,755,088**	**$ 404,501**	

Allocation Rate - Worked Time (regular and overtime)

-Total Benefits/taxes and Leave	$8,159,589
-Total Regular Productive Labor	11,692,252
2018 Allocation Rate	**69.79%**

BUDGET BY DIRECTORATE

TAB 6

REVENUE AND EXPENSE SUMMARY BY DEPARTMENT
PUBLIC UTILITY DISTRICT NO. 1 OF BENTON COUNTY
2018 Budget

	2018 Budget	2017 Budget	Increase/ (Decrease)	% Change
REVENUE				
Finance & Business Services	$876,070	$726,070	$150,000	20.7%
Customer Programs & Services	610,000	610,000	0	0.0%
Engineering/Power Mgmt	15,660,035	18,484,811	(2,824,776)	-15.3%
Broadband	2,330,324	2,090,716	239,608	11.5%
Operations	368,205	361,052	7,153	2.0%
Non-Departmental	130,438,442	128,330,591	2,107,851	1.6%
TOTAL REVENUE	**$150,283,076**	**$150,603,240**	**($320,164)**	**-0.2%**
EXPENSES				
Executive Administration	$2,342,853	$2,252,035	$90,818	4.0%
Customer Programs & Services	1,740,671	1,897,490	(156,819)	-8.3%
Finance & Business Services	2,312,829	2,218,450	94,379	4.3%
Engineering/Power Mgmt	110,095,212	106,901,264	3,193,948	3.0%
Operations	15,922,757	15,075,053	847,704	5.6%
Non-Departmental	35,846,238	37,985,875	(2,139,637)	-5.6%
TOTAL EXPENSES	**$168,260,560**	**$166,330,167**	**$1,930,393**	**1.2%**

EXECUTIVE

TAB 6

PUBLIC UTILITY DISTRICT NO. 1 OF BENTON COUNTY
2018 Budget
Summary of Expense by Directorate

Executive Administration

Department(s)		Totals
01	General Manager, Commission	1,668,123
02	Human Resources	216,630
12	Communications and Government	458,100
Grand Total Expenses	**Executive Administration**	$2,342,853

Directorate Budget by Department and Activity
2018 Budget Compared to 2017 Budget

Directorate	Executive

Department	Activity	2018 Budget	2017 Budget	Increase/ (Decrease)	% Increase/ (Decrease)
1 - General Manager, Commission	10 - District Overtime Labor	2,500		2,500	
	11 - All Other District Labor	1,086,944	1,037,963	48,981	4.7%
	33 - Office Supplies & Expenses	13,000	13,000	-	0.0%
	42 - Business Expense & Travel	78,000	78,000	-	0.0%
	43 - Training Expense & Travel	12,000	10,500	1,500	14.3%
	44 - Other General Expenses	20,000	4,000	16,000	
	45 - Subscriptions & Publications	10,310	9,870	440	4.5%
	61 - Professional Services	85,000	85,000	-	0.0%
	72 - Industry Assoc Assessments	360,369	361,887	(1,518)	-0.4%
1 - General Manager, Commission Total		**1,668,123**	**1,600,220**	**67,903**	**4.2%**
2 - Human Resources	11 - All Other District Labor	50,000	50,000	-	0.0%
	33 - Office Supplies & Expenses	3,000	3,000	-	0.0%
	42 - Business Expense & Travel	17,500	17,500	-	0.0%
	43 - Training Expense & Travel	12,500	12,000	500	4.2%
	44 - Other General Expenses	28,000	24,500	3,500	14.3%
	45 - Subscriptions & Publications	5,850	5,795	55	0.9%
	61 - Professional Services	56,080	56,080	-	0.0%
	72 - Industry Assoc Assessments	10,700	10,590	110	1.0%
	104 - Other Employee Costs	33,000	31,700	1,300	4.1%
2 - Human Resources Total		**216,630**	**211,165**	**5,465**	**2.6%**
12 - Communications & Government	33 - Office Supplies & Expenses	400	400	-	0.0%
	42 - Business Expense & Travel	26,000	26,000	-	0.0%
	44 - Other General Expenses	5,500	5,500	-	0.0%
	45 - Subscriptions & Publications	800	800	-	0.0%
	61 - Professional Services	170,000	174,000	(4,000)	-2.3%
	70 - Civic & Service Organizations	15,500	15,500	-	0.0%
	72 - Industry Assoc Assessments	5,900	3,850	2,050	53.2%
	119 - Public Information Expenses	234,000	214,600	19,400	9.0%
12 - Communications & Government Total		**458,100**	**440,650**	**17,450**	**4.0%**
Grand Total		**2,342,853**	**2,252,035**	**90,818**	**4.0%**

PUBLIC UTILITY DISTRICT NO. 1 OF BENTON COUNTY
2018 Budget
By Department, Resource

Department 01 General Manager, Commission

Activity	Description	Detail	Amount
010	**District Overtime Labor**		2,500
	Labor - Overtime	2,500	
011	**All Other District Labor**		1,086,944
	Labor - Admin General	832,217	
	Labor - Customer Accounting	102,555	
	Labor - Leave	152,172	
033	**Office Supplies and Expenses**		13,000
	Imaging & Preservation of Records	4,000	
	Misc Office	3,000	
	Off-Site Storage of Permanent Records	1,000	
	Records Mgmt - Shredding Services	5,000	
042	**Business Expense and Travel**		78,000
	Commission Travel	53,000	
	Manager	22,000	
	RM Software Users Group - Demory	1,000	
	WPUDA Annual Assistant's Meeting - Marshall (2)	1,000	
	WPUDA Records Roundtable - Demory (2)	1,000	
043	**Training Expense & Travel**		12,000
	AIIM/ARMA Conference - Demory/Cole	8,000	
	WA Municipal Clerks Association - Marshall	1,000	
	WAPRO Training (two) - Cole/Demory	3,000	
044	**Other General Expenses**		20,000
	Election Costs	20,000	
045	**Subscriptions & Publications**		10,310
	Clearing Up - (Newsdata)	8,300	
	Executive Leadership	170	
	FortNightly (Annual Subscription)	300	
	Kiplinger Letter	100	
	Loislaw Libraries on Fastcase	1,000	
	Wall Street Journal	320	
	Wenatchee World	120	
061	**Professional Services**		85,000
	Contract Attorney	75,000	
	Misc. Legal (Thompson Coburn, Gordon Thomas Honeywell)	10,000	

Department 01 General Manager, Commission

Activity	Description	Detail	Amount
072	**Industry Assoc. Assessment**		360,369
	Administrative Professionals of TC - APTC - Marshall	50	
	APPA	44,996	
	ARMA Membership - includes Local Chapter - Cole/Demory	400	
	Benton/Franklin Council of Governments	6,659	
	IMA - Institute of Management Accountants-Bartram Cert	250	
	Notary - Cole/Marshall	66	
	NW River Partners	37,275	
	NWPPA	30,000	
	PNUCC	10,350	
	Public Power Council (PPC)	69,751	
	TRIDEC	20,000	
	WA State Board of Accountancy (CPA License) - Bartram	77	
	WAPRO Certified Public Records Officer Designation - Cole	100	
	Washington Assoc. of Public Records Officers Membership - Cole/Demory	50	
	WFOA - Bartram	50	
	WPUDA	140,000	
	WSCPA - WA Society of CPA - Bartram	295	
TOTAL EXPENSE	**General Manager, Commission**		**$1,668,123**

PUBLIC UTILITY DISTRICT NO. 1 OF BENTON COUNTY
2018 Budget
By Department, Resource

Department 02 Human Resources

Activity	Description	Detail	Amount
011	**All Other District Labor**		50,000
	HR - Attrition Credit - O&M	-30,000	
	Labor - Promotional Pool A&G	45,000	
	Promotion/Recruitment Pool	25,000	
	Recruitment Pool	10,000	
033	**Office Supplies and Expenses**		3,000
	HR - Misc. Supplies & Expenses	3,000	
042	**Business Expense and Travel**		17,500
	CWPU/UIP Meetings	2,000	
	HR Mgr. - NWPPA Labor & Employee Relations Mtgs	3,000	
	HR Staff - HR System Analysis/Training	5,000	
	HR Staff - Misc. Business Travel	3,000	
	HR Staff (1) - SHRM Annual Conference	3,500	
	Leadership Planning Workshop	500	
	Monthly Labor Management Meetings	500	
043	**Training Expense & Travel**		12,500
	District - Misc. Training (Policy, Leadership TC)	2,000	
	District - Misc. Training (Web-based, Other)	2,500	
	District - NWPPA Frontline & Leadership	1,500	
	HR Staff - Misc. Training	3,000	
	HR Staff - Professional Certifications	3,500	
044	**Other General Expenses**		28,000
	Affirmative Action Outreach - Job Fairs, Future Employees Day	2,500	
	DOT Quarterly Drug/Alcohol Testing	1,000	
	Driver Abstracts	1,000	
	Employee Recognition	2,500	
	Recruiting - Advertising	10,000	
	Recruiting - Assessments	3,500	
	Recruiting - Backgrounds	3,000	
	Recruiting - Interviewee Travel	3,000	
	Recruiting - Pre-Employment Physicals/Drug Screenings	1,500	
045	**Subscriptions & Publications**		5,850
	Labor Law Poster Updates	500	
	Misc. Employment & Regulatory Subscriptions	500	
	Salary Survey - Milliman Mgmt. & Professional Survey	1,000	
	Salary Survey - Milliman NW Benefits Survey	1,000	
	Salary Survey - Milliman NW Utilities Salary, Wage & Benefits	650	
	Salary Survey - Milliman WA Employers	500	
	Salary Survey - Misc.	1,700	

PUBLIC UTILITY DISTRICT NO. 1 OF BENTON COUNTY
2018 Budget
By Department, Resource

Department 02 Human Resources

Activity	Description	Detail	Amount
061	**Professional Services**		56,080
	Affirmative Action Consultation	1,500	
	District - Misc. Training	5,000	
	District - Safety Training	5,000	
	District - Skill Testing (IBM)	2,500	
	District - Skill Testing Admin (Sylvan)	1,000	
	Driver Record Monitoring Service	2,880	
	Health & Safety Program/Trucking Consortium Administration	3,200	
	Legal Advice, Policy Review, Training	20,000	
	NWPPA Frontline Leadership (On-site)	15,000	
072	**Industry Assoc. Assessment**		10,700
	CWPU Membership Assessments	8,000	
	District - Assoc. of WA Cities Membership	500	
	District - NWPPA Labor & Employee Relations Membership	650	
	HR Staff - SHRM Professional Memberships (5)	1,000	
	HR Staff - World at Work Memberships (2)	550	
104	**Other Employee Benefits**		33,000
	Assessments - Fitness for Duty, ADA & Ergonomic	6,000	
	COBRA Administration	1,000	
	CWPU Wellness Program Screening	500	
	Employee Assistance Program (EAP) Mediation	2,000	
	Flex 125 Plan Administration	3,500	
	Local Wellness Activities & Events	8,000	
	Safety Program - Supplies & Administration	6,000	
	Tuition Reimbursement	6,000	
TOTAL EXPENSE Human Resources			**$216,630**

PUBLIC UTILITY DISTRICT NO. 1 OF BENTON COUNTY
2018 Budget
By Department, Resource

Department 12 Communications and Government

Activity	Description	Detail	Amount
033	**Office Supplies and Expenses**		400
	Misc Office Supplies	400	
042	**Business Expense and Travel**		26,000
	APPA, NWPPA, WPUDA, IABC - Henderson	8,000	
	APPA, Olympia, WPUDA, NWPPA, PPC- Miller	18,000	
044	**Other General Expenses**		5,500
	Community Involvement	5,500	
045	**Subscriptions & Publications**		800
	Tri-City Herald (Kennewick, Prosser), PRB	800	
061	**Professional Services**		170,000
	Customer Survey	45,000	
	Governmental Relations	66,000	
	Production, Graphics	35,000	
	Website Maintenance/Technical	24,000	
070	**Civic & Service Organizations**		15,500
	Tri-Cities Visitor & Convention Bureau	5,000	
	Tri-City Area Chamber of Commerce	10,500	
072	**Industry Assoc. Assessment**		5,900
	Association of Washington Business	2,000	
	International Association of Business Communicators - Henderson	350	
	Leadership TC Alumni Association Dues - Henderson	50	
	Smart Grid Consumer Collaborative	2,500	
	Washington Business Alliance	1,000	
119	**Public Information Expenses**		234,000
	Misc	4,000	
	Print Advertising/On-Line Advertisting	37,000	
	Printing (Newsletter, Brochures, Inserts, Postage, Direct Mail, etc)	83,000	
	Public Education	28,000	
	TV/Radio/Video/Photographer	82,000	
TOTAL EXPENSE Communications and Government			**$458,100**

FINANCE & BUSINESS SERVICES

TAB 6

PUBLIC UTILITY DISTRICT NO. 1 OF BENTON COUNTY
2018 Budget
Summary of Expense by Directorate

Finance & Business Services

Department(s)		Totals
11	Finance and Business Services	718,921
14	General Accounting	534,923
16	Treasurer & Risk Management	1,036,830
17	Purchasing/Contracts	22,155
Grand Total Expenses	**Finance & Business Services**	$2,312,829

Directorate Budget by Department and Activity
2018 Budget Compared to 2017 Budget

Directorate	Finance & Business Services

Department	Activity	2018 Budget	2017 Budget	Increase/ (Decrease)	% Increase/ (Decrease)
11 - Finance & Business Services	10 - District Overtime Labor	2,000	2,000	-	0.0%
	11 - All Other District Labor	704,504	669,742	34,762	5.2%
	33 - Office Supplies & Expenses	5,000	5,000	-	0.0%
	42 - Business Expense & Travel	2,000	3,000	(1,000)	-33.3%
	43 - Training Expense & Travel	4,000	5,500	(1,500)	-27.3%
	45 - Subscriptions & Publications	200	200	-	0.0%
	72 - Industry Assoc Assessments	1,217	1,207	10	0.8%
11 - Finance & Business Services Total		**718,921**	**686,649**	**32,272**	**4.7%**
14 - General Accounting	10 - District Overtime Labor	1,000	1,000	-	0.0%
	11 - All Other District Labor	453,167	428,955	24,212	5.6%
	43 - Training Expense & Travel	6,000	9,500	(3,500)	-36.8%
	45 - Subscriptions & Publications	2,680	2,680	-	0.0%
	60 - Audit Examination - State	70,500	70,500	-	0.0%
	72 - Industry Assoc Assessments	1,576	1,556	20	1.3%
14 - General Accounting Total		**534,923**	**514,191**	**20,732**	**4.0%**
16 - Treasurer	34 - Insurance	559,450	549,450	10,000	1.8%
	41 - Insurance Damages & Other Reim	10,000	10,000	-	0.0%
	42 - Business Expense & Travel	3,500	3,500	-	0.0%
	43 - Training Expense & Travel	4,100	4,100	-	0.0%
	45 - Subscriptions & Publications	500	500	-	0.0%
	46 - Treasurer Expenses	425,850	391,500	34,350	8.8%
	61 - Professional Services	32,500	32,500	-	0.0%
	72 - Industry Assoc Assessments	930	905	25	2.8%
16 - Treasurer Total		**1,036,830**	**992,455**	**44,375**	**4.5%**
17 - Purchasing	33 - Office Supplies & Expenses	11,000	11,000	-	0.0%
	42 - Business Expense & Travel	2,000	6,000	(4,000)	-66.7%
	43 - Training Expense & Travel	7,000	6,000	1,000	16.7%
	44 - Other General Expenses	1,565	1,565	-	0.0%
	72 - Industry Assoc Assessments	590	590	-	0.0%
17 - Purchasing Total		**22,155**	**25,155**	**(3,000)**	**-11.9%**
Grand Total		**2,312,829**	**2,218,450**	**94,379**	**4.3%**

PUBLIC UTILITY DISTRICT NO. 1 OF BENTON COUNTY
2018 Budget
By Department, Resource

Department 11 Finance and Business Services

Activity	Description	Detail	Amount
010	**District Overtime Labor**		2,000
	Labor - Overtime	2,000	
011	**All Other District Labor**		704,504
	Labor - Admin General	455,742	
	Labor - Customer Accounting	42,073	
	Labor - Distribution	70,152	
	Labor - Leave	98,630	
	Labor - Purchased Power	37,907	
033	**Office Supplies and Expenses**		5,000
	Office Supplies	5,000	
042	**Business Expense and Travel**		2,000
	Rating Agency Meeting	1,000	
	TEA/BPA/Other	1,000	
043	**Training Expense & Travel**		4,000
	APPA/GFOA/Accounting/Auditing Standards Training - Director	1,500	
	Office Training - Administrative Assistant	1,500	
	WPUDA - Director	1,000	
045	**Subscriptions & Publications**		200
	Miscellaneous Publications	200	
072	**Industry Assoc. Assessment**		1,217
	AICPA (American Institue of CPA's) Membership - Meyer	265	
	CMA License - IMA (Inst of Mgmt Accountants) - Meyer	250	
	CPA License - WA ST Board of Accountancy - Meyer	77	
	GFOA (Government Finance Officers Assoc) Membership - Meyer	280	
	WFOA (Washington Finance Officers Assoc) Membership - Meyer	50	
	WSCPA (Wa State Board of CPA's) Membership - Meyer	295	
TOTAL EXPENSE	**Finance and Business Services**		**$718,921**

PUBLIC UTILITY DISTRICT NO. 1 OF BENTON COUNTY
2018 Budget
By Department, Resource

Department 14 General Accounting

Activity	Description	Detail	Amount
010	**District Overtime Labor**		1,000
	Labor Overtime - O&M A&G	1,000	
011	**All Other District Labor**		453,167
	Labor - Admin General	380,095	
	Labor - Customer Accounting	9,629	
	Labor - Leave	63,443	
043	**Training Expense & Travel**		6,000
	Training - Accounting Manager - Zirker	2,000	
	Training - AP & Payroll - Yuly, Newell	1,000	
	Training - Fin. Analysts/Specialist - Swanson, Herrington, Eby	2,000	
	WPUDA Finance Meetings	1,000	
045	**Subscriptions & Publications**		2,680
	APA Basic Guide to Payroll	500	
	GASB Subscriptions	500	
	GFOA Fee - CAFR Excellence in Reporting program	580	
	Governmental GAAP (Various)	500	
	Keep Up to Date on A/P	350	
	Keep Up to Date on Payroll	250	
060	**Audit Examination - State**		70,500
	Financial Statement External Audit	53,500	
	State Auditor's Office	17,000	
072	**Industry Assoc. Assessment**		1,576
	AICPA (American Institute of CPAs) - Zirker, Herrington	530	
	APA (American Payroll Assoc) - Yuly	219	
	CPA License - Wash. State Board of Accountancy - Zirker, Herrington	154	
	Notary Licenses & Bonds - Eby	33	
	WFOA (Wa Finance Officers Assoc) Membership - Zirker	50	
	WSCPA (Wash. Society of CPAs) - Zirker, Herrington	590	
TOTAL EXPENSE General Accounting			**$534,923**

PUBLIC UTILITY DISTRICT NO. 1 OF BENTON COUNTY
2018 Budget
By Department, Resource

Department 16 Treasurer & Risk Management

Activity	Description	Detail	Amount
034	**Insurance**		559,450
	Crime Policy	3,700	
	Cyber Security Insurance	20,000	
	Fiduciary Liability Policy	17,000	
	Liability, Directors & Officers	19,000	
	Liability, Excess $25 million, EIM	24,000	
	Liability, Excess General & Professional, AEGIS	137,000	
	Liability, General Assessment	140,000	
	Other Insurance Policies (Flood, Bonds, Fronting, etc)	2,000	
	Property, Excess, National Union Fire	95,000	
	Property, General Assessment	80,000	
	PURMS Reserve Increase Assessment	13,750	
	Railroad	3,000	
	Special Trips	4,000	
	Storage Tank Pollution Liability, WA. State	1,000	
041	**Insurance Damages & Other Reim**		10,000
	Direct Payment of Damages and other Reimbursements	10,000	
042	**Business Expense and Travel**		3,500
	BPA/I-937/TEA Meetings	1,500	
	PURMS	2,000	
043	**Training Expense & Travel**		4,100
	Training - Blackwell, Homer, White	3,000	
	WFOA, WPTA, AGA, WPUDA Finance Officers	1,100	
045	**Subscriptions & Publications**		500
	Subscription & Publications	500	
046	**Treasurer Expenses**		425,850
	Bank Service Fees	38,000	
	Credit Card Fees	343,350	
	Fiscal Agent Fees (US Bank)	1,500	
	Investment Custody Fees (US Bank)	3,000	
	Line of Credit Fee	40,000	
061	**Professional Services**		32,500
	Bond Counsel - Foster Pepper, PLLC	2,500	
	Financial Advisor	7,500	
	Fitch Ratings	7,500	
	Retail Rate Design Consultant	10,000	
	Standard & Poors	5,000	
072	**Industry Assoc. Assessment**		930
	Risk Insurance Management Society	750	
	WFOA, WPTA	180	
TOTAL EXPENSE	**Treasurer & Risk Management**		**$1,036,830**

PUBLIC UTILITY DISTRICT NO. 1 OF BENTON COUNTY
2018 Budget
By Department, Resource

Department 17 Purchasing/Contracts

Activity	Description	Detail	Amount
033	**Office Supplies and Expenses**		11,000
	Miscellaneous Office Supplies	1,000	
	Paper, Envelopes, Mailing Labels, Letterhead	10,000	
042	**Business Expense and Travel**		2,000
	Plant Tour - Okinite - MO	2,000	
043	**Training Expense & Travel**		7,000
	Contracts & Purchasing Training State DES - LT, LL, MO	3,000	
	ISM Seminar (Local) - LL, MO	500	
	L & I Training - MO, LT, LL	500	
	NIGP - Contract Training - MO	3,000	
044	**Other General Expenses**		1,565
	Advertising (A & E Notice, Vendor Notice, Bids, & RFPs)	1,000	
	Costco Membership	165	
	Small Works Administrative Fee	400	
072	**Industry Assoc. Assessment**		590
	ISM Membership Dues - LL, MO	360	
	NIGP Membership Dues - LL	40	
	NIGP Membership Dues (Base Agency Fee) MO	190	
TOTAL EXPENSE	**Purchasing/Contracts**		**$22,155**

ENGINEERING & POWER MANAGEMENT

TAB 6

PUBLIC UTILITY DISTRICT NO. 1 OF BENTON COUNTY
2018 Budget
Summary of Expense by Directorate

Engineering & Power Management

Department(s)		Totals
21	Engineering	10,615,248
22	Customer Engineering	870,630
45	Energy Programs	-96,131
46	Broadband	2,247,489
51	Power Management	96,152,204
Grand Total Expenses	**Engineering & Power Management**	$109,789,440

Directorate Budget by Department and Activity
2018 Budget Compared to 2017 Budget

Directorate	Engineering/Power Management

Department	Activity	2018 Budget	2017 Budget	Increase/ (Decrease)	% Increase/ (Decrease)
21 - Engineering	11 - All Other District Labor	723,266	716,259	7,007	1.0%
	12 - Materials & Supplies	2,112,050	1,847,069	264,981	14.3%
	18 - Misc Construction Expense	1,937,078		1,937,078	
	21 - Elec Construction Contracts	1,150,000	1,757,465	(607,465)	-34.6%
	33 - Office Supplies & Expenses	4,000	4,000	-	0.0%
	42 - Business Expense & Travel	14,800	15,300	(500)	-3.3%
	43 - Training Expense & Travel	18,000	16,500	1,500	9.1%
	45 - Subscriptions & Publications	500	500	-	0.0%
	61 - Professional Services	350,000	330,000	20,000	6.1%
	72 - Industry Assoc Assessments	15,130	22,330	(7,200)	-32.2%
	120 - Substation Xfrs & Regulators	1,384,477		1,384,477	
	121 - Substation Equip & Materials	1,065,969	788,530	277,439	35.2%
	122 - Line Devices	452,658	416,971	35,687	8.6%
	123 - Transformers & Related Items	948,000	848,400	99,600	11.7%
	125 - Land & Land Rights - Electric	265,320		265,320	
	127 - SCADA Communications Equipment	225,000	129,000	96,000	74.4%
	128 - SCADA Substation Equipment	15,000	15,000	-	0.0%
	132 - Office Equipment	1,000	1,000	-	0.0%
	545 - Other Electric Revenue	(67,000)		(67,000)	
21 - Engineering Total		**10,615,248**	**6,908,324**	**3,706,924**	**53.7%**
22 - Customer Engineering	10 - District Overtime Labor		7,000	(7,000)	-100.0%
	11 - All Other District Labor	770,080	722,737	47,343	6.6%
	14 - Small Tools & Materials	1,350	1,350	-	0.0%
	17 - Operation & Maintenance Exp	3,600	3,600	-	0.0%
	18 - Misc Construction Expense	18,100	18,100	-	0.0%
	29 - Personal Computer Supplies&Exp	1,000	1,000	-	0.0%
	33 - Office Supplies & Expenses	1,000	1,000	-	0.0%
	40 - Rents	16,000	16,000	-	0.0%
	42 - Business Expense & Travel	11,000	11,000	-	0.0%
	43 - Training Expense & Travel	22,500	19,500	3,000	15.4%
	61 - Professional Services	20,000	15,000	5,000	33.3%
	132 - Office Equipment	1,000	1,000	-	0.0%
	134 - Tools, Shop & Stores Equipment	5,000	5,000	-	0.0%
22 - Customer Engineering Total		**870,630**	**822,287**	**48,343**	**5.9%**
45 - Energy Programs	9 - Purchased Power	(2,929,932)	(1,651,259)	(1,278,673)	77.4%
	10 - District Overtime Labor	3,000		3,000	
	11 - All Other District Labor	363,435	449,487	(86,052)	-19.1%
	33 - Office Supplies & Expenses	3,000	1,000	2,000	200.0%
	42 - Business Expense & Travel	6,000	7,000	(1,000)	-14.3%
	43 - Training Expense & Travel	7,000	11,000	(4,000)	-36.4%
	45 - Subscriptions & Publications	150	150	-	0.0%
	61 - Professional Services	5,000	30,000	(25,000)	-83.3%
	72 - Industry Assoc Assessments	335	335	-	0.0%
	112 - Residential Conservation Exp	440,881	669,001	(228,120)	-34.1%
	113 - Commercial Conservation Exp	500,000	699,000	(199,000)	-28.5%
	114 - Industrial Conservation Expense	700,000		700,000	
	115 - Irrigation Conservation Exp	275,000	220,000	55,000	25.0%
	116 - Energy Savings Plan Exp	100,000		100,000	
	117 - Appliance Efficiency Program	250,000	125,000	125,000	100.0%
	118 - Low Income Conservation	180,000		180,000	
45 - Energy Programs Total		**(96,131)**	**560,714**	**(656,845)**	**-117.1%**
46 - Broadband	12 - Materials & Supplies	326,750	123,000	203,750	165.7%
	17 - Operation & Maintenance Exp	40,000	60,000	(20,000)	-33.3%
	20 - Off-the-Dock Labor	784,236	447,000	337,236	75.4%
	38 - Maint of Bldg & Improvements	7,500	7,500	-	0.0%
	40 - Rents	93,269	93,269	-	0.0%
	44 - Other General Expenses	845,734	740,704	105,030	14.2%
	131 - Structures & Improvements		150,000	(150,000)	-100.0%

Department	Activity	2018 Budget	2017 Budget	Increase/ (Decrease)	% Increase/ (Decrease)
46 - Broadband	136 - Communication Equipment	150,000	90,000	60,000	66.7%
46 - Broadband Total		**2,247,489**	**1,711,473**	**536,016**	**31.3%**
51 - Power Management	9 - Purchased Power	95,605,270	96,425,896	(820,626)	-0.9%
	11 - All Other District Labor	276,319	264,260	12,059	4.6%
	33 - Office Supplies & Expenses	1,500	1,500	-	0.0%
	42 - Business Expense & Travel	15,000	20,000	(5,000)	-25.0%
	43 - Training Expense & Travel	5,000	5,000	-	0.0%
	60 - Audit Examination - State	30,000	15,000	15,000	100.0%
	61 - Professional Services	203,000	151,000	52,000	34.4%
	70 - Civic & Service Organizations	140	140	-	0.0%
	72 - Industry Assoc Assessments	15,975	15,670	305	1.9%
51 - Power Management Total		**96,152,204**	**96,898,466**	**(746,262)**	**-0.8%**
Grand Total		**109,789,440**	**106,901,264**	**2,888,176**	**2.7%**

PUBLIC UTILITY DISTRICT NO. 1 OF BENTON COUNTY
2018 Budget
By Department, Resource

Department 21 Engineering

Activity	Description	Detail	Amount
011	**All Other District Labor**		723,266
	Labor - Broadband	25,443	
	Labor - Capital	63,343	
	Labor - Customer Accounting	7,899	
	Labor - Distribution	363,445	
	Labor - Distribution Plant	43,133	
	Labor - General Plant	3,538	
	Labor - Leave	101,257	
	Labor - Purchased Power	43,139	
	Labor - Transmission	41,071	
	Labor - Transmission Plant	30,998	
012	**Materials & Supplies**		2,112,050
	Distribution - Cable Replacement	100,000	
	Distribution - Customer Growth & System Improvement	966,487	
	Distribution - Five Year Plan of Service	295,254	
	Distribution - Inventory Issued for O&M (Non-capital)	100,000	
	Distribution - Repair & Replacements	168,309	
	Leslie Sub Feeder Getaways (Large System Improvement)	125,000	
	Orchard View Bay #2 Sub Feeder Getaways (Lrg System Impr)	350,000	
	Transmission - Repair & Replacements	7,000	
018	**Purchased Construction Expend**		1,937,078
	BPA McNary 115kV Point of Delivery	550,000	
	Transmission - BPA Interconnection Agreement - Leslie	217,078	
	Transmission - BPA Interconnection Agreement - Southridge Sub	600,000	
	Transmission - Hwy 240 to Canal Sub	20,000	
	Transmission - Sunset Rd to Dallas Rd	550,000	
021	**Construction Contracts Other EP**		1,150,000
	Dock Crew Distribution Cable Replacement	800,000	
	Dock Crew Joint Use Deficiency Corrections (590.10 Expense)	100,000	
	Dock Crew Joint Use Deficiency Corrections (Capital Construction)	250,000	
033	**Office Supplies and Expenses**		4,000
	Misc. Engineering Office Supplies	4,000	
042	**Business Expense and Travel**		14,800
	Cascade Users Conference - TF	1,500	
	Industry Trade Show - RD	2,000	
	NWPPA Engineering & Operations Conference - DB, EE	3,000	
	PPC/PNUCC/NoaNet - RD	4,000	
	Survalent User Conference - BS	2,500	
	WECC Compliance User Group - BS	1,800	

PUBLIC UTILITY DISTRICT NO. 1 OF BENTON COUNTY
2018 Budget
By Department, Resource

Department 21 Engineering

Activity	Description	Detail	Amount
043	**Training Expense & Travel**		18,000
	Technical Training - BS	3,000	
	Technical Training - BW	1,500	
	Technical Training - DB	3,000	
	Technical Training - EE	3,000	
	Technical Training - EP	3,000	
	Technical Training - RD	1,500	
	Technical Training - TF	3,000	
045	**Subscriptions & Publications**		500
	Subscriptions and Publications (IEEE, ANSI stds, etc.)	500	
061	**Professional Services**		350,000
	Distribution - Joint Use Pole Contact Consulting (590.10)	20,000	
	Distribution - Unanticipated Consulting Engineering Support	25,000	
	NERC/WECC Consulting - GDS #10-51-06	30,000	
	Substation - Nine Canyon Harmonic Analysis/Specifications	50,000	
	Substations - River System Capacitor Bank Analysis/Specifications	50,000	
	Transmission - BPA Interconnection Agreement - Southridge sub	5,000	
	Transmission - Hwy 240 to Canal sub	25,000	
	Transmission - Sunset Rd to Dallas Rd	145,000	
072	**Industry Assoc. Assessment**		15,130
	IEEE Membership - BS, RD, EP, TF, EE, DB	1,200	
	Miscellaneous	100	
	Notary Renewals	250	
	PE Licenses & Renewals (5) $116 every 2 yrs ea	580	
	Smart Electric Power Alliance (SEPA)	5,000	
	WSU Power Engineering Program	8,000	
120	**SubstationTransformers & Regulat**		1,384,477
	New Substation - Leslie	1,384,477	
121	**Substation Equip,Material & Exp**		1,065,969
	Berrian Sub - 5kV Breaker Addition	50,000	
	Breaker Retrofit - Vista #2	53,156	
	Feeder Relay Upgrade - Ely #1	16,000	
	Feeder Relay Upgrade - Ely #2	16,000	
	New Substation - Leslie	785,813	
	Power Quality Metering - SEL-735 meters	31,950	
	Substation Inventory Issued for O&M (Non-capital)	100,000	
	Substation Misc. Aux. Equip., Relays/Controls	13,050	

PUBLIC UTILITY DISTRICT NO. 1 OF BENTON COUNTY
2018 Budget
By Department, Resource

Department 21 Engineering

Activity	Description	Detail	Amount
122	**Line Devices**		452,658
	Distribution - Customer Growth & System Improvement	143,881	
	Distribution - Five Year Plan of Service	87,507	
	Distribution - Inventory Issued for O&M (Non-capital)	50,000	
	Distribution - Repair & Replacement	51,270	
	Leslie Sub Feeder Getaways	20,000	
	Transmission - Switch Additions/Replacements	100,000	
123	**Transformers & Related Items**		948,000
	Transformers and Related Items	948,000	
125	**Electric Plant Land&Land Right**		265,320
	Transmission-Sunset Rd to Dallas Rd (DNR Permitting)	265,320	
127	**SCADA Communications Equipment**		225,000
	Distribution Automation - Line Regulator Comm.	210,000	
	Substation Communications Equipment (Routers/Switches)	15,000	
128	**SCADA Substation Equipment**		15,000
	Substation RTU	15,000	
132	**Office Equipment**		1,000
	Miscellaneous Office Furniture	1,000	
545	**Other Electric Revenue**		-67,000
	Joint Use Deficiency Corrections - Pole Attachers Reimbursements	-67,000	
TOTAL EXPENSE Engineering			**$10,615,248**

PUBLIC UTILITY DISTRICT NO. 1 OF BENTON COUNTY
2018 Budget
By Department, Resource

Department 22 Customer Engineering

Activity	Description	Detail	Amount
011	**All Other District Labor**		770,080
	Labor - Capital	146,320	
	Labor - Distribution	213,139	
	Labor - Distribution Plant	292,615	
	Labor - General Plant	762	
	Labor - Leave	107,811	
	Labor - Transmission	2,460	
	Labor - Transmission Plant	6,973	
014	**Shop Expense-Small Tools & Matl**		1,350
	GPS Batteries - Replacement/Purchase	200	
	GPS Cables - Replacement/Purchase	200	
	Miscellaneous Tools, Equipment	500	
	Training/Instructional Manuals & Publications	450	
017	**Operation & Maintenance Exp.**		3,600
	Equipment Maintenance/Repair	500	
	Miscellaneous Form Printing	500	
	O&M Related Permit Fees	500	
	Scanning Services	1,000	
	Unplanned O&M Expenses	500	
	WA State Ref. Network - Annual Mtnce for VRS Net (GPS Signals)	600	
018	**Purchased Construction Expend**		18,100
	New Permits (Crossing, Railroad, etc)	15,000	
	Survey Supplies (Stakes, Flags, etc)	600	
	Title Reports for Construction Projects	2,500	
029	**Personal Computer Supplies & Exp**		1,000
	Printer / Plotter Paper	1,000	
033	**Office Supplies and Expenses**		1,000
	Labeling & Binding Supplies	1,000	
040	**Rents**		16,000
	Maintenance Crossing Permits (Railroad, DOT, etc)	8,000	
	Pole Contact Fee (us on their poles)	8,000	
042	**Business Expense and Travel**		11,000
	Design Software User Group - DD Tech	3,000	
	Hi-Line Wood Pole Design Conference - DD Tech	2,000	
	NWPPA E&O - MI, DD Tech	4,000	
	Trimble Dimensions GPS Conference - Eng Tech	2,000	

PUBLIC UTILITY DISTRICT NO. 1 OF BENTON COUNTY
2018 Budget
By Department, Resource

Department 22 Customer Engineering

Activity	Description	Detail	Amount
043	**Training Expense & Travel**		22,500
	NESC code update or other Advanced Tech Training - DS, CB, SE	3,000	
	NWPPA Leadership Training - MI	3,000	
	NWPPA Staking Certification Courses - CB	7,500	
	Technical Training - TA, CM	3,000	
	Technical Training Class - JV, NL	3,000	
	Training Admin Staff - RW, JW	3,000	
061	**Professional Services**		20,000
	Surveying for Capital Construction	10,000	
	Surveying for O&M Support	10,000	
132	**Office Equipment**		1,000
	Office Furniture	1,000	
134	**Tools, Shop & Stores Equipment**		5,000
	GPS, Staking or Other Related Tools and Equipment	5,000	
TOTAL EXPENSE	**Customer Engineering**		**$870,630**

PUBLIC UTILITY DISTRICT NO. 1 OF BENTON COUNTY
2018 Budget
By Department, Resource

Department 45 Energy Programs

Activity	Description	Detail	Amount
009	**Purchased Power**		-2,929,932
	EEI Reimbursement - Performance Payment	-433,051	
	EEI Reimbursement - Rebates	-2,470,881	
	PTCS Reimbursement	-26,000	
010	**District Overtime Labor**		3,000
	Labor - Overtime	3,000	
011	**All Other District Labor**		363,435
	Labor - Conservation Program	276,731	
	Labor - Customer Accounting	32,660	
	Labor - Leave	50,881	
	Labor - Purchased Power	3,163	
033	**Office Supplies and Expenses**		3,000
	Audit Field Materials (Flow Meter, Camera, Protective Clothing)	3,000	
042	**Business Expense and Travel**		6,000
	BPA Annual Conservation Mtgs - New Staffer, Monson, Carsten, Fischer, Bergu	3,000	
	BPA Conservtion Mtgs - Mapes	3,000	
043	**Training Expense & Travel**		7,000
	Conservation - Frost	2,000	
	Misc - Philipp, Frost, Carstens, Fischer, Bergum	5,000	
045	**Subscriptions & Publications**		150
	Subscriptions and Publications- Home Energy Mag.	150	
061	**Professional Services**		5,000
	Professional Services (EES CPA Audit work, Voltage Op, Council)	5,000	
072	**Industry Assoc. Assessment**		335
	Home Builders Association Dues	335	
112	**Residential Conservation Expense**		440,881
	Residential Conservation Expense	440,881	
113	**Commercial Conservation Expense**		500,000
	Commercial Conservation Expense	500,000	
114	**Energy Smart Reimbursable Expense**		700,000
	Industrial Conservation Expense	700,000	
115	**Irrigation Conservation Expense**		275,000
	Agriculture/Irrigation Conservation Expense	275,000	
116	**Energy Savings Plan Reimb Expense**		100,000
	Non Federally Funded	100,000	

PUBLIC UTILITY DISTRICT NO. 1 OF BENTON COUNTY
2018 Budget
By Department, Resource

Department 45 Energy Programs

Activity	Description	Detail	Amount
117	**Appliance Efficiency Program Expense**		250,000
	LED Buy-Down in Stores(Costco/HomeDepot),Wtr Heaters, Showerheads etc.	250,000	
118	**Low Income Conservation Expense**		180,000
	Residential CAC Low Income Program	80,000	
	Residential District Low Income Program	100,000	
TOTAL EXPENSE	**Energy Programs**		**($96,131)**

PUBLIC UTILITY DISTRICT NO. 1 OF BENTON COUNTY
2018 Budget
By Department, Resource

Department 46 Broadband

Activity	Description	Detail	Amount
012	**Materials & Supplies**		326,750
	Airflow Spoiler Project 2018	31,750	
	Conduit and Misc. New Developments	20,000	
	Fiber Backbone, Laterals, Customers	175,000	
	Sunheaven to Prosser Loop	100,000	
017	**Operation & Maintenance Exp.**		40,000
	Paramount - After Hrs Emergency On-Site Maintenance -Fiber Restoration	40,000	
020	**Off-the-Dock Labor**		784,236
	Airflow Spoiler Project 2018	34,236	
	Fiber Backbone, Laterals, Customers	700,000	
	Joint Use Audit Corrective Actions	50,000	
038	**Maint of Bldg & Improvements**		7,500
	Maintenance Expense (Nodes and Building)	7,500	
040	**Rents**		93,269
	BPA Dark Fiber Lease (BPA 01TX-10704/BPUD #01-41-05)	4,000	
	City of Richland 12-46-11 - Fiber Lease - 5 Towers	16,200	
	City of Richland 13-46-02 - Fiber Lease - 4 Towers	23,184	
	City of Richland 14-46-06 - Dark Fiber Lease	5,213	
	City of Richland 15-46-04 - Fiber Optic Cable Lease - GWW & Knight St.	3,519	
	City of Richland 15-46-07 - 2800 Polar Way Preferred Freezer	1,303	
	Energy NW - (2) Dark Fiber-Ashe Facility to POS 10-46-07, Line #1	3,050	
	Energy NW Facility - Misc Svcs.- Rack Units Contract 10-46-07, Line #2	1,800	
	Franklin PUD Dark Fiber Lease - Contract 13-46-04	15,480	
	Pole Contact Fees - COR	2,000	
	Verizon Colocation Space and DC Power - Contract 10-46-12	17,520	
044	**Other General Expenses**		845,734
	Franklin PUD Recurring Transport Charges	2,200	
	NCS Contract 16-46-01; NoaNet Labor Allocation to Capital	155,200	
	NCS Contract 16-46-01; NoaNet Labor Allocation to O&M	620,798	
	NoaNet Contract 10-46-11 - APEL to Sequim Bay - Gigabit E ($3,928 x 12)	47,136	
	NoaNet Contract 10-46-13 - Internet Access via Franklin POP ($1,260 x 12 plus	16,200	
	NoaNet Contract 14-46-02 - CALEA Hosted Services	4,200	
136	**Communication Equipment**		150,000
	Core Electronics Door Alarms, UPS, HVAC, DC Plan, MPLS Switches	75,000	
	Premise Electronics	75,000	
TOTAL EXPENSE Broadband			**$2,247,489**

PUBLIC UTILITY DISTRICT NO. 1 OF BENTON COUNTY
2018 Budget
By Department, Resource

Department 51 Power Management

Activity	Description	Detail	Amount
009	**Purchased Power**		95,605,270
	Ancillary Services (includes TEA Scheduling & Risk Management)	1,544,937	
	BPA Prepay Credit	-161,256	
	BPA Transmission	9,101,268	
	BPA Transmission Ancillary Costs	1,864,147	
	Frederickson CT Fixed Expense	7,577,872	
	Frederickson Variable Expense	3,166,106	
	GTA Delivery Charge	14,400	
	Irrigation Mitigation	-3,671,933	
	Load Shaping	-503,160	
	Non-Slice (Block)	-5,330,299	
	Other Purchases - Options Premium	350,000	
	Other Purchases - Power	6,748,420	
	Packwood	380,544	
	Renewable Energy Credit Purchases	432,390	
	Renewables (Nine Canyon, White Creek)	3,617,091	
	REP Refund (BPA)	-2,196,036	
	Tier 1 Composite Block	37,785,235	
	Tier 1 Composite Slice	34,869,544	
	Use of Facilities Benton REA (Sunheaven 2)	16,000	
011	**All Other District Labor**		276,319
	Labor - Conservation Program	38,947	
	Labor - Customer Accounting	21,938	
	Labor - Leave	38,685	
	Labor - Purchased Power	176,749	
033	**Office Supplies and Expenses**		1,500
	Office Supplies	1,500	
042	**Business Expense and Travel**		15,000
	BPA, PPC, TEA, SIG, JSOC, PNUCC - Johnson	15,000	
043	**Training Expense & Travel**		5,000
	NWPPA, APPA, BPA, AMA - Johnson, Dykes, Bergum	5,000	
060	**Audit Examination - State**		30,000
	I-937 SAO Audit Examination Fees	30,000	
061	**Professional Services**		203,000
	Power Contracting, REC PPA, Legal, RMC Audit	25,000	
	Slice Implementation Group Assessment via PPC	10,000	
	TEA Consulting	168,000	
070	**Civic & Service Organizations**		140
	Kiwanis - Bergum	140	

PUBLIC UTILITY DISTRICT NO. 1 OF BENTON COUNTY
2018 Budget
By Department, Resource

Department 51 Power Management

Activity	Description	Detail	Amount
072	**Industry Assoc. Assessment**		15,975
	APPA - DEED Program	9,000	
	GMEI Maintenance Fee	125	
	OATI Web Registery Fee	350	
	PPC Slice Assessment Cash Call	5,000	
	WECC WREGIS Dues and Fees	1,500	
TOTAL EXPENSE	**Power Management**		**$96,152,204**

OPERATIONS

TAB 6

PUBLIC UTILITY DISTRICT NO. 1 OF BENTON COUNTY
2018 Budget
Summary of Expense by Directorate

Operations

Department(s)		Totals
15	IT - Infrastructure	2,232,065
18	IT - Applications	2,120,542
31	Operations	982,815
32	Supt. Of Transmission & Distribution	4,551,635
33	Supt. Of Operations	570,010
34	Meter Shop	796,544
35	Transformer Shop	838,362
37	Automotive Shop	756,568
38	Supt. Of Support Services	2,224,204
39	Warehouse	142,650
42	Prosser Branch	707,362
Grand Total Expenses	**Operations**	$15,922,757

Directorate Budget by Department and Activity
2018 Budget Compared to 2017 Budget

Directorate	Operations

Department	Activity	2018 Budget	2017 Budget	Increase/ (Decrease)	% Increase/ (Decrease)
15 - IT Infrastructure	10 - District Overtime Labor	2,500	5,000	(2,500)	-50.0%
	11 - All Other District Labor	653,115	539,076	114,039	21.2%
	25 - Maintenance of Software	246,000	168,800	77,200	45.7%
	26 - Computer Hardware & Equip Exp	47,000	47,000	-	0.0%
	27 - Personal Computer Software	22,500	19,400	3,100	16.0%
	28 - Personal Computer O&M Costs	123,700	163,700	(40,000)	-24.4%
	29 - Personal Computer Supplies&Exp	11,000	11,000	-	0.0%
	33 - Office Supplies & Expenses	2,500	2,000	500	25.0%
	42 - Business Expense & Travel	18,000	15,000	3,000	20.0%
	43 - Training Expense & Travel	19,500	17,000	2,500	14.7%
	45 - Subscriptions & Publications	250	250	-	0.0%
	50 - Telephone & Answering Services	79,500	77,500	2,000	2.6%
	61 - Professional Services	77,000	30,000	47,000	156.7%
	136 - Communication Equipment	300,000	150,000	150,000	100.0%
	137 - Capitalized Computer Software	27,000	55,000	(28,000)	-50.9%
	138 - Computer Equipment	602,500	365,000	237,500	65.1%
15 - IT Infrastructure Total		**2,232,065**	**1,665,726**	**566,339**	**34.0%**
18 - IT Applications	11 - All Other District Labor	1,068,502	1,024,999	43,503	4.2%
	17 - Operation & Maintenance Exp	63,900	57,900	6,000	10.4%
	25 - Maintenance of Software	642,890	640,278	2,612	0.4%
	26 - Computer Hardware & Equip Exp	19,000		19,000	
	27 - Personal Computer Software	6,500	7,000	(500)	-7.1%
	42 - Business Expense & Travel	22,500	16,300	6,200	38.0%
	43 - Training Expense & Travel	22,000	17,000	5,000	29.4%
	45 - Subscriptions & Publications	250	250	-	0.0%
	61 - Professional Services	179,000	429,000	(250,000)	-58.3%
	72 - Industry Assoc Assessments		175	(175)	-100.0%
	137 - Capitalized Computer Software	96,000	86,000	10,000	11.6%
	138 - Computer Equipment		48,000	(48,000)	-100.0%
18 - IT Applications Total		**2,120,542**	**2,326,902**	**(206,360)**	**-8.9%**
31 - Operations	11 - All Other District Labor	834,971	808,299	26,672	3.3%
	27 - Personal Computer Software	2,000	2,000	-	0.0%
	33 - Office Supplies & Expenses	4,000	4,000	-	0.0%
	42 - Business Expense & Travel	10,100	10,100	-	0.0%
	43 - Training Expense & Travel	4,500	4,000	500	12.5%
	45 - Subscriptions & Publications	600	600	-	0.0%
	61 - Professional Services	80,990	119,000	(38,010)	-31.9%
	72 - Industry Assoc Assessments	930	930	-	0.0%
	104 - Other Employee Costs	39,724	39,724	-	0.0%
	132 - Office Equipment	5,000	5,000	-	0.0%
31 - Operations Total		**982,815**	**993,653**	**(10,838)**	**-1.1%**
32 - Supt of Transm & Distribtution	10 - District Overtime Labor	475,000	460,871	14,129	3.1%
	11 - All Other District Labor	2,784,465	2,694,190	90,275	3.4%
	14 - Small Tools & Materials	68,600	66,520	2,080	3.1%
	17 - Operation & Maintenance Exp	30,500	30,000	500	1.7%
	18 - Misc Construction Expense	60,000	60,000	-	0.0%
	19 - Tree Trimming - Contract	605,000	680,000	(75,000)	-11.0%
	20 - Off-the-Dock Labor	190,000	190,000	-	0.0%
	21 - Elec Construction Contracts	165,000	160,000	5,000	3.1%
	39 - Maint of Equipment	16,770	15,000	1,770	11.8%
	42 - Business Expense & Travel	9,100	6,600	2,500	37.9%
	43 - Training Expense & Travel	49,400	49,570	(170)	-0.3%
	50 - Telephone & Answering Services	7,400	6,000	1,400	23.3%
	61 - Professional Services	50,000	50,000	-	0.0%
	104 - Other Employee Costs	40,400	55,720	(15,320)	-27.5%
	134 - Tools, Shop & Stores Equipment		15,000	(15,000)	-100.0%
32 - Supt of Transm & Distribtution Total		**4,551,635**	**4,539,471**	**12,164**	**0.3%**
33 - Supt of Operations	10 - District Overtime Labor	18,879	18,330	549	3.0%

Department	Activity	2018 Budget	2017 Budget	Increase/ (Decrease)	% Increase/ (Decrease)
33 - Supt of Operations	11 - All Other District Labor	153,587	138,084	15,503	11.2%
	17 - Operation & Maintenance Exp	45,500	45,500	-	0.0%
	40 - Rents	220,660	219,549	1,111	0.5%
	43 - Training Expense & Travel	19,000	19,000	-	0.0%
	50 - Telephone & Answering Services	112,384	97,384	15,000	15.4%
33 - Supt of Operations Total		**570,010**	**537,847**	**32,163**	**6.0%**
34 - Meter Shop	10 - District Overtime Labor	25,853	25,853	-	0.0%
	11 - All Other District Labor	532,281	519,104	13,177	2.5%
	14 - Small Tools & Materials	4,000	7,500	(3,500)	-46.7%
	17 - Operation & Maintenance Exp	6,600	6,600	-	0.0%
	39 - Maint of Equipment	10,000	10,000	-	0.0%
	42 - Business Expense & Travel	2,500	2,500	-	0.0%
	43 - Training Expense & Travel	14,810	14,810	-	0.0%
	45 - Subscriptions & Publications	500	500	-	0.0%
	124 - Meters & Related Items	160,000	159,075	925	0.6%
	127 - SCADA Communications Equipment	5,000	5,000	-	0.0%
	128 - SCADA Substation Equipment	5,000	5,000	-	0.0%
	135 - Laboratory & Test Equipment	25,000	17,000	8,000	47.1%
	136 - Communication Equipment	5,000	5,000	-	0.0%
34 - Meter Shop Total		**796,544**	**777,942**	**18,602**	**2.4%**
35 - Transformer Shop	10 - District Overtime Labor	33,085	32,123	962	3.0%
	11 - All Other District Labor	573,799	568,723	5,076	0.9%
	14 - Small Tools & Materials	8,000	8,000	-	0.0%
	17 - Operation & Maintenance Exp	126,678	125,000	1,678	1.3%
	18 - Misc Construction Expense	10,000	10,000	-	0.0%
	42 - Business Expense & Travel	4,500	4,500	-	0.0%
	43 - Training Expense & Travel	12,800	12,800	-	0.0%
	45 - Subscriptions & Publications	500	500	-	0.0%
	135 - Laboratory & Test Equipment	69,000		69,000	
35 - Transformer Shop Total		**838,362**	**761,646**	**76,716**	**10.1%**
37 - Automotive Shop	10 - District Overtime Labor	6,890	6,538	352	5.4%
	11 - All Other District Labor	320,578	308,498	12,080	3.9%
	14 - Small Tools & Materials	12,100	11,100	1,000	9.0%
	15 - Transportation Expense-Gas&Oil	225,000	225,000	-	0.0%
	16 - Transportation Exp-Repair&Main	177,000	165,000	12,000	7.3%
	17 - Operation & Maintenance Exp	1,000	1,000	-	0.0%
	39 - Maint of Equipment	6,000	5,000	1,000	20.0%
	42 - Business Expense & Travel	1,800	1,800	-	0.0%
	43 - Training Expense & Travel	6,200	6,200	-	0.0%
37 - Automotive Shop Total		**756,568**	**730,136**	**26,432**	**3.6%**
38 - Support Services	10 - District Overtime Labor	18,590	17,300	1,290	7.5%
	11 - All Other District Labor	456,314	444,659	11,655	2.6%
	14 - Small Tools & Materials	3,000	3,000	-	0.0%
	17 - Operation & Maintenance Exp	15,000	12,500	2,500	20.0%
	23 - Environmental	22,000	22,000	-	0.0%
	27 - Personal Computer Software	2,500	2,300	200	8.7%
	37 - Grounds Care	93,000	82,500	10,500	12.7%
	38 - Maint of Bldg & Improvements	207,500	210,500	(3,000)	-1.4%
	39 - Maint of Equipment	5,000	5,000	-	0.0%
	42 - Business Expense & Travel	3,600	3,600	-	0.0%
	43 - Training Expense & Travel	11,400	10,200	1,200	11.8%
	45 - Subscriptions & Publications	500	500	-	0.0%
	51 - Water,Garbage,Irrigation&Other	60,000	60,000	-	0.0%
	61 - Professional Services	11,000	11,000	-	0.0%
	104 - Other Employee Costs	1,800	1,800	-	0.0%
	131 - Structures & Improvements	251,000	356,000	(105,000)	-29.5%
	133 - Transportation Equipment	1,062,000	653,000	409,000	62.6%
38 - Support Services Total		**2,224,204**	**1,895,859**	**328,345**	**17.3%**
39 - Warehouse	13 - Store Expense - Non Labor	25,000	25,000	-	0.0%
	14 - Small Tools & Materials	4,000	4,000	-	0.0%
	17 - Operation & Maintenance Exp	78,000	78,000	-	0.0%
	42 - Business Expense & Travel	1,500	1,500	-	0.0%
	43 - Training Expense & Travel	5,150	5,150	-	0.0%
	104 - Other Employee Costs	29,000	29,000	-	0.0%

Department	Activity	2018 Budget	2017 Budget	Increase/ (Decrease)	% Increase/ (Decrease)
39 - Warehouse Total		**142,650**	**142,650**	**-**	**0.0%**
42 - Prosser Branch	10 - District Overtime Labor	46,095	44,652	1,443	3.2%
	11 - All Other District Labor	549,887	553,269	(3,382)	-0.6%
	14 - Small Tools & Materials	6,000	6,000	-	0.0%
	15 - Transportation Expense-Gas&Oil	500	500	-	0.0%
	16 - Transportation Exp-Repair&Main	2,500	2,500	-	0.0%
	18 - Misc Construction Expense	7,500	7,500	-	0.0%
	30 - Customer Service Expenses	9,950	9,250	700	7.6%
	33 - Office Supplies & Expenses	2,500	2,500	-	0.0%
	37 - Grounds Care	2,000	5,500	(3,500)	-63.6%
	38 - Maint of Bldg & Improvements	20,000	32,000	(12,000)	-37.5%
	39 - Maint of Equipment	1,000	1,000	-	0.0%
	42 - Business Expense & Travel	2,000	2,000	-	0.0%
	43 - Training Expense & Travel	3,000	3,000	-	0.0%
	45 - Subscriptions & Publications	200	200	-	0.0%
	51 - Water,Garbage,Irrigation&Other	13,000	13,000	-	0.0%
	70 - Civic & Service Organizations	350	350	-	0.0%
	131 - Structures & Improvements	40,880	20,000	20,880	104.4%
42 - Prosser Branch Total		**707,362**	**703,221**	**4,141**	**0.6%**
Grand Total		**15,922,757**	**15,075,053**	**847,704**	**5.6%**

PUBLIC UTILITY DISTRICT NO. 1 OF BENTON COUNTY
2018 Budget
By Department, Resource

Department 15 IT - Infrastructure

Activity	Description	Detail	Amount
010	**District Overtime Labor**		2,500
	Labor - Overtime	2,500	
011	**All Other District Labor**		653,115
	Labor - Admin General	412,727	
	Labor - Distribution	11,925	
	Labor - Distribution Plant	27	
	Labor - General Plant	137,000	
	Labor - Leave	91,436	
025	**Maintenance of Software**		246,000
	Accellion (FTP Software)	12,000	
	Accellops	8,500	
	Acronis (Desktop/Server Imaging)	2,200	
	Archive Social	1,800	
	Azure ID Badging Software	1,000	
	Brava Reader	500	
	Cisco ISE Anyconnect	3,200	
	Cradlepoint Cloud Mngr	4,500	
	Fax Server	1,300	
	Google Apps (Spam Blocker)	5,000	
	Kemp Load Balancers	1,500	
	MaaS 360	4,800	
	Microcall (Phone Call Logging)	1,200	
	Nessus (Network Analysis)	14,000	
	NetApp (Kennewick)	9,000	
	NetApp Software Renewal (Prosser)	10,000	
	OEL for Existing	3,500	
	Phone Q/A Software	3,500	
	Power Broker (Desktop Security)	1,500	
	RSA (Network Authentication)	1,800	
	Secret Server	1,000	
	SmartNet (Ironport, Firepower)	25,000	
	SmartNet (Phone)	17,500	
	Solar Winds (Network Monitoring)	19,000	
	Solar Winds (Storage, VM)	4,200	
	Third Tier Backup Software (Veeam)	13,000	
	Trackit (Help Desk Ticket Tracker)	3,200	
	Trend (Antivirus)	14,000	
	Varonis	2,500	
	VMWare (Server Virtualization)	40,000	
	VMWare (VDI)	13,000	
	Wallboard	1,800	
	WinMagic (Disk Encryption)	1,000	

Department 15 IT - Infrastructure

Activity	Description	Detail	Amount
026	**Computer Hardware & Equip Exp**		47,000
	Fax for Ops (DS)	1,000	
	General PC needs (HD, Mouse, DVD Burner, Cables, etc)	5,000	
	Mobile Wireless in Trucks - 4	4,000	
	Printer for Ops Dispatch Coord (SD)	3,000	
	Projector - P. Ball's office	5,000	
	Replacement Desktop - 8	10,000	
	Replacement Laptops - 3	7,500	
	Replacement Monitors - 20	2,500	
	Tablets (iPad) - 7	5,000	
	Zero Clients - 10	4,000	
027	**Personal Computer Software**		22,500
	Misc Upgrades and Software	7,500	
	MSDN (Kilgore, Fuher, Walsh)	2,000	
	VDA	13,000	
028	**Personal Computer O&M Costs**		123,700
	Cisco SmartNets	65,000	
	GoTo Meeting	8,000	
	MFP Maintenance - Engineering	10,000	
	MFP Maintenance - Executive	1,500	
	MFP Maintenance - Finance/CS	12,000	
	MFP Maintenance - Operations	8,000	
	MFP Maintenance - Power Mgmt	5,000	
	MFP Maintenance - Prosser	1,000	
	Printer Maintenance - Engr	2,200	
	Printer Maintenance - Executive	500	
	Printer Maintenance - Finance/CS	500	
	Printer Maintenance - IT	2,500	
	Printer Maintenance - Operations	2,000	
	Printer Maintenance - Power Mgmt	500	
	Printer Maintenance - Prosser	1,000	
	Records Scanner	1,000	
	UPS Maintenance	3,000	
029	**Personal Computer Supplies & Exp**		11,000
	Engineering	3,500	
	Executive	1,500	
	Finance/CS	800	
	IT	500	
	Operations	4,000	
	Power Mgmt	350	
	Prosser	350	
033	**Office Supplies and Expenses**		2,500
	Cisco Phones	2,500	

PUBLIC UTILITY DISTRICT NO. 1 OF BENTON COUNTY
2018 Budget
By Department, Resource

Department 15 IT - Infrastructure

Activity	Description	Detail	Amount
042	**Business Expense and Travel**		18,000
	IT Mgmt/Strategic Planning (Infrastructure Mgmt)	3,500	
	SAN/Vmware Conference (System Admin)	6,000	
	Security Conference (Network Engr)	6,000	
	TechMentor (IT Support Specialist)	2,500	
043	**Training Expense & Travel**		19,500
	IT Mgmt Training (Supr IT Infrastructure)	2,500	
	Security/Network Training (Network Engr)	7,500	
	Storage /VMWare Training (System Administrator)	7,000	
	Windows 10 (IT Support Specialist)	2,500	
045	**Subscriptions & Publications**		250
	Subscriptions/Publications	250	
050	**Telephone & Answering Services**		79,500
	Aircard (IS) - 2	2,000	
	Aircards - Engr/Power Mgmt	5,000	
	Aircards - Operations (Cradlepoint) - 20	12,000	
	AVL - 85	23,000	
	Charter (Internet Service)	2,000	
	Commissioners	2,000	
	Frontier (includes all Non-Wireless Services)	33,500	
061	**Professional Services**		77,000
	Consulting for NetApp	10,000	
	Cybersecurity Assessment	45,000	
	Infrastructure Support	12,000	
	Phone System Support	10,000	
136	**Communication Equipment**		300,000
	Optics for Prosser Alternate Data Path	50,000	
	Sunheaven to Prosser Fiber Build	250,000	
137	**Capitalized Computer Software**		27,000
	Adobe Upgrade	10,000	
	Windows Datacenter	17,000	

PUBLIC UTILITY DISTRICT NO. 1 OF BENTON COUNTY
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Department 15 IT - Infrastructure

Activity	Description	Detail	Amount
138	**Computer Equipment**		602,500
	ASA 5545x Redundant Prosser	50,000	
	Data Loss Prevention	40,000	
	Hardware/Licenses for SCADA Network	5,000	
	Large Screen Monitors for Dispatch/Outage Mgmt	110,000	
	Multi Function Printers	7,500	
	Network Switches	10,000	
	SAN Upgrade Kennewick	160,000	
	UCS Blade Servers	20,000	
	UCS Replacement Kennewick	140,000	
	Umatilla Redundant Backhaul for SCADA and AMI	50,000	
	Wireless Access Points for Operations	10,000	
TOTAL EXPENSE IT - Infrastructure			**$2,232,065**

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Department 18 IT - Applications

Activity	Description	Detail	Amount
011	**All Other District Labor**		1,068,502
	Labor - Admin General	552,417	
	Labor - Customer Accounting	122,793	
	Labor - Distribution	182,112	
	Labor - General Plant	61,590	
	Labor - Leave	149,590	
017	**Operation & Maintenance Exp.**		63,900
	Benton County Aerial Imagery (Orthophotos)	6,000	
	Benton County Plat Imagery	900	
	Sensus Flexnet Meter Reading Fee	57,000	
025	**Maintenance of Software**		642,890
	Adobe Creative Cloud	800	
	Alden	4,400	
	AutoCAD Network License	5,000	
	Border States Barcoding fees	1,650	
	Businiess Intelligence Software	30,000	
	Cascade (Asset Management)	14,000	
	Crystal Server (DEV) Maintenance	100	
	Crystal Server (PROD) Maintenance	6,000	
	Embarcadero	1,200	
	Epicor	7,200	
	ESRI (GIS)	27,000	
	GPS	4,400	
	HireDesk	5,500	
	Kapish EasyLink	900	
	MilSoft (Distribution System Analysis)	12,000	
	NISC Monthly Recurring Costs	165,360	
	NISC Monthly Recurring Costs	84,240	
	NISC Monthly Recurring Costs	62,400	
	Oracle (Database, Partitioning, Tuning/Diagnostics)	90,000	
	Org Publisher	440	
	Osmose Ocalc Licenses (8)	3,200	
	PowerWorld Transimission Software	3,600	
	Quest Toad (Pro version x1)	585	
	Sensus Alarm Manager	4,000	
	Sensus RNI	45,600	
	SQL Server SA	7,000	
	Survalent (SCADA)	23,000	
	Toad (Std version x 3 for Analysts)	1,000	
	Toad DBA Suite	1,200	
	Toad for Data Analysts (1)	145	
	Toad for SQL Server	270	
	TRIM	25,000	
	Vehicle Management System Maintenance	3,000	
	V-OPS Server Enterprise Edition	2,700	

PUBLIC UTILITY DISTRICT NO. 1 OF BENTON COUNTY
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Department 18 IT - Applications

Activity	Description	Detail	Amount
026	**Computer Hardware & Equip Exp**		19,000
	Kiosks (2) - Lease Kennewick & Prosser	19,000	
027	**Personal Computer Software**		6,500
	Misc Upgrades and Software	5,000	
	Visual Studio Upgrade - 2	1,500	
042	**Business Expense and Travel**		22,500
	Business Intelligence Conference	3,000	
	Data Integration Conference	3,500	
	IT Mgmt/Strategic Planning (Apps Manager)	3,000	
	It Mgmt/Strategic Planning (IT Mgr)	5,000	
	NISC User Group (Analysts - 2)	4,000	
	Records Mgmt Conference (Analyst)	2,000	
	SCADA User Group (Analyst)	2,000	
043	**Training Expense & Travel**		22,000
	AppDev Training (Developers - 3)	2,000	
	BI Training (3)	6,000	
	Cyber Security/DR Training (IT Mgr)	3,000	
	ETL Training (Developers)	6,000	
	NWPPA Training (McMahon 2 classes)	3,000	
	Web Development Training (Developer)	2,000	
045	**Subscriptions & Publications**		250
	Subcriptions and Publications	250	
061	**Professional Services**		179,000
	AMI Enhanced Support	84,000	
	Consulting for CMEP Conversion for use with NISC	5,000	
	Crystal Reports Server Consulting	10,000	
	IT Strategic Plan Update Consulting	50,000	
	NISC Enhancements (Capital)	20,000	
	TRIM Support/Consulting	10,000	
137	**Capitalized Computer Software**		96,000
	Data Integration Tools (ETL)	45,000	
	Data Warehouse Database Licenses	40,000	
	Survalent ExpressDB Software License	11,000	
TOTAL EXPENSE IT - Applications			**$2,120,542**

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Department 31 Operations

Activity	Description	Detail	Amount
011	**All Other District Labor**		834,971
	Labor - Admin General	61,687	
	Labor - Automotive Shop	22,992	
	Labor - Capital	200,084	
	Labor - Customer Accounting	39,114	
	Labor - Distribution	379,659	
	Labor - Inventory	14,539	
	Labor - Leave	116,896	
027	**Personal Computer Software**		2,000
	Web Based Record Keeping Package for Safety Coordinator (588)	2,000	
033	**Office Supplies and Expenses**		4,000
	Office Supplies and Expense (588)	4,000	
042	**Business Expense and Travel**		10,100
	Distributech (588)	3,000	
	E&O Committee Safety Coordinator (588)	3,000	
	EECSC/EUSAC Quarterly Safety Coordinator (588)	1,100	
	Travel for Director/Asst (588)	3,000	
043	**Training Expense & Travel**		4,500
	Flagger Certification Training - Safety Coordinator	500	
	Training - Safety Coordinator (588)	1,000	
	Training Expense Director/Asst (588)	3,000	
045	**Subscriptions & Publications**		600
	Current Edition of NESC Codebooks (3) (588)	600	
061	**Professional Services**		80,990
	Communications Contracting (588)	25,000	
	Meter Testing	28,000	
	Safety Committee Consultant (588)	10,000	
	Strategic Planning (921)	10,000	
	Utility Analytics (921)	7,990	
072	**Industry Assoc. Assessment**		930
	Admin Professionals - Schlekewey (588)	50	
	IEEE - Frost (Associate Level) (588)	185	
	IEEE - Hunter (588)	200	
	ISA - Cramer (588)	220	
	National Arbor Day Foundation - Cramer (588)	75	
	PE License - Hunter (588)	150	
	UDIG - Inman (588)	50	

Department 31 Operations

Activity	Description	Detail	Amount
104	**Other Employee Benefits**		39,724
	CDL Endorsement Reimbursement - Ops (588)	1,224	
	First Aid Training Supplies (588)	1,000	
	Other Dist. Expense (588)	2,000	
	Safety Awareness (921)	16,000	
	Safety Lens Reimbursement Program (588)	3,000	
	Safety Supplies (588)	1,000	
	Special Safety Sessions (588)	2,000	
	Vivid Learning - Elec Worker Training/Admin Safety Training	13,500	
132	**Office Equipment**		5,000
	Office Furniture (391.05)	5,000	
TOTAL EXPENSE Operations			**$982,815**

Department 32 Supt. Of Transmission & Distribution

Activity	Description	Detail	Amount
010	**District Overtime Labor**		475,000
	Labor - Overtime	475,000	
011	**All Other District Labor**		2,784,465
	Labor - Admin General	3,862	
	Labor - Broadband	3,129	
	Labor - Capital	117,953	
	Labor - Customer Accounting	53,609	
	Labor - Distribution	933,568	
	Labor - Distribution Plant	1,259,890	
	Labor - Leave	389,825	
	Labor - Transmission	8,706	
	Labor - Transmission Plant	13,923	
014	**Shop Expense-Small Tools & Matl**		68,600
	Gas Drill (2) (588)	1,000	
	S&R Press (2) (588)	6,600	
	Small Tools Expense (588)	61,000	
017	**Operation & Maintenance Exp.**		30,500
	Maintenance of Transmission (560)	10,000	
	Other Dist Exp (588)	20,000	
	Safety Demo Trailer Maintenance (588)	500	
018	**Purchased Construction Expend**		60,000
	Other Dist Exp (361)	60,000	
019	**Tree Trimming - Contract**		605,000
	Herbicide (593.40)	1,000	
	Tree Replacement (588)	4,000	
	Tree Trimming-Contract (588)	600,000	
020	**Off-the-Dock Labor**		190,000
	Construction (361)	180,000	
	Pole Stubbing (361)	10,000	
021	**Construction Contracts Other EP**		165,000
	Fire Guard (560)	50,000	
	Pole Testing (593.10)	115,000	
039	**Maint Equip Office**		16,770
	Load Breaks (3) (588)	1,770	
	Maintenance of Tools (588)	15,000	
042	**Business Expense and Travel**		9,100
	Distributech (588)	2,000	
	E&O (2) (588)	2,500	
	Supt (588)	2,500	
	Tree Coordinator Business Exp (588)	2,100	

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Department 32 Supt. Of Transmission & Distribution

Activity	Description	Detail	Amount
043	**Training Expense & Travel**		49,400
	Lineman Rodeo (588)	2,500	
	NESC Training (2 Day Class) (588)	20,000	
	Training - Tree Coord Lineman, Foremen, Upgrade Foremen (588)	15,500	
	Training Expense Apprentices (2) (588)	11,400	
050	**Telephone & Answering Services**		7,400
	Locates (584)	7,400	
061	**Professional Services**		50,000
	Distribution System Inspection	40,000	
	Meter Repair (588)/Coordinated Electrical Repair (587.11)	10,000	
104	**Other Employee Benefits**		40,400
	FR Clothing - Rain Gear/New Hires (588)	3,500	
	FR Clothing Current Employees Line, Meter, Transformer. (588)	32,800	
	Gloves (588)	4,100	
TOTAL EXPENSE	**Supt. Of Transmission & Distribution**		**$4,551,635**

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Department 33 Supt. Of Operations

Activity	Description	Detail	Amount
010	**District Overtime Labor**		18,879
	Labor - Overtime	18,879	
011	**All Other District Labor**		153,587
	Labor - Capital	2,504	
	Labor - Customer Accounting	4,787	
	Labor - Distribution	114,419	
	Labor - Distribution Plant	10,375	
	Labor - Leave	21,502	
017	**Operation & Maintenance Exp.**		45,500
	Communication Expenses - Radios (588)	2,500	
	Doble Lease - Power Factor Test Set (592)	25,000	
	Doble Relay Test Set Maintenance (592)	12,000	
	Microwave Site(935)/Umatilla Power Bill (935.01)	6,000	
040	**Rents**		220,660
	800 MHz Usage Fee - BCES (588)	35,000	
	Badger Mtn Site AMI Fee (935)	6,500	
	DNR Billing - Jump Off Joe (935.02)	38,160	
	Finley Lease - Phillips Substation (588)	50,000	
	Microwave Circuit Billing - BCES (920)	35,000	
	Prosser Tower Site (935.03)	2,500	
	Rattlesnake Site Fee (588-PO 50116)	50,000	
	Umatilla Ground Lease (935.01)	3,500	
043	**Training Expense & Travel**		19,000
	Lead Dispatch (588)	3,000	
	Survalent Training (10) /Training for Back Up Dispatcher(s) (588)	14,000	
	Training for Dept Asst. (588)	2,000	
050	**Telephone & Answering Services**		112,384
	Call Center (588)	110,000	
	Kelley's Paging Service (2) (588)	384	
	Microwave Site Comm/Misc Expenses (935)	2,000	
TOTAL EXPENSE Supt. Of Operations			**$570,010**

PUBLIC UTILITY DISTRICT NO. 1 OF BENTON COUNTY
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Department 34 Meter Shop

Activity	Description	Detail	Amount
010	**District Overtime Labor**		25,853
	Labor - Overtime	25,853	
011	**All Other District Labor**		532,281
	Labor - Customer Accounting	38,552	
	Labor - Distribution	274,666	
	Labor - Distribution Plant	144,544	
	Labor - Leave	74,519	
014	**Shop Expense-Small Tools & Matl**		4,000
	Small Tool Expense (588)	4,000	
017	**Operation & Maintenance Exp.**		6,600
	Calibration of RFL and Weco Meter Test Boards (588)	1,300	
	O & M Expenses (597)	5,000	
	Support Package for RFL5800 (588)	300	
039	**Maint Equip Office**		10,000
	Other Dist Exp (597)	10,000	
042	**Business Expense and Travel**		2,500
	NW Meter Group and Hands On Relay Planning (588)	2,500	
043	**Training Expense & Travel**		14,810
	Apprentice	5,980	
	NW Meter School (588)	1,100	
	Power Quality (588)	2,000	
	Relay School (2) (588)	1,830	
	SEL-2032 Communication Processor Training (588)	1,900	
	Training - possibly Survalent (588)	2,000	
045	**Subscriptions & Publications**		500
	Subscriptions & Publications (588)	500	
124	**Meters and Related Items**		160,000
	Meters and Related Items, AMI Meters For Growth (370)	160,000	
127	**SCADA Communications Equipment**		5,000
	SCADA Radio (592)	5,000	
128	**SCADA Substation Equipment**		5,000
	SCADA Substation Equipment (592)	5,000	
135	**Laboratory & Test Equipment**		25,000
	CT Verification	25,000	
136	**Communication Equipment**		5,000
	800 MHz Radios (397)	5,000	

PUBLIC UTILITY DISTRICT NO. 1 OF BENTON COUNTY
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Department 34 Meter Shop

Activity	Description	Detail	Amount
TOTAL EXPENSE	**Meter Shop**		**$796,544**

PUBLIC UTILITY DISTRICT NO. 1 OF BENTON COUNTY
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Department 35 Transformer Shop

Activity	Description	Detail	Amount
010	**District Overtime Labor**		33,085
	Labor - Overtime	33,085	
011	**All Other District Labor**		573,799
	Labor - Admin General	308	
	Labor - Broadband	633	
	Labor - Capital	3,498	
	Labor - Distribution	394,903	
	Labor - Distribution Plant	94,125	
	Labor - Leave	80,332	
014	**Shop Expense-Small Tools & Matl**		8,000
	Small Tools (595)	8,000	
017	**Operation & Maintenance Exp.**		126,678
	Gloves, Mac's, Blankets, Rubber (592)	12,000	
	O&M Expense (592)	81,922	
	Oil Testing at Wind Farm (592)	9,333	
	SD Myer Oil Screening (592)	13,423	
	Substation Sterilization (592)	10,000	
018	**Purchased Construction Expend**		10,000
	Dist Plant (361)	10,000	
042	**Business Expense and Travel**		4,500
	Cascade Conference for 1 (592)	1,500	
	Codes Update - 5 Station Electricians (588)	3,000	
043	**Training Expense & Travel**		12,800
	Cooper Reg Workshop (588)	2,500	
	Doble Training Onsite (588)	2,500	
	Pesticide License/Refresher (588)	300	
	Recloser Training (588)	2,500	
	Reinhausen Tap Changer Workshop (588)	2,500	
	Waukesha Tap Changer Training (588)	2,500	
045	**Subscriptions & Publications**		500
	Subscriptions	500	
135	**Laboratory & Test Equipment**		69,000
	Recloser Test Set	59,000	
	Vacuum Bottle Test Set	10,000	
TOTAL EXPENSE Transformer Shop			**$838,362**

PUBLIC UTILITY DISTRICT NO. 1 OF BENTON COUNTY
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Department 37 Automotive Shop

Activity	Description	Detail	Amount
010	**District Overtime Labor**		6,890
	Labor - Overtime	6,890	
011	**All Other District Labor**		320,578
	Labor - Automotive Shop	271,696	
	Labor - Distribution	3,542	
	Labor - Inventory	459	
	Labor - Leave	44,881	
014	**Shop Expense-Small Tools & Matl**		12,100
	All Data (184.12)	2,100	
	General Tools (184.12)	3,000	
	Software Update (184.12)	7,000	
015	**Transportation Expense-Gas & Oil**		225,000
	Trans Exp Gas and Oil (184.11)	225,000	
016	**Transportation Exp-Repair/Main**		177,000
	Fire Extinguishers on Vehicles (184.12)	2,000	
	Transportation Exp (184.12)	165,000	
	Vehicle Detailing (184.12)	10,000	
017	**Operation & Maintenance Exp.**		1,000
	O&M Expense (588)	1,000	
039	**Maint Equip Office**		6,000
	Bio Digester (Filtration System for Wash Bay) (598.10)	2,500	
	Maint Agrmts for Pressure Washer, Compressor and Water Filter (184.12)	2,500	
	Trans Exp Other (184.12)	1,000	
042	**Business Expense and Travel**		1,800
	Business Travel Expense for Foreman and Mechanics (588)	1,800	
043	**Training Expense & Travel**		6,200
	Altec Aerial Training (588)	1,900	
	Automotive Training Group (at CBC) (588)	1,100	
	Cummings Training	1,600	
	Vehicle Motor Maint for 1 (588)	1,600	
TOTAL EXPENSE	**Automotive Shop**		**$756,568**

PUBLIC UTILITY DISTRICT NO. 1 OF BENTON COUNTY
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Department 38 Supt. Of Support Services

Activity	Description	Detail	Amount
010	**District Overtime Labor**		18,590
	Labor - Overtime	18,590	
011	**All Other District Labor**		456,314
	Labor - Admin General	65,691	
	Labor - Broadband	2,906	
	Labor - Customer Accounting	4,935	
	Labor - Distribution	81,032	
	Labor - Distribution Plant	4,627	
	Labor - Inventory	208,138	
	Labor - Leave	63,884	
	Labor - Production Plant	21,312	
	Labor - Transmission	3,789	
014	**Shop Expense-Small Tools & Matl**		3,000
	Small Tool Exp (588)	3,000	
017	**Operation & Maintenance Exp.**		15,000
	O&M Expense	2,500	
	Pole Line Sterilization (598.10 and 571.20)	12,500	
023	**Environmental**		22,000
	Hazardous Waste Disposal (588)	6,000	
	Transformer & Oil Disposal (588)	10,000	
	Universal Waste Disposal (588)	6,000	
027	**Personal Computer Software**		2,500
	MSDS Online (588)	2,500	
037	**Grounds Care**		93,000
	Admin Office (920)	25,000	
	General (A & G 920)	4,000	
	General (Other Dist Exp 588)	3,000	
	Operations (588)	25,000	
	Property Clean-Up (588)	4,000	
	Prosser (588)	13,000	
	Substations (588)	6,500	
	Tree Maintenance (598.10)	12,500	

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Department 38 Supt. Of Support Services

Activity	Description	Detail	Amount
038	**Maint of Bldg & Improvements**		207,500
	Carpet Cleaning (Admin 935)	5,000	
	Carpet Cleaning (Operations 588)	4,500	
	Fire Extinguishers (588)	2,000	
	Floor Mats (Admin 935)	3,000	
	Floor Mats (Operations 588)	8,000	
	General Maintenance (Admin 935)	22,000	
	General Maintenance (Operations 588)	22,000	
	HVAC (Admin 935)	20,000	
	HVAC (Operations 588)	12,000	
	Janitorial Services (Operations 588)	35,000	
	Janitorial Services (Prosser 920)	35,000	
	Painting (Operations 598.10)	6,000	
	Painting Admin (935)	6,000	
	Security (598.10, and Radio Sites)	22,000	
	Wireless Expansion (Operations 588)	5,000	
039	**Maint Equip Office**		5,000
	Maintenance (588)	5,000	
042	**Business Expense and Travel**		3,600
	Audit Disposal Facility (588)	1,500	
	Green House Gas Meeting (588)	500	
	Maint. Dept Business Travel Exp (588)	600	
	Supt of Support Svcs Business Travel (incl Fleet Mgrs qrtly) (588)	1,000	
043	**Training Expense & Travel**		11,400
	Hazwopper Training (588)	1,800	
	NWPPA Environmental Task Force (quarterly) (588)	2,200	
	PCB & XFR Oil Workshop (2) (588)	4,600	
	Pesticide License Renewal and Testing (588)	1,800	
	Washington Dept of Ecology (RCRA) (588)	1,000	
045	**Subscriptions & Publications**		500
	Subscriptions (588)	500	
051	**Water,Garbage,Irrigation & Other**		60,000
	Benton County Property Tax (935.00)	2,000	
	CID (920)	2,000	
	KID (920)	9,000	
	Water, Garbage, Irrigation, Other (920)	47,000	
061	**Professional Services**		11,000
	General (920)	4,000	
	Green House Gas (588)	3,000	
	Mech Engr Drawings (588)	4,000	
104	**Other Employee Benefits**		1,800
	Clothing/Shoes/Gloves (588)	1,800	

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Department 38 Supt. Of Support Services

Activity	Description	Detail	Amount
131	**Structures & Improvements**		251,000
	Asphalt Admin Drive Through & West Parking (390)	120,000	
	Ceiling Tiles - Auditorium and Commission Room(390)	10,000	
	Compressors & Dryers Units 2 (Admin) (390)	7,500	
	Concrete Pad - Ops (390.01)	8,500	
	Dry Fire System Building #3 & #2 Ops (390.01)	45,000	
	Kiosk Kennewick (390)	6,000	
	Kiosk Prosser (390.02)	10,000	
	Paint - Operations Dock Area (390.01)	12,000	
	Roof Repair Admin (390)	32,000	
133	**Transportation Equipment**		1,062,000
	Engineering Project Manager	40,000	
	Pool Vehicle - Electric (Admin)	28,000	
	Replace #123 - Power Mgmt Pick up	32,000	
	Replace #128 - Line Truck	340,000	
	Replace #161 - Foreman's Truck	114,000	
	Replace #162 - Transformer Shop Pick Up	48,000	
	Replace #34 - Transformer Shop Van	140,000	
	Replace Vehicle #171 - Service Truck	130,000	
	Underground Cable Puller	190,000	
TOTAL EXPENSE Supt. Of Support Services			**$2,224,204**

PUBLIC UTILITY DISTRICT NO. 1 OF BENTON COUNTY
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Department 39 Warehouse

Activity	Description	Detail	Amount
013	**Store Expense - Non Labor**		25,000
	Stores Exp Undistributed (163)	25,000	
014	**Shop Expense-Small Tools & Matl**		4,000
	Small Tools Expense (588)	4,000	
017	**Operation & Maintenance Exp.**		78,000
	Other Dist Exp (588)	30,400	
	Stores Exp Undistributed (163)	47,600	
042	**Business Expense and Travel**		1,500
	Bus. Travel Exp for Warehouse Foremen/Warehousemen/Dept Asst (588)	1,500	
043	**Training Expense & Travel**		5,150
	AMA (Admin Asst) (588)	2,000	
	Integrated Utility Solution (588)	2,000	
	Material Management (1) (588)	1,150	
104	**Other Employee Benefits**		29,000
	A&G (920)	4,300	
	Other Distribution Expense (588)	24,700	
TOTAL EXPENSE Warehouse			**$142,650**

PUBLIC UTILITY DISTRICT NO. 1 OF BENTON COUNTY
2018 Budget
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Department 42 Prosser Branch

Activity	Description	Detail	Amount
010	**District Overtime Labor**		46,095
	Labor - Overtime	46,095	
011	**All Other District Labor**		549,887
	Labor - Admin General	3,186	
	Labor - Capital	8,188	
	Labor - Cust Dist	127,824	
	Labor - Distribution	223,426	
	Labor - Distribution Plant	110,279	
	Labor - Leave	76,984	
014	**Shop Expense-Small Tools & Matl**		6,000
	Small Tools & Material (588)	6,000	
015	**Transportation Expense-Gas & Oil**		500
	Expense (184.11)	500	
016	**Transportation Exp-Repair/Main**		2,500
	Transportation Exp - Vehicle Maint Schedule (184.12)	2,500	
018	**Purchased Construction Expend**		7,500
	Construction Expense (361)	7,500	
030	**Customer Service Expenditures**		9,950
	Armored Car Service (903)	7,200	
	Customer Service Expenditures (901)	2,750	
033	**Office Supplies and Expenses**		2,500
	Office Supplies & Expenses (588)	2,500	
037	**Grounds Care**		2,000
	Grounds Care (parts) (598.10)	2,000	
038	**Maint of Bldg & Improvements**		20,000
	Maintenance Expense (920)	17,000	
	Sand Spreader (598.10)	3,000	
039	**Maint Equip Office**		1,000
	Equip Maintenance (588)	1,000	
042	**Business Expense and Travel**		2,000
	Business Expense & Travel (588)	2,000	
043	**Training Expense & Travel**		3,000
	CSR Credit and Collection (588)	1,500	
	NESC Training	1,500	
045	**Subscriptions & Publications**		200
	Subscriptions (588)	200	

PUBLIC UTILITY DISTRICT NO. 1 OF BENTON COUNTY
2018 Budget
By Department, Resource

Department 42 Prosser Branch

Activity	Description	Detail	Amount
051	**Water,Garbage,Irrigation & Other**		13,000
	Prosser Utilities (588)	13,000	
070	**Civic & Service Organizations**		350
	Chamber Dues for Branch Manager (920)	350	
131	**Structures & Improvements**		40,880
	Replace 3 AC Units (390.02)	25,000	
	Replace LED Wall Pack Units (390.02)	5,000	
	Warehouse and Shop Lights	10,880	
TOTAL EXPENSE Prosser Branch			**$707,362**

CUSTOMER PROGRAMS & SERVICES

TAB 6

PUBLIC UTILITY DISTRICT NO. 1 OF BENTON COUNTY
2018 Budget
Summary of Expense by Directorate

Customer Programs & Services

Department(s)		Totals
43	Marketing & Key Accounts	239,179
44	Customer Service	1,501,492
Grand Total Expenses	**Customer Programs & Services**	$1,740,671

Directorate Budget by Department and Activity
2018 Budget Compared to 2017 Budget

Directorate	Customer Service

Department	Activity	2018 Budget	2017 Budget	Increase/ (Decrease)	% Increase/ (Decrease)
43 - Marketing & Key Accounts	11 - All Other District Labor	187,004	181,940	5,064	2.8%
	33 - Office Supplies & Expenses	2,500	2,500	-	0.0%
	42 - Business Expense & Travel	4,500	4,500	-	0.0%
	43 - Training Expense & Travel	6,000	6,000	-	0.0%
	44 - Other General Expenses	10,000	10,000	-	0.0%
	45 - Subscriptions & Publications	200	200	-	0.0%
	61 - Professional Services	10,000	10,000	-	0.0%
	70 - Civic & Service Organizations	2,975	2,975	-	0.0%
	72 - Industry Assoc Assessments	4,500	4,500	-	0.0%
	119 - Public Information Expenses	4,000	4,000	-	0.0%
	200 - New Services Expenses	4,000	4,000	-	0.0%
	201 - New Product Expenses	3,500	3,500	-	0.0%
43 - Marketing & Key Accounts Total		**239,179**	**234,115**	**5,064**	**2.2%**
44 - Customer Service	10 - District Overtime Labor	27,769	32,473	(4,704)	-14.5%
	11 - All Other District Labor	1,048,341	1,143,820	(95,479)	-8.3%
	30 - Customer Service Expenses	399,732	461,432	(61,700)	-13.4%
	33 - Office Supplies & Expenses	15,000	15,000	-	0.0%
	39 - Maint of Equipment	3,000	3,000	-	0.0%
	42 - Business Expense & Travel	5,500	5,500	-	0.0%
	43 - Training Expense & Travel	2,000	2,000	-	0.0%
	72 - Industry Assoc Assessments	150	150	-	0.0%
44 - Customer Service Total		**1,501,492**	**1,663,375**	**(161,883)**	**-9.7%**
Grand Total		**1,740,671**	**1,897,490**	**(156,819)**	**-8.3%**

PUBLIC UTILITY DISTRICT NO. 1 OF BENTON COUNTY
2018 Budget
By Department, Resource

Department 43 Marketing & Key Accounts

Activity	Description	Detail	Amount
011	**All Other District Labor**		187,004
	Labor - Customer Accounting	158,193	
	Labor - Leave	28,811	
033	**Office Supplies and Expenses**		2,500
	Office Supplies and Expenses	2,500	
042	**Business Expense and Travel**		4,500
	Customer Service/Key Accounts - McAloon	2,000	
	Customer Service/Key Accounts - Sparks	2,000	
	Miscellaneous Travel - McAloon,Sparks	500	
043	**Training Expense & Travel**		6,000
	APPA, Customer Service - Sparks	2,000	
	APPA, NISC - McAloon	4,000	
044	**Other General Expenses**		10,000
	Other General Expenses	10,000	
045	**Subscriptions & Publications**		200
	Subscriptions	200	
061	**Professional Services**		10,000
	Customer Prepay Option, Customer Engagement	10,000	
070	**Civic & Service Organizations**		2,975
	Benton City Chamber of Commerce	100	
	Home Builders Association	375	
	Prosser Economic Development Association	2,500	
072	**Industry Assoc. Assessment**		4,500
	Columbia Snake River Irrigators Assoc.	4,500	
119	**Public Information Expenses**		4,000
	Events, Communications, Newsletters	4,000	
200	**New Services Expenditures**		4,000
	Demos	4,000	
201	**New Product Expenditures**		3,500
	Trade Shows, Events	3,500	
TOTAL EXPENSE	**Marketing & Key Accounts**		**$239,179**

PUBLIC UTILITY DISTRICT NO. 1 OF BENTON COUNTY
2018 Budget
By Department, Resource

Department 44 Customer Service

Activity	Description	Detail	Amount
010	**District Overtime Labor**		27,769
	Labor Overtime - O&M Customer Acctg	27,769	
011	**All Other District Labor**		1,048,341
	Labor - Customer Accounting	901,573	
	Labor - Leave	146,768	
030	**Customer Service Expenditures**		399,732
	CAC Application Processing Fees (Helping Hands/Disabled Disc Programs)	11,130	
	Language Line Interpretation Services	8,400	
	Loomis Vault Services	8,400	
	NISC - Postage Costs	169,500	
	NISC - Printing & Inserting & Intelligent Bill Service	126,500	
	Non-Bill District Postage Costs	60,000	
	OUE - Identity Verifications and Adverse Action Letters	15,802	
033	**Office Supplies and Expenses**		15,000
	Misc Office Supplies	15,000	
039	**Maint Equip Office**		3,000
	Postage Meter & Mail Insert Machine Expenses	3,000	
042	**Business Expense and Travel**		5,500
	APPA Customer Service	1,500	
	NISC MIC Conference (2 attendees)	4,000	
043	**Training Expense & Travel**		2,000
	CSR Training Off Site	1,000	
	Other Customer Service	1,000	
072	**Industry Assoc. Assessment**		150
	Leadership Tri-Cities Alumni Assoc - Holesworth	50	
	Notary	100	
TOTAL EXPENSE	**Customer Service**		**$1,501,492**

NON-DEPARTMENTAL

TAB 6

PUBLIC UTILITY DISTRICT NO. 1 OF BENTON COUNTY
2018 Budget
Summary of Expense by Directorate

Non-Departmental

Department(s)		Totals
98	Non-Departmental	35,846,238
Grand Total Expenses	**Non-Departmental**	$35,846,238

Directorate Budget by Department and Activity
2018 Budget Compared to 2017 Budget

Directorate	No Directorate

Department	Activity	2018 Budget	2017 Budget	Increase/ (Decrease)	% Increase/ (Decrease)
98 - Non-Departmental Rev/Exp	1 - Contingency	(270,000)	(270,000)	-	0.0%
	80 - Public Utility & Excise Tax	5,175,000	4,806,000	369,000	7.7%
	81 - State Privilege Tax	2,669,000	2,645,000	24,000	0.9%
	82 - City Occupation Taxes	5,999,000	5,889,101	109,899	1.9%
	88 - Payroll Taxes	1,077,448	1,076,846	602	0.1%
	101 - Employee Benefits	5,183,835	4,974,890	208,945	4.2%
	150 - Principal	3,570,000	3,045,000	525,000	17.2%
	151 - Interest	2,090,457	2,210,650	(120,193)	-5.4%
	301 - Depreciation	10,351,499	13,608,389	(3,256,890)	-23.9%
98 - Non-Departmental Rev/Exp Total		**35,846,238**	**37,985,874**	**(2,139,636)**	**-5.6%**
Grand Total		**35,846,238**	**37,985,874**	**(2,139,636)**	**-5.6%**

PUBLIC UTILITY DISTRICT NO. 1 OF BENTON COUNTY
2018 Budget
By Department, Resource

Department 98 Non-Departmental

Activity	Description	Detail	Amount
001	**Contingency**		-270,000
	A&G	-185,000	
	Customer Acctg.	-50,000	
	Distribution	-35,000	
080	**Gross Revenue - Utility Tax**		5,175,000
	Other Excise Tax	62,000	
	Public Utility Tax	5,113,000	
081	**State Privelege Tax**		2,669,000
	Privilege Tax	2,669,000	
082	**City Occupation Tax**		5,999,000
	City Occupation Tax	5,999,000	
088	**Payroll Taxes**		1,077,448
	Medicare	207,607	
	Social Security	869,841	
101	**Employee Benefits**		5,183,835
	Change in PL	175,000	
	Deferred Compensation	262,290	
	Dental	199,837	
	Life Insurance	65,973	
	Medical	2,241,399	
	PERS	1,749,760	
	State Industrial	164,011	
	STD Admin Fee	3,000	
	Unemployment	18,000	
	VEBA Wellness ($150 per employee per month)	270,900	
	Vision	33,665	
150	**Principal**		3,570,000
	Debt Service - Principal	3,570,000	
151	**Debt Service Interest**		2,090,457
	Amortization of Bond loss on deafeasance	12,823	
	Amortization of Bond Premium	-466,533	
	BABs Subsidy for 2010 Bonds	-376,070	
	Bond Interest Expense	2,920,237	
	Capitalized Interest	254,477	
	Capitalized Interest - Move to Capital Acct	-254,477	

PUBLIC UTILITY DISTRICT NO. 1 OF BENTON COUNTY
2018 Budget
By Department, Resource

Department 98 Non-Departmental

Activity	Description	Detail	Amount
301	**Depreciation**		10,351,499
	Depr - Broadband	775,185	
	Depr - Distribution	6,397,483	
	Depr - General Plant	2,599,426	
	Depr - Generation	77,519	
	Depr - Transmission	205,469	
	Depr - Transportation Equipment	296,417	
TOTAL EXPENSE	**Non-Departmental**		**$35,846,239**

ACTIVITY CODES

TAB 6

SYSTEM COSTS:

5 Construction Overhead Allocated

The allocation of overhead construction costs based on loaded construction payroll.

6 Warehouse & Small Tool Allocated

The allocation of expenses associated with the warehouse and purchasing functions based on inventory activity.

7 Transportation Expense Allocated

The allocation of expenses associated with the auto shop function to mileage.

8 Benefits & Payroll Taxes Allocated

The allocation of employee benefits and payroll taxes based on labor.

9 Purchased Power

Includes all expenses associated with the procurement of electric power and the associated transmission expense.

Some examples of power sources are included here:

* The Energy Authority (TEA)
* Bonneville Power Administration/Energy NW
* Market purchases and contracts for purchase
* Frederickson
* Benton R.E.A.

10 District Overtime Labor

Includes all expenses for wages paid to District employees for overtime worked.

11 All Other District Labor

All expenses for wages, other than for overtime, including the following:

* Regular Pay (includes temporary upgrades, etc.)
* Standby Pay
* Duty Pay
* Vehicle Add Pay
* Other pay not covered elsewhere

12 Materials & Supplies

Includes all materials and supplies used which are kept in the District's inventories, except substation power transformers and regulators.

13 Stores Expense - Non Labor

Includes charges for the following:

* Cost of special forms for stores and purchasing use
* Miscellaneous general use materials and supplies of very low value such as miscellaneous screws, bolts, nuts, batteries, rags, nails, etc.

14 Small Tools & Materials

Includes expenses for tools and tool items having a unit cost of less than **$5,000**. Also includes such items as rope or chain used in conjunction with other tools even though purchased by the reel where the intent is to cut it into useable sizes.

Some examples of expenses included here are:

* Klien Chicago Grips
* Hot sticks
* High voltage gloves
* Shovels and handles
* Rope & chain
* Endless slings
* Saw blades and files
* Glass rangepoles
* String measuring devices
* Extending level rod
* Magnetic strobe lights
* Travellers
* Drill bits and braces
* Pull grips and clamp sticks
* Hoists-hotstick and lineman
* Cadweld molds
* Signs - men working, etc.
* Traffic cones
* Ground clamps
* Hot line jumpers
* Line guards
* Miscellaneous test meters
* Electric drills and saws
* Various small hand tools

15 Transportation Expense - Gas & Oil

Includes all expenses for gasoline, diesel fuel, propane and automotive oil and grease.

16 Transportation Expense - Repair & Maintenance

Includes all expenses for parts and labor purchased to repair and maintain all vehicles in good condition, including towing costs.

17 Operations & Maintenance Expense

Includes expenses pertinent to the operations and maintenance of the District's electrical systems.

Some examples of expenses included here are:

* Materials and supplies generally purchased to operations or maintenance expense accounts rather than to inventory.
* Special engineering supplies
* Drafting film (Mylar, etc.)
* White print material
* Reduction services
* Microfilming
* Special forms unique to operations or maintenance
* Equipment instructions, operating, maintenance and service manuals
* Blueprint machine maintenance and paper costs
* Pressure vacuum regulators and gauges
* Rubber padding
* Paving repairs (i.e. road crossings, etc.)
* Wildlife protective boots
* Posts with cable decals
* Hi-Line road work
* Fuse links and other small fuses including bayonet fuses for transformers
* Miscellaneous materials and services for operations or maintenance of electric systems
* Repairs to private property

Does not include materials and supplies normally purchased to District inventories or Off-the-Dock contract Labor budgeted separately.

18 Miscellaneous Construction Expense

Includes costs charged to jobs for items of expense that do not become a part of a unit of property.

Some examples of expenses included here are:

* Benton County Engineer costs
* Purchases of sand, gravel and concrete for construction
* Rental costs necessary to job
* Service charges necessary to job
* Purchased labor other than bid by contract or quote (ex. payments to small contractor for road patching, trenching, blasting, digging pole holes, etc.)
* Payments to machine shops for making parts
* Purchased surveying costs incurred on specific jobs the construction of new transmission or distribution plant
* Miscellaneous Engineering or service labor for specific jobs
* Photography charged to jobs
* Miscellaneous small charges not readily identifiable
* Miscellaneous supplies for surveying such as stakes, flags etc.

19 Tree Trimming - Contract

Includes only those expenses for contracted tree trimming.

20 Off-the-Dock Labor

Includes only contracted Off-the-Dock labor.

21 Electric Construction Contracts

Includes contracts obtained by bid or quote to do a specific package of work such as build transmission or distribution line or a substation or part thereof.

Does not include contract costs for major maintenance of, or construction of, new general plant such as storage yards, service facilities and general office buildings. Such costs should be budgeted at items 038 - Maintenance of Buildings and Improvements or 131 - Structures and Improvements to differentiate them from electric plant costs.

22 Contract Temporary Labor

Includes contract labor on a temporary basis for existing labor positions. These are for people that are paid through a job agency and are not paid through the District's payroll system.

23 Environmental

Includes those costs associated with environmental compliance, waste minimization, handling, storage and disposal of hazardous material or dangerous waste.

Some examples of expenses included here are:

* Fees paid to disposal firms
* Transportation costs
* Test kits
* Testing of materials
* Cleanup media
* Drums

Does not include, cost to repair or replace real or personal property damaged by an environmental occurrence. Examples of these types of costs are blacktop replacement, concrete, gravel dirt or repairs to personal property.

GENERAL EXPENSES:

25 Maintenance of Software

26 Computer Hardware & Equipment Expense

27 Personal Computer Software

All personal computer software packages.

28 Personal Computer O & M Costs

Includes all expenses related to the operation and maintenance of hardware equipment.

Some examples of expenses included here are:

* Replacement of cables
* Switches
* Connectors
* Cards
* Disk drives with like kind
* Maintenance contracts
* Phone line costs

29 Personal Computer Supplies & Expenses

Includes all purchases of plotter paper, forms, diskettes, tapes, cartridges, ribbons, pens, and miscellaneous supplies used on the computer.

30 Customer Service Expenses

Includes expenses attributable to Customer Service.

Some examples of costs included here are:

* Armored Car dispatch
* Payments to Collections Stations (drugstores, etc.)
* Payments to Collection Agencies
* Padlocks - (meter readers)
* Special Forms (Cust. Accounting, Credit and Meter Reading)
* All postage expense

33 Office Supplies & Expenses

Some examples of expenses included here are:

* Small items of office equipment - less than **$5,000** unit cost
* Paper and envelopes
* General use forms
* Pencils, pens, erasers, rulers and misc. scales

34 Insurance

Includes the cost of insurance premiums including "Self-Insurance Assessments". It does not include the employee insurance premiums.

37 Grounds Care

Includes expenses for care of lawns and shrubbery at all office and substation locations.

38 Maintenance of Building & Improvements - General

Includes janitorial service, maintenance of buildings, and certain improvements to general property such as graveled and/or paved areas and fences.

Some examples of expenses included here are:

* Janitorial Services
* Painting and repairs to buildings and structures
* Adding gravel to graveled areas
* Patching paved areas
* Repairs to heating, air conditioning, electrical and water systems.
* Contracts for major repairs, including labor contract.

39 Maintenance of Equipment - Communication, Office Equipment, General Property & Other

Some examples of expenses that may be included here are:

* Cost of Maintenance Agreements/Office equipment maintenance repair
* Maintenance and repair of vehicle radios
* Maintenance of telephones
* Maintenance/repair of other general property not budgeted elsewhere, i.e., tools.

40 Rents

Includes all expenses for use of property and equipment not budgeted elsewhere.

Some examples of expenses included here are:

* Poles contact rentals
* Permits for railway crossings

41 Insurance Damages & Other Reimbursable

Costs paid to be reimbursed by insurance for damages to District property.

42 Business Expense & Travel

Includes all costs of meetings and travel that are for general business-related purposes.

Some examples of expenses included here are:

* Chamber of Commerce
* TRIDEC
* Kiwanis
* Rotary Club
* NoaNet
* CWPU
* PURMS
* Foreman's dinner
* Travel costs related to the evaluation/investigation of products or equipment.

43 Training Expense & Travel

Includes all costs (travel, registration fees, materials, etc.) for meetings, conferences, and seminars that provide training or educational sessions or speakers in a learning or networking environment related to your work:

Some examples of expenses included here are:

* Conferences of professional associations with break-out training sessions
* Sessions offering continuing education credits or units
* Vendor conferences
* Meter school
* APPA or NWPPA courses or seminars

44 Other General Expenses

Miscellaneous general expenses not budgeted elsewhere, including but not limited to:

* Miscellaneous advertising for bids, rate studies, surplus property, call for bonds, etc.
* Employee service pins and awards
* Special survey costs

45 Subscriptions & Publications

Included here are <u>all</u> books, reference texts and manuals, newspapers, magazines and other general informational publications.

Some examples of expenses included here are:

* Special manuals
* Reference manuals and services (R.C.W.'s, National Public Employee Reports, etc.)
* Directories
* Computer Services
* Westlaw Legal Service
* Other miscellaneous publications such as:
  - Kiplinger Letter
  - Northwest Wage & Hours Subscription
  - N.A.D.A. Subscription
  - Electric Power & Light
  - Clearing Up
  - Energy Omnium

46 Treasurer Expenses

Bank fees, escrow fees, and other expenses directly related to the Treasurer.

UTILITIES:

50 Telephone & Answering Services

Includes all expenses for use of telephone lines and answering services except those for remote computer terminals.
Some examples of expenses included here are:

* Frontier/Embarg - Prosser
* Verizon NW - Kennewick
* Kelley's Answering Service
* City of Prosser - Emergency Answering Service
* Washington State Central Stores - Scan lines
* Asplund - Utilities Underground Location Center

51 Water, Garbage, Irrigation & Other

Includes expenses for water, garbage and irrigation assessments at all District locations.

Some examples of expenses included here are:

* Kennewick Disposal - Garbage
* City of Kennewick - Water and Sewer
* City of Prosser - Water
* Culligan - Water conditioning
* Irrigation Districts - Annual Assessments
* Special Assessments

OUTSIDE SERVICES:

60 Audit Examination - State

61 Professional Services

Includes expenses for all professional services not budgeted elsewhere.

Some examples of expenses included here are:

* Engineering studies
* Other attorney fees
* District share of labor negotiations office
* Arbitration costs
* Purchased surveying costs not identified to other budget items. These would include surveying costs incurred in conjunction with feasibility studies and would not include survey cost for acquisition of land and land rights for general plant, or survey costs for power line design.

DUES & ASSESSMENTS:

70 **Civic & Service Organizations**

72 **Industry Association Assessments**

Includes all assessments paid for membership in various industry associations.

73 **Other Assessments**

Includes all other assessments not budgeted above or elsewhere in the budget.

TAXES:

80 **State Public Utility Tax & Other Excise Taxes**

81 **State Privilege Tax**

82 **City Occupation Taxes**

88 **Payroll Taxes**

EMPLOYEE BENEFITS:

101 **Employee Benefits**

104 **Other Employee Costs**

Includes expenses made for the benefit of employees.

Some examples of expenses included here are:

* Purchase of tools supplied to employees
* School Reimbursements
* Medical exams

106 **Vacation Accrual**

CONSERVATION:

107 **Residential Loans**

108 **Non Reimbursed Conservation Costs**

Includes the commercial program, flow restrictors, outlet gaskets, etc.

109 Conservation Advertising

Includes all conservation advertising costs.

111 Inspection Services

Includes all inspection services and contract labor for the District's conservation programs.

112 Residential Conservation Expenses

Includes the Weatherization, Super Good Cents, Heat Pump, Water Heater and Duct Sealing Programs.

113 Commercial Conservation Expenses

Includes small and medium general service and multi-family residential common area lighting improvements and small and medium general service building and equipment improvements.

114 C&R Discount Reimbursable Expenses

Includes reimbursable program expenses for commercial customers.

115 Irrigation Conservation Expenses

Includes reimbursable program expenses only for the irrigation programs.

116 Energy Savings Plan Reimbursement Expense

Includes reimbursable program expenses only for the Energy Savings Plan (Industrial).

117 Appliance Efficiency Program

Includes reimbursable program expenses for showerheads, water heaters, etc.

PUBLIC INFORMATION:

119 Public Information Expenses

Includes safety and promotional expenses sponsored by the District, such as radio spots, demonstrations and newspaper ads.

PURCHASED ELECTRIC PLANT & EQUIPMENT:

120 Substation Transformers & Regulators

Purchase of substation power transformers and regulators only.

121 Substation Equipment & Materials

Since substations as such are actually large pieces of electric equipment, it is intended that all expenses incurred for the construction of substations including work in progress purchases, which are not specifically budgeted elsewhere, shall be collected here.

Some examples of expenses included here are:

* Miscellaneous purchased labor
* Fencing materials or installed fencing
* Materials used in construction of substations such as gravel, concrete, bar stock, wiring and other materials not budgeted elsewhere.

Does not include power transformers and regulators, substation demand meters and other metering devices for substations, labor contracted to build substations per bid or quote and Off-the-Dock labor.

122 Line Devices

Includes all expenses for protective and operational line equipment for transmission and distribution systems other than those line items included in substations.

Some examples of expenses included here are:

* Switches - line type only, except regulator bypass switches
* Cutouts
* Lightning arrestors (not included in the substation inventories)

123 Transformers & Related Items

Include only those items included in the distribution lines.

Some examples of expenses included here are:

* Distribution transformers
* Fiberglass enclosures
* Transformer vaults and pads (flat and with box)
* Miscellaneous low value installation materials unique to installation of the above items.

124 Meters & Related Items

All meters and metering devices purchased by the District including substation metering, and related items.

Some examples of expenses included here are:

* Single phase demand and no demand meters
* Three phase demand and no demand meters
* Current transformers - including substation type
* Potential transformers - including substation type
* Demand registers - including substation type

* kW demand registers
* Compensators
* Enclosures
* Test switches - meter maintenance
* Miscellaneous materials used only in the installation of metering devices

125 Land & Land Rights - Electric

Includes all expenses associated with the acquisition of land and land rights for construction of electric plant.

Some examples of expenses included here are:

* Purchase price
* Taxes and escrow fees
* Survey and legal costs associated with the purchase of the land or land rights
* Other costs deemed necessary to obtain the property or rights

126 SCADA Master Station Equipment

Computers, monitors, printers, furniture, UPS, spare equipment, vendor support, remodeling costs

127 SCADA Communications Equipment

Master radio, repeater radio, RTU radios, antennas, coax cables, spares and test equipment

128 SCADA Substation Equipment

RTU transducers, cable, auxiliary relays, control modifications, enclosures, RTU test equipment

129 SCADA Travel & Non-District Labor

Consists of vendor training costs, travel expenses, consultants, BPA - metering modifications, contract labor

PURCHASED GENERAL PLANT & EQUIPMENT:

130 Land & Land Rights - General

Includes all expenses for the acquisition of land and land rights for the construction of office and operations facilities.

Some examples of expenses included here are:

* Purchase price
* Taxes and escrow fees
* Survey and legal costs associated with the purchase of the property or rights.
* Other costs deemed necessary to obtain the property or rights.

131 Structures & Improvements

Include expenses for the construction of buildings and the improvement of lands, buildings or other structures.

Some examples of expenses included here are:

* Site improvement costs, such as grading, graveling, paving and landscaping.
* Costs to build buildings or structures
* Improvements to buildings or structures
* Surveying costs associated with development of improvement

132 Office Equipment

Includes all expenses for office furniture and equipment with a value of $5,000 or more.

133 Transportation Equipment

Includes all expenses for motor driven or towed vehicles including any ancillary or auxiliary equipment attached to the vehicle with a value of $5,000 or more.

The term vehicle includes:

* Automobiles
* Trucks
* Trailers
* Backhoes
* Forklifts

134 Tools, Shop & Stores Equipment

Includes the cost of tools and equipment with a value of $5,000 or more and purchased to accounts 393.00 - Stores Equipment or 394.00 - Tools, Shop and Garage Equipment.

Some items included here are:

* Stores cabinets and bins
* Work benches
* Shelving
* Tools for use in the Auto Shop, Meter Shop, Transformer Shop, Warehouse, Line Crews, and equipment used by same, but not specialized calibration and test equipment included at 135 below.

135 Laboratory & Test Equipment

Includes the cost of specialized tools and equipment purchased to account 395.00 - Laboratory Equipment having a unit value of $5,000 or more.

Tools and equipment included here are of a type used to calibrate and/or test other tools or equipment items of electric plant such as meters, transformers, etc.

136 Communication Equipment

Includes the expense of all types of communication equipment purchased to account 397.00 - Communications Equipment, having a value of $5,000 or more.

Some items included here are:

* The telephone system
* Portable and mobile radios
* Radio base stations

Not included here is communication equipment for linking information systems equipment together.

137 Capitalized Computer Software

138 Computer Equipment

Personal computers will be identified as a personal computer system and will normally include items such as keyboards, monitors, printers, modems, digitizers, plotters, etc.

All auxiliary equipment, such as that specified above, will be identified to a personal computer. If the total cost of the computer together with the auxiliary equipment identified to it costs or will cost $5,000 or more, this will constitute a capital purchase and the items will be capitalized in account 391.00.

Items added after initial purchase of a computer will be capitalized with the computer for which they are acquired. This will include replacing a floppy disk drive with a hard drive, network cards, etc.

139 Miscellaneous General Plant

Includes the cost of equipment purchased to account 398.00 Miscellaneous Equipment, having a value of $5,000 or more. Equipment included here is usually not necessary to the operation of the business.

Some examples of expenses included here are:

* Cameras
* Other miscellaneous items

140 Generation Plant & Equipment

DEBT SERVICE:

150 Principal

Includes payment made to retire debt.

151 Interest

153 Provision for Bond Reserve

Includes monies set aside in special deposits or investments to insure payment of bond debts.

OTHER MISCELLANEOUS EXPENSES:

301 Depreciation Expense

302 Amortized Conservation

303 WCEF Expense

This is the expense for the one-time credit that residential customers will receive on their bill and the payment to the Housing Authority for weatherization.

304 Grant Expense

PRODUCTS & SERVICES EXPENSES:

200 New Services Expenses

Expenses related to providing services that the District offers customers. **These are services not related to the sale or delivery of energy**.

Some examples of expenses included here are:

* Postage for Mail Service for other companies
* Supplies for Glove Testing provided other utilities
* Supplies for Maintenance of Substations belonging to other utilities
* Home and Building Inspection expenses (non-Public Purpose)
* Advertising and Marketing expense including fees associated with “Home Shows” etc.

201 New Product Expenses

Expenses incurred in obtaining, selling, merchandising, and advertising products to consumers.

Some examples of expenses included here are:

* Purchase cost of light bulbs, appliances, surge suppressors, etc.
* Display booths
* Advertising and Marketing expense including fees associated with Home Show, Fair, etc.

202 Mutual Aid & Other Reimbursable Expenses

Non-labor expenses incurred by the District in providing mutual aid or maintenance and repair work to other utilities except for Maintenance of Substations (see *200*).

Some examples of expenses included here are:

* Travel expenses
* Fuel
* Other miscellaneous costs

ADDITIONS & USAGE OF INVENTORY: (for use in controlling the growth of Inventory)

994 **Reel Deposits**
996 **CT Inventory**
997 **Substation Inventory**
998 **Fiber Optic Inventory**
999 **Non-Exempt Inventory**

REVENUE:

501 **Retail Energy Sales**

502 **City Occupation Taxes**

503 **Bad Debt Expense**

505 **Wholesale Power Sales Revenue**

510 **Wholesale Transmission & Wheeling Sales**

515 **Interest and Investment Income**

520 **Electric Services Installation Revenue**

523 **Pole Contact Rent Revenue**

* Pole Contact Rental
* Pole Contact Application Fees

525 **Capital Contributions**

530 **Property Rental Revenue**

* Rent of Electric Property
* Auditorium Rent

535 **Microwave Site Rental**

545 Other Electric Revenue

* NSF check charges
* Electric account service charge
* Collection of write-offs

546 Miscellaneous Non-Electric Revenue

547 WCEF Settlement Revenue

This is the Washington Consumer Energy Fund settlement. A portion of the settlement will be given to the Housing Authority for weatherization. The remaining funds will be given back to residential customers as a one-time credit on their bill.

548 Grant Revenue

549 SWIFT Grant Revenue

550 Products & Services Revenue

* Substation Maintenance and Repair for other Utilities
* Meter Shop Revenue
* Glove Testing
* Mail Service
* Sale of Products (light bulbs, surge suppressors, etc.)
* Energy Service Revenue (building inspection fees, etc.)
* Block Heater Rental

560 Insurance Claim Revenue

570 Reserves (Gain or Loss)

FINANCIAL PLAN

TAB 7

2018 BUDGET
FINANCIAL PLAN - KEY ASSUMPTIONS

The Financial Plan for 2018 is based on these key assumptions:

GENERAL

- Conservative assumptions have been used in the development of the financial plan in accordance with the District's Financial Policies and prudent utility practice.
- The financial plan is based on accrued revenues and costs. To derive end-of-year cash balances, amounts are adjusted to remove non-cash items, to add non-cost cash items and to account for timing differences between accrued cost and cash.

REVENUES

- The 2018 Budget reflects no revenue increase in 2018.
- Retail energy sales are based on the medium case of the Retail Energy Load Ten-Year Forecast, 2017-2026, approved by the Commission on June 27, 2017 (see Tab 8).
- Sales for Resale are consistent with the 2018 Power Supply Plan.

POWER & TRANSMISSION COSTS *(see Tab 10, 2018 Power Supply Plan, Section 4, for more details)*

- **The District's net power cost is estimated using a "Risk Model or Probability of Occurrence Forecast."**
  - The purpose of the Risk Model is to define the distribution of possible outcomes taking into account changes in power cost variables.
  - The model is run 1,000 times to produce a probability curve of net power cost.
  - A conservative assumption of the 25th percentile of probability is used for budgeting purposes. Thus 75% of the model's net power cost outcomes were equal to or less than the budgeted net power cost.
  - The net power cost budget details are developed by choosing a single model result of occurrence at the 25th percentile of probability point and using its detail information.
- **Within the model, known variables were included as follows:**
  - The financial plan includes the final BPA rate increase effective October 1, 2017 and results in a 3.8% increase to the District's BPA power costs.
  - Benton's share of the Residential Exchange Settlement credit from BPA is estimated at $2.2 million.
  - The forecast includes an irrigation mitigation annual benefit of $3.7 million.
  - Net conservation program costs after reimbursement from BPA are expected to be $0.1 million.
  - No Cost Recovery Adjustment Clause (CRAC) is assumed.
  - Court ordered additional spill test impact has not been included due to uncertainty of the cost.
  - No slice true-up credit is assumed.
  - Power cost assumptions include the Frederickson contract cost through the contract period.
  - Power cost forecast assumes the EIA cost cap is not triggered.
  - No carbon cap and trade impact included in power forecast.

FINANCIAL PLAN - KEY ASSUMPTIONS

(CONTINUED)

FINANCING

- No debt issuance is assumed in this forecast.
- Short-term borrowing may be used, if needed, to maintain cash flow requirements, but none is projected.

CAPITAL

- Capital is based on the District's five-year Capital Requirement Plan (see Tab 9).

COMPARATIVE OPERATING STATEMENT
Public Utility District No. 1 of Benton County
2018 Budget

	2016 Actual	2017 Forecast	2018 Budget
Revenue Action Budget Assumption *For planning purposes only, any future rate action would require Commission approval*			**0.0%**
OPERATING REVENUES			
Energy Sales - Retail	$120,438,526	$131,171,747	$130,438,441
Energy Sales for Resale	14,808,281	14,730,641	13,007,988
Transmission of Power for Others	915,169	969,232	900,000
Broadband Revenue	2,046,068	2,150,716	2,330,325
Other Electric Revenue	1,653,580	1,585,951	1,598,503
TOTAL OPERATING REVENUES	139,861,624	150,608,287	148,275,257
OPERATING EXPENSES			
Purchased Power	80,889,012	84,917,165	84,943,064
Purchased Transmission & Ancillary Services	12,997,169	11,299,145	11,355,718
Conservation	307,114	666,654	137,518
Total Power Supply	94,193,295	96,882,964	96,436,300
Transmission Operation & Maintenance	260,519	177,831	184,699
Distribution Operation & Maintenance	9,029,751	9,547,842	9,607,430
Broadband Expense	931,789	929,595	938,415
Customer Accounting, Collections & Information	3,411,338	4,290,909	4,447,495
Administrative & General	6,331,749	7,144,325	7,329,961
Subtotal before Taxes & Depreciation	19,965,146	22,090,502	22,508,000
Taxes	12,630,500	13,775,267	13,843,000
Depreciation & Amortization	12,630,490	10,668,389	10,055,082
Total Other Operating Expenses	45,226,136	46,534,158	46,406,082
TOTAL OPERATING EXPENSES	139,419,431	143,417,122	142,842,382
OPERATING INCOME (LOSS)	442,193	7,191,165	5,432,874
NONOPERATING REVENUES & EXPENSES			
Interest Income	325,895	400,000	400,000
Unrealized Gain/(Loss) on Investments	(4,170)	-	-
Other Income (includes BABs subsidy)	321,466	376,070	376,070
Interest Expense	(2,664,442)	(2,933,116)	(2,705,760)
Debt Premium/Discount & Expense Amortization	438,668	490,142	453,710
Cost of Issuance Expense	(295,146)	-	-
TOTAL NONOPERATING REVENUES & EXPENSES	(1,877,729)	(1,666,904)	(1,475,980)
NET INCOME (LOSS) BEFORE CONTRIBUTIONS	(1,435,537)	5,524,262	3,956,894
CAPITAL CONTRIBUTIONS	1,164,819	1,256,023	1,376,749
CHANGE IN NET ASSETS	**($270,718)**	**$6,780,285**	**$5,333,643**
CAPITAL REQUIREMENTS PLAN (Gross)	**$15,650,076**	**$16,090,336**	**$19,666,425**
UNRESTRICTED RESERVES (End of Year)	**$53,525,298**	**$54,760,850**	**$45,447,832**

Liquidity Measures
Public Utility District No. 1 of Benton County
2018 Budget

Unrestricted Reserves	2016 Actual	2017 Forecast	2018 Budget
BEGINNING BALANCE	$44,665,217	$53,525,298	$54,760,850
Revenues (excluding sales for resale)	124,781,365	136,184,484	135,143,339
Capital Contributions	1,164,819	1,256,023	1,376,749
Operating Expenses*	(111,983,152)	(117,048,860)	(118,879,312)
Amortization of White Creek	578,400	578,400	578,400
Debt Service and LOC	(5,400,712)	(6,265,648)	(6,558,987)
Gross Capital	(15,650,076)	(16,090,336)	(19,666,425)
2017 Capital Projects to be Completed in 2018		2,000,000	(2,000,000)
BPA Prepay	438,742	438,742	438,742
Capitalized Interest	150,381	182,746	254,477
Bond Reserve Fund Transfer	(23,868)		
Cost of Issuance Expense	(295,146)		
Bond Proceeds (Reimbursement for projects)	15,099,328		
ENDING BALANCE	**$53,525,298**	**$54,760,850**	**$45,447,832**

** Operating expenses include gross power expense and exclude depreciation*

Days Cash on Hand	2016 Actual	2017 Forecast	2018 Budget
Unrestricted Reserves	$53,525,298	$54,760,850	$45,447,832
Gross Power Expense	94,193,295	96,882,964	96,436,300
Non-Power Operating Expenses	45,226,136	46,534,158	46,406,082
Depreciation	(12,630,490)	(10,668,389)	(10,055,082)
Amortization of White Creek/BPA Prepay	(1,017,142)	(1,017,142)	(1,017,142)
Operating Expenses (cash basis)	$125,771,799	$131,731,591	$131,770,158
DAYS CASH ON HAND	**155**	**152**	**126**

Days Liquidity on Hand	2016 Actual	2017 Forecast	2018 Budget
Unrestricted Reserves + $10M LOC	$63,525,298	$64,760,850	$55,447,832
Operating Expenses (cash basis)	$125,771,799	$131,731,591	$131,770,158
DAYS LIQUIDITY ON HAND	**184**	**179**	**154**

Debt Measures
Public Utility District No. 1 of Benton County
2018 Budget

Debt Service Coverage	2016 Actual	2017 Forecast	2018 Budget
Change in Net Assets	($270,718)	$6,780,285	$5,333,643
Depreciation	12,630,490	10,668,389	10,055,082
Amortization of White Creek	578,400	578,400	578,400
Amortization of BPA Prepay	438,742	438,742	438,742
GASB 68 Pension Expense	(308,366)	-	-
Interest Expense	2,520,920	2,442,974	2,252,050
Funds Available for Debt Service (FADS)	$15,589,469	$20,908,790	$18,657,917
Debt Service	$5,351,412	$6,226,648	$6,519,987
DSC with capital contributions (Target = 2.0)	**2.91**	**3.36**	**2.86**
DSC without capital contributions (Target = 1.75)	**2.70**	**3.16**	**2.65**

Fixed Charge Coverage	2016 Actual	2017 Forecast	2018 Budget
Change in Net Assets	($270,718)	$6,780,285	$5,333,643
Depreciation	12,630,490	10,668,389	10,055,082
Amortization of White Creek	578,400	578,400	578,400
Amortization of BPA Prepay	438,742	438,742	438,742
GASB 68 Pension Expense	(308,366)	-	-
Interest Expense	2,520,920	2,442,974	2,252,050
Frederickson Fixed Costs	7,578,901	7,735,887	7,577,872
34% of BPA Power & Transmission	25,114,982	25,921,980	24,398,151
Adjusted FADS	$48,283,353	$54,566,657	$50,633,941
Debt Service	$5,351,412	$6,226,648	$6,519,987
Frederickson Fixed Costs	7,578,901	7,735,887	7,577,872
34% of BPA Power & Transmission	25,114,982	25,921,980	24,398,151
Debt Service & Fixed Charges	$38,045,296	$39,884,515	$38,496,010
FCC Ratio (Target = 1.3)	**1.27**	**1.37**	**1.32**

Debt Ratio	2016 Actual	2017 Forecast	2018 Budget
Revenue Bonds Outstanding	$59,950,000	$56,905,000	$53,335,000
Capitalization (bonds + net assets)	$175,985,851	$179,721,136	$181,484,780
Debt Ratio	**34%**	**32%**	**29%**

PUBLIC UTILITY DISTRICT NO. 1 OF BENTON COUNTY, WASHINGTON
2017 - 2021 Retail Revenue and Kilowatt Hours (kWh) Forecast
(Medium Case, June 2017 Forecast)

Forecast - 2017 Medium Case	Revenues	kWh
Residential	$62,792,840	760,243,975
Small Gen. Service	9,283,490	128,541,633
Medium Gen. Service	12,895,919	186,195,536
Large Gen. Service	14,281,522	229,107,400
Large Industrial	3,400,130	66,283,303
Small Ag Irrigation	893,612	13,587,709
Large Ag. Irrigation	20,920,863	392,303,656
Street Lighting	209,794	2,545,471
Security Lighting	266,804	1,147,514
Unmetered Accounts	194,183	3,042,290
TOTAL	**$125,139,156**	**1,782,998,487**

Forecast - 2018 Medium Case	Revenues	kWh
Residential	$60,050,996	703,307,518
Small Gen. Service	9,143,715	123,726,228
Medium Gen. Service	12,937,553	183,416,663
Large Gen. Service	13,908,413	218,110,225
Large Industrial	3,399,011	64,612,000
Small Ag Irrigation	1,082,240	15,942,880
Large Ag. Irrigation	23,440,629	436,000,000
Street Lighting	213,707	2,569,190
Security Lighting	291,038	1,291,920
Unmetered Accounts	207,138	3,066,000
TOTAL	**$124,674,441**	**1,752,042,624**

Forecast - 2019 Medium Case	Revenues	kWh
Residential	$60,553,297	708,490,386
Small Gen. Service	9,194,489	124,270,365
Medium Gen. Service	13,011,921	184,398,175
Large Gen. Service	13,804,390	216,442,786
Large Industrial	3,399,011	64,612,000
Small Ag Irrigation	1,082,240	15,942,880
Large Ag. Irrigation	23,440,629	436,000,000
Street Lighting	213,707	2,481,590
Security Lighting	291,038	1,291,920
Unmetered Accounts	207,138	3,066,000
TOTAL	**$125,197,860**	**1,756,996,103**

Forecast - 2020 Medium Case	Revenues	kWh
Residential	$61,225,939	716,040,588
Small Gen. Service	9,267,548	125,159,190
Medium Gen. Service	13,114,520	185,795,707
Large Gen. Service	13,719,193	215,073,048
Large Industrial	3,399,011	64,612,000
Small Ag Irrigation	1,081,784	15,935,440
Large Ag. Irrigation	23,440,629	436,000,000
Street Lighting	213,707	2,488,550
Security Lighting	291,038	1,317,600
Unmetered Accounts	208,695	3,089,040
TOTAL	**$125,962,064**	**1,765,511,163**

Forecast - 2021 Medium Case	Revenues	kWh
Residential	$61,481,668	717,937,447
Small Gen. Service	9,290,265	125,287,026
Medium Gen. Service	13,141,619	186,089,169
Large Gen. Service	13,563,756	212,596,514
Large Industrial	3,399,011	64,612,000
Small Ag Irrigation	1,079,991	15,906,170
Large Ag. Irrigation	23,440,629	436,000,000
Street Lighting	213,707	2,393,990
Security Lighting	291,038	1,314,000
Unmetered Accounts	209,620	3,102,730
TOTAL	**$126,111,303**	**1,765,239,046**

Total kWh for 2017-2021

Actual (January - October 2017)

Total kWh 2017	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Total
Residential	114,089,923	97,473,618	72,629,078	50,897,608	40,454,502	45,014,248	55,425,631	62,752,408	53,038,585	40,359,813	49,851,394	78,257,167	760,243,975
Small Gen. Service	13,896,042	12,326,759	11,375,219	8,459,581	8,910,557	10,148,595	11,421,880	12,037,978	11,357,363	9,027,734	8,848,990	10,730,935	128,541,633
Medium Gen. Service	17,170,328	15,406,899	15,083,130	13,953,993	14,157,015	15,250,364	15,663,861	17,906,763	16,509,954	14,751,484	14,854,862	15,486,882	186,195,536
Large Gen. Service	18,624,018	17,299,889	18,510,883	17,691,033	18,241,931	18,951,191	20,511,714	21,497,993	20,970,960	20,501,084	18,724,093	17,582,611	229,107,400
Large Industrial	5,118,880	5,319,830	5,953,160	5,959,920	4,342,280	5,566,080	5,565,400	6,072,640	5,753,440	5,962,760	5,450,496	5,218,417	66,283,303
Small Ag Irrigation	-4	0	277,710	434,783	1,701,606	2,505,109	3,147,673	2,781,753	1,809,769	928,403	905	1	13,587,709
Large Ag. Irrigation	200,892	229,629	1,485,633	17,886,279	54,086,389	93,753,828	103,188,520	70,975,001	29,243,746	18,136,316	2,860,800	256,622	392,303,656
Street Lighting	211,349	211,253	211,253	211,253	211,253	211,253	211,253	211,253	211,253	211,238	216,383	216,477	2,545,471
Security Lighting	100,963	100,920	91,650	91,545	91,424	91,134	90,782	90,860	90,850	90,827	108,290	108,269	1,147,514
Unmetered Accounts	253,915	253,915	253,715	253,715	253,715	253,715	253,715	253,715	253,715	253,715	252,370	252,370	3,042,290
TOTAL Retail kWh SALES:	**169,666,306**	**148,622,712**	**125,871,431**	**115,839,710**	**142,450,672**	**191,745,517**	**215,480,429**	**194,580,364**	**139,239,635**	**110,223,374**	**101,168,584**	**128,109,754**	**1,782,998,487**

Total kWh 2018	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Total
Residential	91,275,779	79,903,590	57,657,673	47,248,763	40,417,508	47,537,047	57,053,786	61,977,543	51,075,548	40,022,731	50,251,808	78,885,742	703,307,518
Small Gen. Service	11,826,361	11,049,545	8,902,003	8,939,077	9,148,225	10,348,529	11,347,675	12,185,411	11,023,623	9,276,465	8,893,909	10,785,407	123,726,228
Medium Gen. Service	16,130,326	15,531,310	13,250,531	13,772,588	13,948,133	15,288,271	16,184,123	16,918,607	16,169,626	15,695,359	14,945,947	15,581,842	183,416,663
Large Gen. Service	17,267,595	16,949,365	15,534,166	16,486,477	16,990,308	18,346,813	19,526,202	20,269,829	20,387,147	20,268,731	18,609,029	17,474,563	218,110,225
Large Industrial	5,572,330	5,207,824	5,461,353	5,478,739	5,098,494	5,511,024	5,335,393	5,825,061	4,806,211	5,646,657	5,450,496	5,218,417	64,612,000
Small Ag Irrigation	6	62	545,277	1,444,168	2,218,473	2,666,239	3,084,440	2,895,080	2,049,787	1,038,442	905	1	15,942,880
Large Ag. Irrigation	276,875	321,549	11,901,877	41,294,030	64,350,904	89,156,778	95,481,613	70,223,791	36,687,690	23,187,470	2,860,800	256,622	436,000,000
Street Lighting	218,042	217,995	218,024	217,917	212,240	212,183	211,969	212,154	212,129	212,160	212,142	212,235	2,569,190
Security Lighting	109,110	109,071	108,890	108,732	104,779	104,751	104,812	108,476	108,406	108,335	108,290	108,269	1,291,920
Unmetered Accounts	254,374	254,317	254,317	254,253	254,500	254,500	254,937	257,693	257,664	256,190	256,628	256,628	3,066,000
TOTAL Retail kWh SALES:	**142,930,799**	**129,544,627**	**113,834,111**	**135,244,745**	**152,743,565**	**189,426,134**	**208,584,950**	**190,873,644**	**142,777,829**	**115,712,538**	**101,589,955**	**128,779,726**	**1,752,042,624**

Total kWh 2019	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Total
Residential	91,948,416	80,492,422	58,082,569	47,596,952	40,715,355	47,887,360	57,474,232	62,434,273	51,451,938	40,317,669	50,622,128	79,467,073	708,490,386
Small Gen. Service	11,878,372	11,098,140	8,941,153	8,978,391	9,188,458	10,394,041	11,397,581	12,239,001	11,072,103	9,317,262	8,933,023	10,832,840	124,270,365
Medium Gen. Service	16,216,644	15,614,422	13,321,438	13,846,289	14,022,773	15,370,083	16,270,728	17,009,143	16,256,154	15,779,349	15,025,927	15,665,225	184,398,175
Large Gen. Service	17,135,585	16,819,788	15,415,409	16,360,439	16,860,419	18,206,553	19,376,926	20,114,867	20,231,288	20,113,777	18,466,764	17,340,971	216,442,786
Large Industrial	5,572,330	5,207,824	5,461,353	5,478,739	5,098,494	5,511,024	5,335,393	5,825,061	4,806,211	5,646,657	5,450,496	5,218,417	64,612,000
Small Ag Irrigation	6	62	545,277	1,444,168	2,218,473	2,666,239	3,084,440	2,895,080	2,049,787	1,038,442	905	1	15,942,880
Large Ag. Irrigation	276,875	321,549	11,901,877	41,294,030	64,350,904	89,156,778	95,481,613	70,223,791	36,687,690	23,187,470	2,860,800	256,622	436,000,000
Street Lighting	210,608	210,563	210,590	210,486	205,004	204,948	204,742	204,920	204,896	204,926	204,909	204,998	2,481,590
Security Lighting	109,110	109,071	108,890	108,732	104,779	104,751	104,812	108,476	108,406	108,335	108,290	108,269	1,291,920
Unmetered Accounts	254,374	254,317	254,317	254,253	254,500	254,500	254,937	257,693	257,664	256,190	256,628	256,628	3,066,000
TOTAL Retail kWh SALES:	**143,602,320**	**130,128,157**	**114,242,872**	**135,572,480**	**153,019,159**	**189,756,277**	**208,985,403**	**191,312,305**	**143,126,137**	**115,970,077**	**101,929,870**	**129,351,045**	**1,756,996,103**

Total kWh 2020	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Total
Residential	92,928,287	81,350,209	58,701,540	48,104,180	41,149,249	48,397,684	58,086,720	63,099,619	52,000,248	40,747,324	51,161,595	80,313,933	716,040,588
Small Gen. Service	11,963,330	11,177,517	9,005,103	9,042,607	9,254,177	10,468,383	11,479,101	12,326,539	11,151,295	9,383,902	8,996,915	10,910,321	125,159,190
Medium Gen. Service	16,339,548	15,732,762	13,422,400	13,951,229	14,129,050	15,486,571	16,394,042	17,138,053	16,379,357	15,898,939	15,139,806	15,783,950	185,795,707
Large Gen. Service	17,027,144	16,713,346	15,317,854	16,256,904	16,753,719	18,091,334	19,254,301	19,987,572	20,103,256	19,986,489	18,349,899	17,231,230	215,073,048
Large Industrial	5,572,330	5,207,824	5,461,353	5,478,739	5,098,494	5,511,024	5,335,393	5,825,061	4,806,211	5,646,657	5,450,496	5,218,417	64,612,000
Small Ag Irrigation	6	62	545,023	1,443,494	2,217,438	2,664,995	3,083,001	2,893,729	2,048,830	1,037,957	904	1	15,935,440
Large Ag. Irrigation	276,875	321,549	11,901,877	41,294,030	64,350,904	89,156,778	95,481,613	70,223,791	36,687,690	23,187,470	2,860,800	256,622	436,000,000
Street Lighting	211,198	211,153	211,181	211,077	205,579	205,523	205,316	205,495	205,471	205,500	205,484	205,573	2,488,550
Security Lighting	111,279	111,239	111,054	110,893	106,862	106,833	106,895	110,633	110,560	110,488	110,443	110,421	1,317,600
Unmetered Accounts	256,285	256,228	256,228	256,164	256,412	256,412	256,853	259,629	259,601	258,116	258,556	258,556	3,089,040
TOTAL Retail kWh SALES:	**144,686,284**	**131,081,889**	**114,933,612**	**136,149,318**	**153,521,884**	**190,345,536**	**209,683,234**	**192,070,121**	**143,752,520**	**116,462,843**	**102,534,899**	**130,289,025**	**1,765,511,163**

Total kWh 2021	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Total
Residential	93,174,462	81,565,714	58,857,046	48,231,613	41,258,257	48,525,894	58,240,597	63,266,776	52,138,002	40,855,268	51,297,127	80,526,693	717,937,447
Small Gen. Service	11,975,550	11,188,934	9,014,301	9,051,843	9,263,629	10,479,075	11,490,825	12,339,129	11,162,685	9,393,487	9,006,105	10,921,464	125,287,026
Medium Gen. Service	16,365,356	15,757,611	13,443,600	13,973,265	14,151,367	15,511,031	16,419,936	17,165,122	16,405,228	15,924,051	15,163,719	15,808,880	186,089,169
Large Gen. Service	16,831,079	16,520,894	15,141,471	16,069,708	16,560,802	17,883,015	19,032,590	19,757,418	19,871,770	19,756,348	18,138,603	17,032,815	212,596,514
Large Industrial	5,572,330	5,207,824	5,461,353	5,478,739	5,098,494	5,511,024	5,335,393	5,825,061	4,806,211	5,646,657	5,450,496	5,218,417	64,612,000
Small Ag Irrigation	6	61	544,022	1,440,843	2,213,365	2,660,100	3,077,338	2,888,413	2,045,067	1,036,051	903	1	15,906,170
Large Ag. Irrigation	276,875	321,549	11,901,877	41,294,030	64,350,904	89,156,778	95,481,613	70,223,791	36,687,690	23,187,470	2,860,800	256,622	436,000,000
Street Lighting	203,173	203,130	203,157	203,056	197,767	197,714	197,514	197,686	197,663	197,692	197,676	197,762	2,393,990
Security Lighting	110,975	110,935	110,751	110,590	106,570	106,541	106,603	110,330	110,258	110,186	110,141	110,119	1,314,000
Unmetered Accounts	257,421	257,363	257,363	257,299	257,549	257,549	257,991	260,780	260,751	259,259	259,702	259,702	3,102,730
TOTAL Retail kWh SALES:	**144,767,228**	**131,134,016**	**114,934,940**	**136,110,987**	**153,458,704**	**190,288,721**	**209,640,401**	**192,034,508**	**143,685,326**	**116,366,469**	**102,485,272**	**130,332,476**	**1,765,239,046**

Total Revenue for 2017-2021

Actual (January - October 2017)

Total Revenue 2017	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Total
Residential	$8,844,384	$7,613,204	$5,870,885	$4,340,837	$3,577,809	$3,938,165	$4,663,508	$5,196,641	$4,514,084	$3,627,263	$4,266,523	$6,339,536	$62,792,840
Small Gen. Service	975,572	869,595	815,233	627,292	652,755	735,982	813,182	884,559	813,703	668,058	651,703	775,855	9,283,490
Medium Gen. Service	1,223,976	1,107,799	1,094,152	939,781	920,753	993,332	1,043,672	1,107,699	1,167,573	1,102,246	1,075,712	1,119,224	12,895,919
Large Gen. Service	1,195,948	1,129,768	1,194,716	1,069,110	1,073,991	1,127,550	1,163,183	1,250,175	1,355,515	1,349,182	1,229,251	1,143,134	14,281,522
Large Industrial	268,887	274,837	298,206	298,851	331,112	185,287	288,766	303,761	292,868	305,638	280,199	271,718	3,400,130
Small Ag Irrigation	0	0	24,650	43,315	114,258	157,632	190,170	172,021	118,919	72,580	67	0	893,612
Large Ag. Irrigation	11,567	11,669	145,856	1,121,729	2,918,194	4,669,496	5,055,598	3,657,812	1,671,089	1,210,893	326,608	120,352	20,920,863
Street Lighting	17,489	17,489	17,482	17,482	17,482	17,482	17,482	17,482	17,482	17,478	17,482	17,482	209,794
Security Lighting	22,498	22,470	22,447	22,403	21,607	22,281	22,169	22,184	22,197	22,200	22,184	22,164	266,804
Unmetered Accounts	16,182	16,182	16,182	16,182	16,182	16,182	16,182	16,182	16,182	16,182	16,182	16,182	194,183
TOTAL REVENUE:	**$12,576,502**	**$11,063,012**	**$9,499,808**	**$8,496,983**	**$9,644,143**	**$11,863,389**	**$13,273,912**	**$12,628,517**	**$9,989,611**	**$8,391,720**	**$7,885,911**	**$9,825,647**	**$125,139,156**

Total Revenue 2018	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Total
Residential	$7,403,525	$6,497,694	$4,945,074	$4,159,552	$3,686,061	$4,183,389	$4,905,537	$5,266,758	$4,445,026	$3,662,584	$4,387,127	$6,508,668	$60,050,996
Small Gen. Service	862,614	803,235	670,687	670,484	687,112	763,234	831,727	886,847	807,898	696,119	668,288	795,471	9,143,715
Medium Gen. Service	1,168,746	1,128,374	985,284	892,440	903,468	991,890	1,044,897	1,084,431	1,320,473	1,166,368	1,103,279	1,147,905	12,937,553
Large Gen. Service	1,128,111	1,116,016	1,041,568	966,625	1,003,600	1,078,373	1,144,585	1,184,027	1,498,803	1,343,742	1,245,088	1,157,876	13,908,413
Large Industrial	286,084	273,951	286,148	288,974	273,718	290,522	282,196	300,180	260,689	294,145	285,523	276,880	3,399,011
Small Ag Irrigation	0	5	155,236	84,007	120,876	141,853	161,087	152,383	172,185	94,539	68	0	1,082,240
Large Ag. Irrigation	117,083	132,999	821,329	2,234,582	3,389,273	4,532,335	4,773,785	3,614,801	2,046,285	1,322,705	332,814	122,639	23,440,629
Street Lighting	17,809	17,809	17,809	17,809	17,809	17,809	17,809	17,809	17,809	17,809	17,809	17,809	213,707
Security Lighting	24,253	24,253	24,253	24,253	24,253	24,253	24,253	24,253	24,253	24,253	24,253	24,253	291,038
Unmetered Accounts	17,185	17,182	17,182	17,177	17,194	17,194	17,223	17,410	17,408	17,308	17,338	17,338	207,138
TOTAL REVENUE:	**$11,025,411**	**$10,011,518**	**$8,964,570**	**$9,355,904**	**$10,123,365**	**$12,040,852**	**$13,203,099**	**$12,548,899**	**$10,610,829**	**$8,639,571**	**$8,081,585**	**$10,068,838**	**$124,674,441**

Total Revenue 2019	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Total
Residential	$7,463,121	$6,550,161	$4,986,560	$4,195,103	$3,718,284	$4,219,132	$4,946,761	$5,310,650	$4,482,714	$3,694,667	$4,424,402	$6,561,741	$60,553,297
Small Gen. Service	867,299	807,573	674,529	674,297	691,029	767,458	836,282	891,646	812,322	700,081	672,099	799,873	9,194,489
Medium Gen. Service	1,175,435	1,134,804	990,990	897,637	908,738	997,619	1,050,925	1,090,671	1,327,962	1,173,047	1,109,606	1,154,486	13,011,921
Large Gen. Service	1,119,682	1,107,660	1,033,799	959,422	996,124	1,070,317	1,136,030	1,175,172	1,487,538	1,333,664	1,235,762	1,149,219	13,804,390
Large Industrial	286,084	273,951	286,148	288,974	273,718	290,522	282,196	300,180	260,689	294,145	285,523	276,880	3,399,011
Small Ag Irrigation	0	5	155,236	84,007	120,876	141,853	161,087	152,383	172,185	94,539	68	0	1,082,240
Large Ag. Irrigation	117,083	132,999	821,329	2,234,582	3,389,273	4,532,335	4,773,785	3,614,801	2,046,285	1,322,705	332,814	122,639	23,440,629
Street Lighting	17,809	17,809	17,809	17,809	17,809	17,809	17,809	17,809	17,809	17,809	17,809	17,809	213,707
Security Lighting	24,253	24,253	24,253	24,253	24,253	24,253	24,253	24,253	24,253	24,253	24,253	24,253	291,038
Unmetered Accounts	17,185	17,182	17,182	17,177	17,194	17,194	17,223	17,410	17,408	17,308	17,338	17,338	207,138
TOTAL REVENUE:	**$11,087,953**	**$10,066,396**	**$9,007,836**	**$9,393,261**	**$10,157,299**	**$12,078,492**	**$13,246,351**	**$12,594,975**	**$10,649,165**	**$8,672,218**	**$8,119,674**	**$10,124,239**	**$125,197,860**

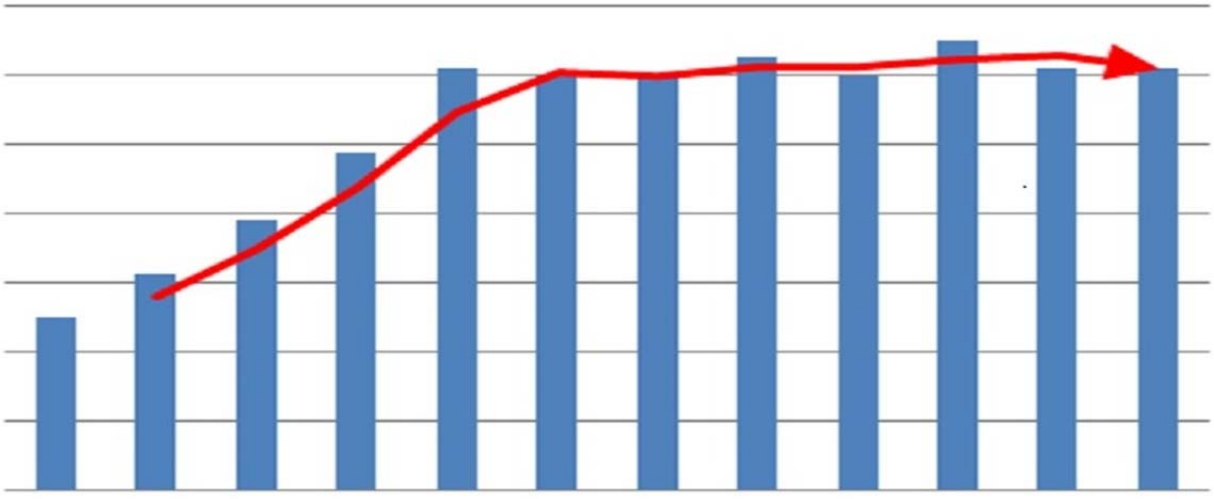
Total Revenue 2020	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Total
Residential	$7,544,954	$6,622,087	$5,042,004	$4,242,055	$3,760,218	$4,266,347	$5,001,792	$5,369,561	$4,532,744	$3,736,362	$4,473,817	$6,633,997	$61,225,939
Small Gen. Service	874,119	813,905	679,969	679,718	696,589	773,547	842,884	898,645	818,734	705,710	677,509	806,219	9,267,548
Medium Gen. Service	1,184,681	1,143,709	998,838	904,766	915,963	1,005,507	1,059,228	1,099,276	1,338,355	1,182,276	1,118,343	1,163,577	13,114,520
Large Gen. Service	1,112,780	1,100,815	1,027,439	953,526	990,005	1,063,720	1,129,024	1,167,920	1,478,305	1,325,408	1,228,123	1,142,130	13,719,193
Large Industrial	286,084	273,951	286,148	288,974	273,718	290,522	282,196	300,180	260,689	294,145	285,523	276,880	3,399,011
Small Ag Irrigation	0	5	155,213	83,968	120,820	141,787	161,012	152,312	172,104	94,495	68	0	1,081,784
Large Ag. Irrigation	117,083	132,999	821,329	2,234,582	3,389,273	4,532,335	4,773,785	3,614,801	2,046,285	1,322,705	332,814	122,639	23,440,629
Street Lighting	17,809	17,809	17,809	17,809	17,809	17,809	17,809	17,809	17,809	17,809	17,809	17,809	213,707
Security Lighting	24,253	24,253	24,253	24,253	24,253	24,253	24,253	24,253	24,253	24,253	24,253	24,253	291,038
Unmetered Accounts	17,315	17,311	17,311	17,306	17,323	17,323	17,353	17,540	17,539	17,438	17,468	17,468	208,695
TOTAL REVENUE:	**$11,179,078**	**$10,146,844**	**$9,070,314**	**$9,446,957**	**$10,205,972**	**$12,133,149**	**$13,309,335**	**$12,662,298**	**$10,706,817**	**$8,720,601**	**$8,175,727**	**$10,204,972**	**$125,962,064**

Total Revenue 2021	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Total
Residential	$7,572,830	$6,646,771	$5,063,261	$4,260,950	$3,778,104	$4,285,334	$5,022,990	$5,391,743	$4,552,465	$3,754,239	$4,493,406	$6,659,577	$61,481,668
Small Gen. Service	876,131	815,747	681,783	681,497	698,423	775,425	844,871	900,690	820,663	707,561	679,296	808,177	9,290,265
Medium Gen. Service	1,187,093	1,146,003	1,000,955	906,719	917,952	1,007,620	1,061,443	1,101,556	1,340,995	1,184,688	1,120,636	1,165,960	13,141,619
Large Gen. Service	1,100,181	1,088,332	1,015,822	942,751	978,821	1,051,678	1,116,239	1,154,688	1,461,495	1,310,361	1,214,193	1,129,194	13,563,756
Large Industrial	286,084	273,951	286,148	288,974	273,718	290,522	282,196	300,180	260,689	294,145	285,523	276,880	3,399,011
Small Ag Irrigation	0	5	155,122	83,814	120,598	141,526	160,716	152,032	171,788	94,321	68	0	1,079,991
Large Ag. Irrigation	117,083	132,999	821,329	2,234,582	3,389,273	4,532,335	4,773,785	3,614,801	2,046,285	1,322,705	332,814	122,639	23,440,629
Street Lighting	17,809	17,809	17,809	17,809	17,809	17,809	17,809	17,809	17,809	17,809	17,809	17,809	213,707
Security Lighting	24,253	24,253	24,253	24,253	24,253	24,253	24,253	24,253	24,253	24,253	24,253	24,253	291,038
Unmetered Accounts	17,391	17,387	17,387	17,383	17,400	17,400	17,430	17,618	17,616	17,515	17,545	17,545	209,620
TOTAL REVENUE:	**$11,198,856**	**$10,163,258**	**$9,083,870**	**$9,458,732**	**$10,216,352**	**$12,143,901**	**$13,321,730**	**$12,675,371**	**$10,714,059**	**$8,727,597**	**$8,185,543**	**$10,222,035**	**$126,111,303**

RETAIL ENERGY SALES FORECAST

TAB 8

Ten Year Load & Customer Forecast 2017-2026



Public Utility District No. 1 of Benton County

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EXECUTIVE SUMMARY

The 2017 Ten Year Load and Customer Forecast (Forecast) is developed annually and is used as critical input in a number of different analyses and processes including the Cost of Service Analysis (COSA), the Integrated Resource Plan (IRP), Rate Analysis, Budgeting, Power Requirements Planning, and Five-Year Capital Plan. Its utilization as an input in these decision making tools and future plans makes its accuracy very important.

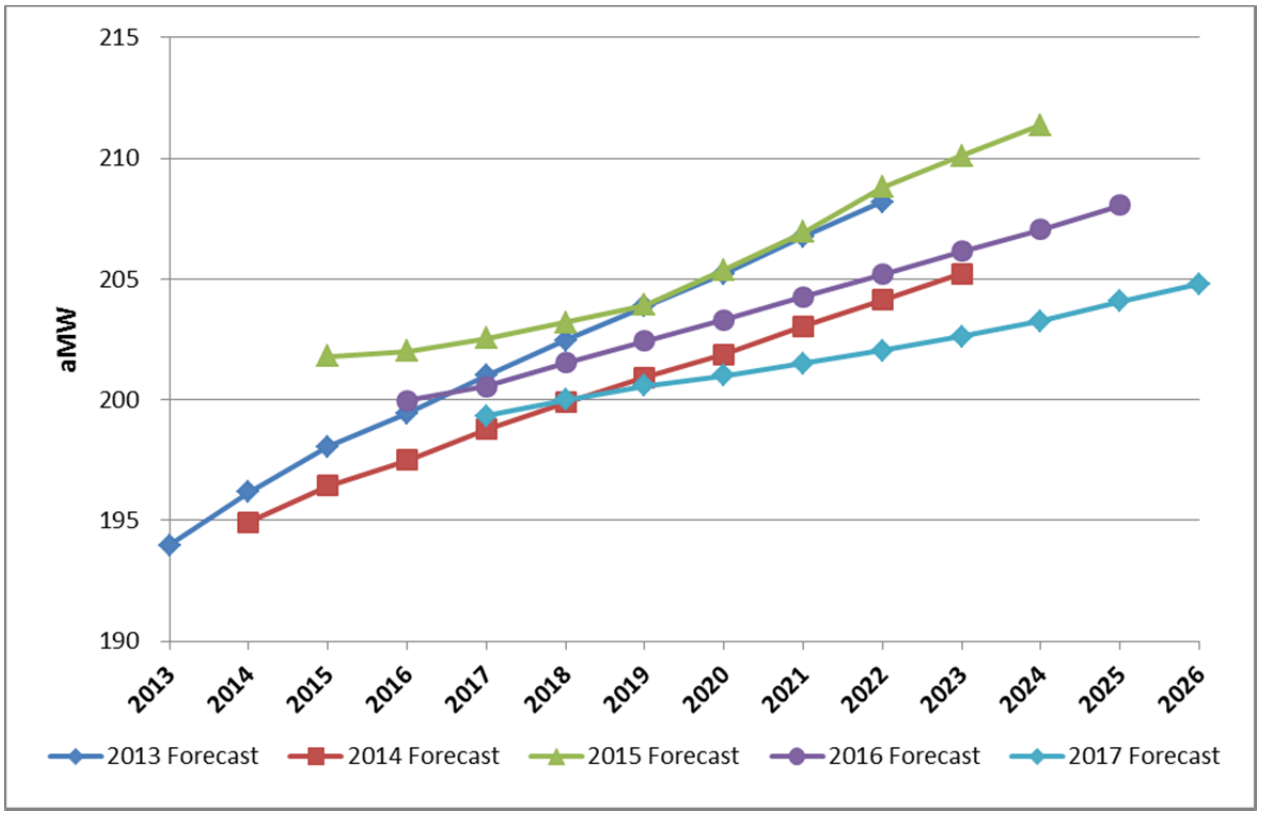


Figure 1 – Historical Ten Year Forecasts (2013-2017)

Figure 1 above shows the historical ten year forecasts from 2013 to the current 2017 Forecast. As seen in the graph, the Forecasts have evolved over the last five years and have started to trend downward. Forecasts peaked in 2015 after the completion of a large irrigation expansion in 2014 and have since trended downward similar to what has been observed regionally by the Pacific Northwest Utilities Conference Committee (PNUCC).

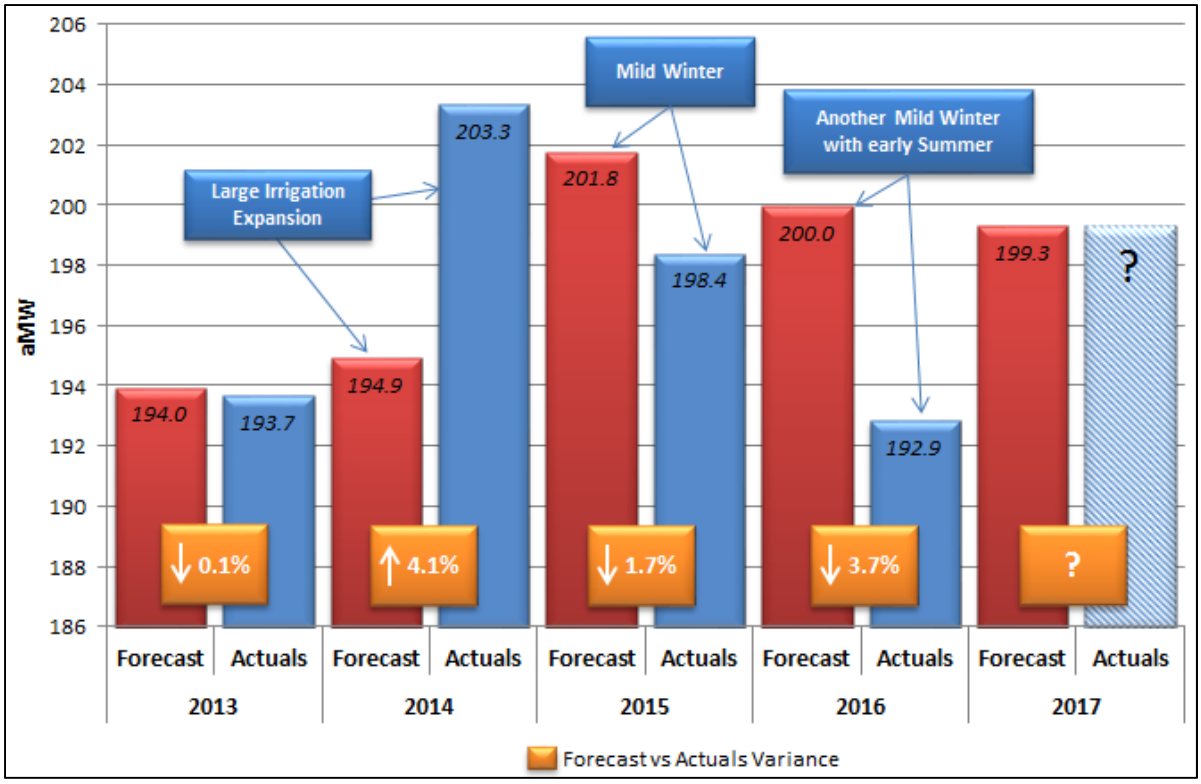


Figure 2 – Forecasts vs Actuals (2013-2017)

As can be seen in the chart above, past forecasts versus actual loads are shown and highlight the variances observed. While variances between forecasts and actual loads are expected, staff sought to improve the forecasting methodology by analyzing modeling inputs used in the Forecast. The two biggest drivers of variances between the Forecast and what energy actually flows through the District's system are weather and conservation. In an effort to improve the Forecast's accuracy, staff adjusted how average weather is determined basing it on a shorter timeframe (last five years vs last 12 years) to reflect recent weather patterns. While actual conservation results have exceeded projections which has contributed to more than expected load reductions, staff also took a close look at how historical conservation and future conservation is treated in the Forecast's model. Staff adjusted how conservation is treated in the Forecast by calculating the energy savings that have been achieved historically versus what the incremental savings are projected to be in the future. Additionally, the impact of conservation from new Federal Codes and Standards were also included in the Forecast to capture its impact on the District's Average Annual Rate of Growth (AARG) (See **MODELING ASSUMPTIONS** for more information).

The District developed three scenarios including a Low Case, Medium Case, and a High Case. In the past, staff has only adjusted the econometric inputs to develop the Low Case and High Case. For this year's Low Case and High Case, staff also adjusted the weather variables used to drive differences in each scenario (See **MODELING ASSUMPTIONS** for more information). The District develops each scenario to establish a range of growth rates and adopts the Medium Case as the Base Case. The Base Case scenario predicts an AARG of 0.30**%** for the ten year

planning period which is down from 0.41% in last year's Forecast. By the year 2026, this would result in an annual average power increase of **12 average megawatts (aMW)** over the 2016 load of 199 aMW at the Bonneville Power Administration (BPA) Points of Delivery (POD). To provide simplified and more relevant reference data, loads are expressed as average power consumption on an annual basis throughout this report.

2017 Retail Load Forecast			
	Low Case	Base Case	High Case
2017-2021 (5 Year) AARG%	0.16%	0.27%	0.38%
2017-2026 (10 Year) AARG%	0.19%	0.30%	0.41%
2021 % Change Over 2016 Actuals	-1.04%	4.49%	9.13%
2026 % Change Over 2016 Actuals	0.04%	6.19%	11.47%

Table 1 – 2017 Retail Load Forecast Overview at Customer Meter

Table 1 above highlights the average rate of growth percentage over the next five and ten years. **Table 1** also shows the forecasted growth percentage in 2021 and 2026 as compared to the actual energy usage in 2016. Differences between the Low Case, Base Case and High Case can be found in **Appendix A**.

2017 Load Forecast Overview			
(2016 Actual POD Load - 199)	Retail Loads	BPA POD Loads	Wholesale Loads
2021 Forecast aMW	202	208	211
2021 aMW change over 2016	9	9	9
2026 Forecast aMW	205	211	215
2026 aMW change over 2016	12	12	12

Table 2 – 2017 Average Annual Power Forecast Overview

Table 2 shows the difference between the District's Retail, BPA POD and Wholesale load forecasts. Retail loads include the District's aggregate metered customer load. BPA POD loads are measured at BPA meter points and include the District's aggregate metered customer load plus distribution losses. Wholesale loads include the District's metered customer load plus distribution losses plus regional power grid transmission losses. At a high level, the District is not only responsible for procuring the energy necessary to serve our customer's load, but also the losses associated with the transport of electricity over equipment and power lines from regional generation resources to our customer loads. For the 2017 Base Case, the District forecasts 6.5 aMW of distribution losses and 3.2 aMW of transmission losses.

Customer Forecast by Customer Class			
(Medium Case)	2016 Actual	2021 Forecast	2026 Forecast
Residential	43,157	46,262	49,092
Small General Service	4,915	5,307	5,660
Medium General Service	768	862	930
Large General Service	157	158	158
Industrial	5	5	5
Small Irrigation	558	528	496
Large Irrigation	233	311	379
Street Lights	9	9	9
Security Lights	1,476	1,518	1,546
Unmetered	365	365	369
Total	**51,642**	**55,325**	**58,644**

Table 3 – 2017 Customer Forecasts by Customer Class (Base Case)

Table 3 shows the actual year-end observed customer counts by customer class in 2016 as well as the forecasted customers in 2021 and 2026.

2021 Retail Load Forecast by Customer Class (aMW) (Effects of Conservation)			
(Medium Case)	2016 Actual	2021 Forecast *(with Conservation)*	2021 Forecast *(No Conservation)*
Residential	75.33	81.96	82.35
Small General Service	13.87	14.30	14.35
Medium General Service	20.54	21.24	21.37
Large General Service	25.42	24.27	24.61
Industrial	7.36	7.38	7.38
Small Irrigation	1.78	1.82	1.82
Large Irrigation	47.77	49.77	49.77
Street Lights	0.29	0.27	0.27
Security Lights	0.14	0.15	0.15
Unmetered	0.35	0.35	0.35
Total	**192.86**	**201.51**	

Table 4 – 2021 Retail Load Forecast by Customer Class (aMW) at Customer Meter (Base Case)

Table 4 displays the 2021 Retail Load Forecast by Customer Class at the customer meter in aMW. The table also show the Forecast without the load reductions associated with expected incremental conservation activities. Between 2017 and 2021, the District's Forecast is reduced by 0.90 aMW for expected conservation activities.

2026 Retail Load Forecast by Customer Class (aMW) (Effects of Conservation)			
(Medium Case)	2016 Actual	2026 Forecast *(with Conservation)*	2026 Forecast *(No Conservation)*
Residential	75.33	85.00	85.57
Small General Service	13.87	14.63	14.70
Medium General Service	20.54	21.85	22.04
Large General Service	25.42	23.58	24.07
Industrial	7.36	7.38	7.38
Small Irrigation	1.78	1.81	1.81
Large Irrigation	47.77	49.77	49.77
Street Lights	0.29	0.25	0.25
Security Lights	0.14	0.16	0.16
Unmetered	0.35	0.37	0.37
Total	**192.86**	**204.80**	**206.11**

Table 5 – 2026 Retail Load Forecast by Customer Class (aMW) at Customer Meter (Base Case)

Table 5 displays the 2026 Forecast by Customer Class at the customer meter aMW. The table also shows the Retail Load Forecast without the load reductions associated with expected conservation activities. Between 2017 and 2026, the District's Forecast is reduced by 1.32 aMW for expected incremental conservation activities. **Figures 3 – 11** illustrate the effect conservation has on energy usage over time by customer class; whereby all but the Large Industrial and Small Irrigation customer classes are expected to see declining usages per customer throughout the planning period.

OVERVIEW

The District saw a 2.53% decrease in actual energy sales for the year 2016 compared to 2015. This was the second year in a row where actual energy sales decreased due to a warmer than average winter that caused a decrease in Residential energy usage. All customer classes with the exception of Small General Service and Unmetered experienced decreased energy sales in 2016.

It should be noted the Forecast for 2017 shows an overall increase of 3.07% over 2016 after accounting for the load reductions associated with expected conservation activities. This growth rate seems relatively high when compared to the 0.30% AARG forecasted in the Base Case for the ten year planning period. The variance is due largely to the mild weather experienced causing unexpectedly low energy sales in 2016.

MODELING ASSUMPTIONS

Overview

The econometric load forecast model is a long-term model that forecasts total energy usage by customer class, number of customers by customer class and system peak demand. The model uses historical data and econometric data (*see below*) to establish a relationship between energy consumption and economic variables.

Model Inputs – Historical Load

Using the District's historical monthly load and customer data separated into customer classes: residential, small general service, medium general service, large general service, large industrial, small irrigation, large irrigation, street lights, security lights, and unmetered. Historical total system peak demand was also provided.

Model Inputs – Econometric Forecast

The Energy Authority subscribes to Woods & Poole Economic Forecasts, which are updated annually; most recently in April 2016. The Woods & Poole Economics, Inc. database contains more than 900 economic and demographic variables for every county in the United States for every year from 1970 to 2040.

The comprehensive database includes:

- Detailed population data by age, sex, and race
- Employment and earnings by major industry
- Personal income by source of income
- Retail sales by kind of business
- Data on the number of households, their size, and their income

The Woods & Poole projection for each county in the United States is done simultaneously so that changes in one county will affect growth or decline in other counties. The specific economic projection technique used by Woods & Poole to generate the employment, earnings, and income estimates for each county in the United States generally follow a standard economic "export-base" approach.

The model utilizes four variables for the Benton County region: total population, total employment, total number of households, and total retail sales including eating and drinking places. Values for the City of Richland and West Richland are gathered by various sources such as Washington State Office of Financial Management's (OFM) website and Google Public Data Explorer, and backed out of the Benton County data to more accurately represent the District's service territory.

According to Woods & Poole, the long-term outlook for the United States economy is one of steady and modest growth through the year 2040. Although periodic business cycles, such as the 2008-09 recession, will interrupt and change the growth trajectory, the nation's employment and income are expected to rise every year from 2017 to 2040. **Table 6** below highlights Benton County's historical and expected economic growth rates.

Woods & Poole Growth Rates				
Year	Population	Employment	Households	Retail Sales
2000	0.68%	0.18%	0.75%	4.21%
2001	1.25%	2.88%	5.53%	2.37%
2002	2.01%	1.63%	0.69%	3.59%
2003	1.54%	2.19%	2.60%	3.25%
2004	0.37%	0.84%	-0.66%	3.99%
2005	0.35%	0.73%	3.82%	3.33%
2006	1.75%	0.03%	-1.38%	1.91%
2007	1.74%	5.78%	2.21%	0.72%
2008	3.42%	2.32%	2.95%	-1.91%
2009	3.12%	2.65%	2.69%	-5.65%
2010	4.08%	4.31%	1.09%	6.04%
2011	0.60%	0.16%	4.99%	6.34%
2012	0.48%	-4.91%	1.50%	3.68%
2013	0.54%	0.10%	2.35%	3.20%
2014	1.22%	2.09%	1.63%	3.73%
2015	1.39%	1.98%	2.03%	2.49%
2016	1.50%	1.90%	1.87%	2.65%
2017	1.50%	1.81%	1.75%	2.49%
2018	1.49%	1.73%	1.64%	2.38%
2019	1.49%	1.69%	1.57%	2.29%
2020	1.48%	1.65%	1.53%	2.24%
2025	1.46%	1.54%	1.25%	2.04%
2030	1.40%	1.34%	1.00%	1.90%
2035	1.25%	1.11%	0.80%	1.79%
2040	1.07%	0.93%	0.89%	1.80%

Table 6 – Benton PUD Service Territory Growth Rates

Model Inputs – Weather

The load forecast model normalizes historical energy usage for weather data from the Pasco, WA weather station. Heating degree days represent days where customers are forecasted to need heating services; whereas, cooling degree days represent days where customers are forecasted to need cooling services. As the need for heating and cooling services increases, the District's energy usage increases as well. For the purposes of this forecast, heating and cooling degree days have been calculated using a 65 degree base.

Precipitation is also used to normalize the small irrigation and large irrigation customer classes. The load forecast model determines the proper correlation, or relationship, between historical loads, historical weather and historical economic indicators to produce a trend line for forecasted planning period. The model was updated this year to use the last five years to determine average weather; whereas, in previous years the model used the last 12 years to determine average weather.

Conservation

In addition to natural energy saving effects due to electricity rate inflation and economic conditions, the District has an established conservation program in place to proactively assist our customers with efforts to reduce their energy consumption. In order to account for these extra efforts in the load forecast model, EES Consulting prepared a Conservation Potential Assessment (CPA) detailing both historical conservation savings and forecasted conservation savings by customer sector. The forecasted cumulative savings are subtracted from the result to forecast loads after accounting for the load reduction associated with conservation activities. District staff observed that approximately one aMW of conservation has been achieved annually since the year 2000. In order to account for the impact historical conservation activities had on the load forecast model's trend line, District staff subtracted average annual achievement observed since 2000 from the annual projection provided by EES in the CPA. Therefore, the Forecast only includes the expected incremental conservation savings. In addition during the past year, District staff observed a presentation by the Northwest Power and Conservation Council (NWPCC) related to Federal Appliance Standards. Due to their potential impact on loads and not being included in the most recent CPA, the District included a 20% increase to the annual incremental conservation projection. See **Table 7** below for more detail on the forecasted load reductions by customer class.

Cumulative Conservation Inputs					
Date	Residential	Small General	Medium General	Large General	Total
2017	0.01	0.00	0.00	0.01	0.02
2018	0.05	0.01	0.02	0.05	0.12
2019	0.14	0.02	0.05	0.12	0.32
2020	0.26	0.03	0.09	0.23	0.61
2021	0.39	0.05	0.13	0.34	0.90
2022	0.49	0.06	0.16	0.42	1.13
2023	0.55	0.07	0.18	0.48	1.28
2024	0.57	0.07	0.19	0.49	1.32
2025	0.57	0.07	0.19	0.49	1.32
2026	0.57	0.07	0.19	0.49	1.32
2027	0.57	0.07	0.19	0.49	1.32
2028	0.57	0.07	0.19	0.49	1.32
2029	0.57	0.07	0.19	0.49	1.32
2030	0.57	0.07	0.19	0.49	1.32
2031	0.57	0.07	0.19	0.49	1.32
2032	0.57	0.07	0.19	0.49	1.32
2033	0.57	0.07	0.19	0.49	1.32
2034	0.57	0.07	0.19	0.49	1.32
2035	0.57	0.07	0.19	0.49	1.32

Table 7 – Forecasted Cumulative Conservation Acquisitions

Methodology

The relationship between the normalized historical load data and the econometric variables is determined by partial least squares (PLS) regression. This is a typical approach when constructing predictive models with factors that are highly correlated, as is the case when dealing with econometric factors. PLS regression is a technique that generalizes and combines features from principal component analysis and multiple regressions. It is particularly useful when it is necessary to predict a set of dependent variables from a (very) large set of independent variables. PLS regression tends to outperform multiple linear regressions when there are a large number of variables because it avoids over-fitting the data. An over fit model is one that is too complicated for the data set and can result in misleading forecasts of future behavior. The established relationship between load data and econometric variables is then used with the Woods & Poole Economic projections to create an energy consumption forecast.

Peak Forecast

To calculate a monthly peak forecast, a peak load factor was calculated using the historical relationship between total monthly load and the monthly peak demand. The calculated peak load factor was then applied to the monthly load forecast to generate peak demands for every month.

Low Case and High Case Scenarios

In the past, staff has only adjusted the econometric inputs to develop the Low Case and High Case. For this year's Low Case and High Case, staff also adjusted the weather variables used to drive differences in each scenario. The District develops each scenario to establish a range of growth rates and adopts the Medium Case as the Base Case. **Figure 3** below shows the differences between the Low Case, Base Case and High Case scenarios. For the Low Case scenario, the Woods & Poole growth rates were decreased by 30% and the min HDD, min CDD, and max precipitation observed over the past 5 years were used for the expected weather to establish a lower boundary of potential outcomes. For the High Case scenario, the Woods & Poole growth rates were increased by 30% and the max HDD, max CDD, and min precipitation observed over the past 5 years were used for the expected weather to establish the upper boundary of potential outcomes. More information can be found in **Appendix A**.

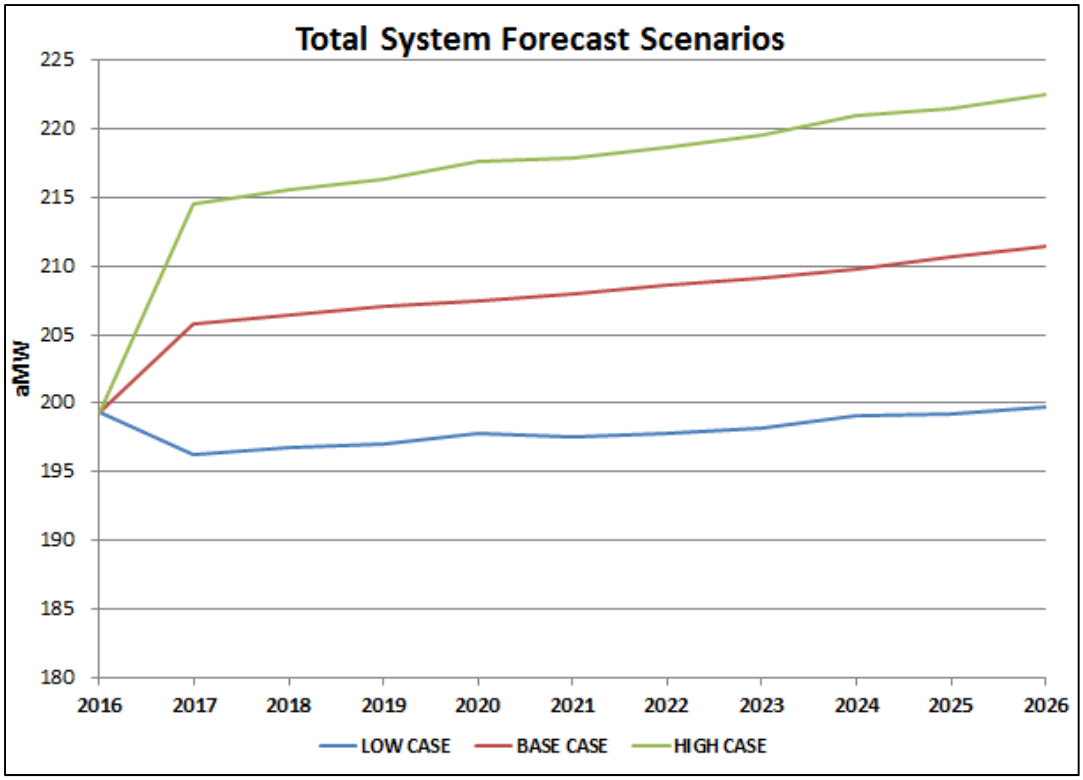


Figure 3 – Low, Base and High Case Scenarios

Other Factors affecting the Forecast

Currently, the District has 146 net metered customers who generate their own provide electricity from their renewable energy systems. It is projected that five new customers will be added each year beginning in 2017. In addition to the net metered customers, 154 District customers fully funded the construction of two community solar projects, the Ely Community Solar Project and the OIE Community Solar Project. The estimated load reduction from the current net metered customers and community solar projects is approximately 0.13 aMW or 1,138 MWhs annually.

DISTRIBUTION AND TRANSMISSION LOSSES

Table 2 shows the difference between the District's Retail, BPA POD and Wholesale load forecasts. In the past, the Forecast has strictly focused on the Retail load forecast as it is utilized to calculate the District's forecasted revenues. Retail loads include the District's aggregate metered customer load. BPA POD loads are the District's aggregate metered customer load plus distribution losses. Wholesale loads include the District's metered customer load plus distribution losses plus regional power grid transmission losses. At a high level, the District is not only responsible for procuring the energy necessary to serve our customer's load, but also the losses associated with the transport of electricity over equipment and power lines from regional generation resources to our customer loads. To put this into context for the 2017 Base Case, the District forecasts 6.5 aMW of distribution losses and 3.2 aMW of transmission losses. The annual wholesale loads, the District's BPA POD loads and Retail loads are shown in **Appendix A – Table 1.**

RESIDENTIAL SALES

The District has historically experienced strong Residential energy usage and customer growth, but over the past five years, the District averaged 591 new customers per year while seeing an annual average decrease of 0.24% in energy usage. The decoupling of customer growth and energy usage growth highlights the impacts conservation and new building codes and standards are having on the electric industry. Over the five year and ten year planning period, customer growth is expected to see continued increases adding 621 and 594 new customers per year respectively. During the same planning period, the Residential energy usage is expected to see an AARG of 0.72% and 0.73% respectively. Due to the severe impact weather has on this customer class, staff developed a mild summer scenario that can be found in **Appendix B**. See **Table 8** and **Figure 4** below for more detail.

Residential	
Load Growth	
Average Growth	Range
0.72%	2017-2021
0.73%	2017-2026

Year	Actuals		Forecast		Forecast - No Conservation		% Change	Cust Count	Change	Usage Per Cust	% Change
	MWh	aMW	MWh	aMW	MWh	aMW					
2000	636,952	72.51									
2001	617,763	70.52					-3.01%				
2002	622,196	71.03					0.72%				
2003	604,618	69.02					-2.83%				
2004	621,386	70.74					2.77%				
2005	622,639	71.08					0.20%	36,963		16.84	
2006	632,213	72.17					1.54%	37,418	455	16.90	0.30%
2007	644,392	73.56					1.93%	37,969	551	16.97	0.45%
2008	666,418	75.87					3.42%	38,855	886	17.15	1.06%
2009	721,719	82.39					8.30%	39,220	365	18.40	7.29%
2010	654,775	74.75					-9.28%	39,687	466	16.50	-10.34%
2011	687,953	78.53					5.07%	40,201	514	17.11	3.72%
2012	668,018	76.05					-2.90%	40,645	444	16.44	-3.96%
2013	697,887	79.67					4.47%	41,321	676	16.89	2.76%
2014	696,804	79.54					-0.16%	41,758	437	16.69	-1.20%
2015	665,505	75.97					-4.49%	42,375	617	15.71	-5.88%
2016	661,742	75.33					-0.57%	43,157	783	15.33	-2.37%
2017			697,703	79.65	697,778	79.65	5.43%	43,895	738	15.89	3.66%
2018			703,308	80.29	703,778	80.34	0.80%	44,501	605	15.80	-0.57%
2019			708,490	80.88	709,728	81.02	0.74%	45,102	602	15.71	-0.61%
2020			716,041	81.52	718,362	81.78	1.07%	45,690	588	15.67	-0.23%
2021			717,937	81.96	721,380	82.35	0.26%	46,262	572	15.52	-0.97%
2022			722,785	82.51	727,089	83.00	0.68%	46,833	572	15.43	-0.55%
2023			727,938	83.10	732,798	83.65	0.71%	47,405	572	15.36	-0.50%
2024			736,222	83.81	741,246	84.39	1.14%	47,977	572	15.35	-0.07%
2025			739,176	84.38	744,186	84.95	0.40%	48,540	563	15.23	-0.76%
2026			744,623	85.00	749,632	85.57	0.74%	49,092	553	15.17	-0.40%

Table 8 – Residential History and Retail Load Forecast

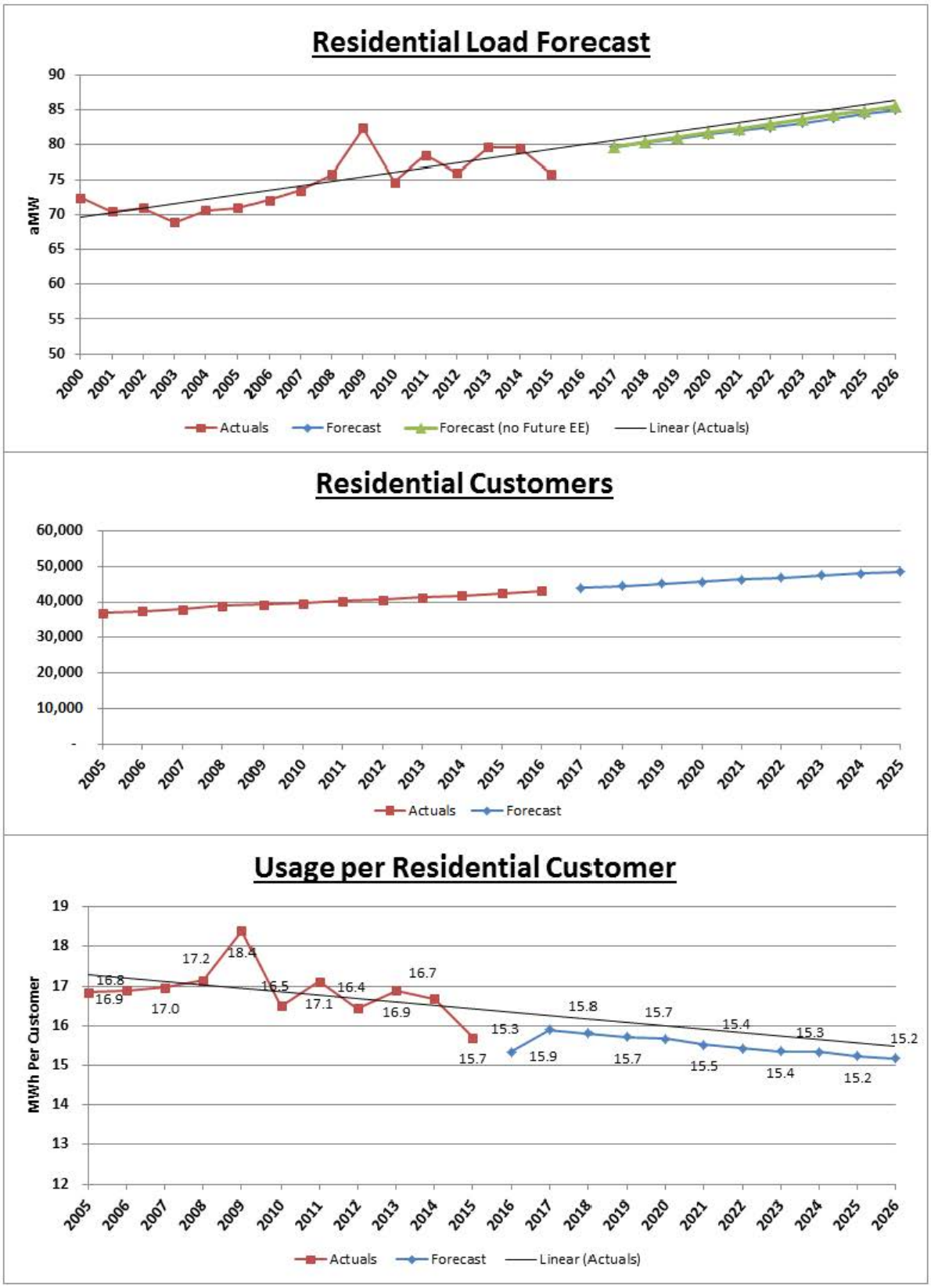


Figure 4 – Residential Load Forecast, Customer Forecast, Usage per Customer

GENERAL SERVICE SALES

Customers with peak demand less than 50 KW are classified as Small General Service (SGS). Medium General Service (MGS) customers have peak demand between 50 KW and 300 KW and the Large General Service (LGS) class is for customers with peak demand greater than 300 kW three times during the year. As a customer's usage changes with time, it is possible for them to be reclassified into another customer class.

The SGS class observed 0.51% of growth in energy usage from 2012 to 2016 with an average increase of 72 in customers. The SGS class is expected to see continued growth adding 78 and 74 new customers per year respectively over the five year and ten year planning period. During the same planning period, SGS's energy usage is expected to see an AARG of 0.44% and 0.45% respectively slightly lower than what was observed during the last five years. See **Table 9** and **Figure 5** for more detail on the SGS customer class.

The MGS class observed 0.63% of growth in energy usage from 2012 to 2016 with an average increase of seven in customers annually. The MGS class is expected to see continued growth adding 19 and 16 new customers per year respectively over the five year and ten year planning period. During the same planning period, MGS's energy usage is expected to see an AARG of 0.52% and 0.54% respectively slightly lower than what was observed during the last five years. See **Table 10** and **Figure 6** for more detail on the MGS customer class.

The LGS has observed 0.67% of growth in energy usage from 2012 to 2016 with an average increase of four customers annually. However, the LGS class is not expected to experience any additional customer growth over the five year and ten year planning period. During the same planning period, LGS's energy usage is expected to see a decline of 0.79% and 0.67% respectively due to overall customer class trend decreasing since 2000 and an increase in conservation acquisitions for the LGS class. See **Table 11** and **Figure 7** for more detail on the LGS customer class.

Small General Service	
Load Growth	
Average Growth	Range
0.44%	2017-2021
0.45%	2017-2026

Year	Actuals		Forecast		Forecast - No Conservation		% Change	Cust Count	Change	Usage Per Cust	% Change
	MWh	aMW	MWh	aMW	MWh	aMW					
2000	115,604	13.16									
2001	113,104	12.91					-2.16%				
2002	113,127	12.91					0.02%				
2003	113,253	12.93					0.11%				
2004	115,574	13.16					2.05%				
2005	114,710	13.09					-0.75%	4,144		27.68	
2006	112,705	12.87					-1.75%	4,169	25	27.03	-2.34%
2007	115,049	13.13					2.08%	4,295	126	26.78	-0.92%
2008	115,616	13.16					0.49%	4,385	90	26.36	-1.57%
2009	121,580	13.88					5.16%	4,460	75	27.26	3.40%
2010	113,483	12.95					-6.66%	4,503	43	25.20	-7.55%
2011	118,338	13.51					4.28%	4,553	50	25.99	3.13%
2012	119,421	13.60					0.92%	4,610	57	25.90	-0.33%
2013	122,928	14.03					2.94%	4,682	72	26.26	1.36%
2014	124,285	14.19					1.10%	4,741	60	26.21	-0.16%
2015	121,498	13.87					-2.24%	4,828	87	25.17	-4.00%
2016	121,868	13.87					0.30%	4,915	87	24.80	-1.47%
2017			123,101	14.05	123,109	14.05	1.01%	5,013	98	24.56	-0.96%
2018			123,726	14.12	123,780	14.13	0.51%	5,088	75	24.32	-0.98%
2019			124,270	14.19	124,415	14.20	0.44%	5,163	75	24.07	-1.02%
2020			125,159	14.25	125,432	14.28	0.72%	5,236	73	23.90	-0.69%
2021			125,287	14.30	125,693	14.35	0.10%	5,307	71	23.61	-1.24%
2022			125,784	14.36	126,291	14.42	0.40%	5,378	71	23.39	-0.93%
2023			126,331	14.42	126,904	14.49	0.43%	5,450	71	23.18	-0.88%
2024			127,300	14.49	127,892	14.56	0.77%	5,521	71	23.06	-0.53%
2025			127,547	14.56	128,138	14.63	0.19%	5,591	70	22.81	-1.06%
2026			128,138	14.63	128,729	14.70	0.46%	5,660	69	22.64	-0.76%

Table 9 – Small General Service History and Retail Load Forecast

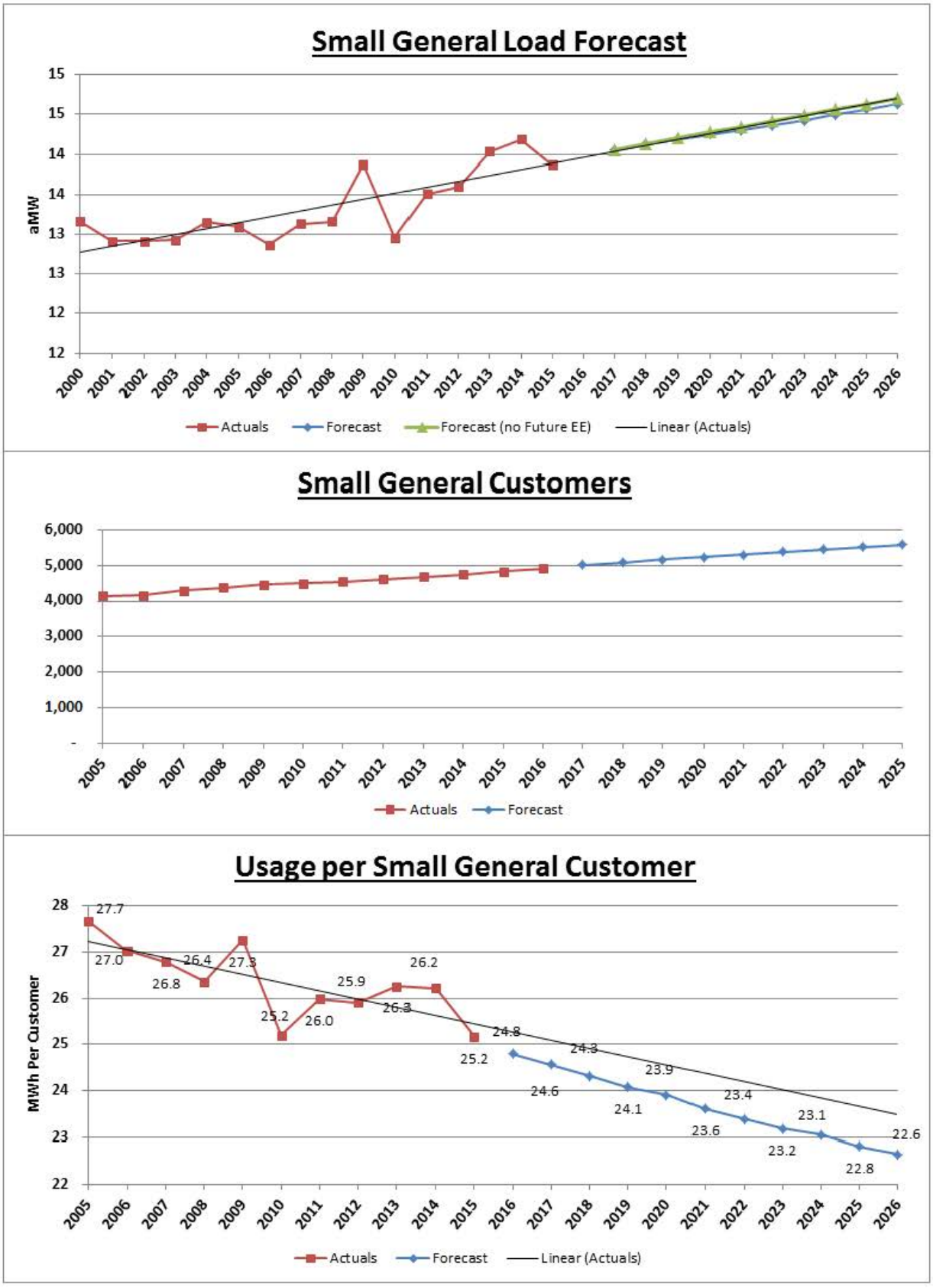


Figure 5 – Small General Service Load Forecast, Customer Forecast, Usage per Customer

Medium General Service	
Load Growth	
Average Growth	Range
0.52%	2017-2021
0.54%	2017-2026

Year	Actuals		Forecast		Forecast - No Conservation		% Change	Cust Count	Change	Usage Per Cust	% Change
	MWh	aMW	MWh	aMW	MWh	aMW					
2000	167,304	19.05									
2001	166,300	18.98					-0.60%				
2002	164,197	18.74					-1.26%				
2003	170,005	19.41					3.54%				
2004	167,622	19.08					-1.40%				
2005	164,043	18.73					-2.14%	637		257.46	
2006	160,440	18.32					-2.20%	636	(1)	252.20	-2.04%
2007	165,186	18.86					2.96%	654	18	252.45	0.10%
2008	169,571	19.30					2.66%	676	21	250.94	-0.60%
2009	175,265	20.01					3.36%	695	19	252.18	0.49%
2010	170,868	19.51					-2.51%	718	23	238.03	-5.61%
2011	175,463	20.03					2.69%	732	14	239.84	0.76%
2012	175,999	20.04					0.31%	747	15	235.71	-1.72%
2013	177,250	20.23					0.71%	746	(1)	237.60	0.80%
2014	182,044	20.78					2.70%	754	8	241.41	1.60%
2015	182,610	20.85					0.31%	758	4	240.99	-0.17%
2016	180,467	20.54					-1.17%	768	10	235.06	-2.46%
2017			182,299	20.81	182,319	20.81	1.02%	805	37	226.55	-3.62%
2018			183,417	20.94	183,568	20.96	0.61%	819	15	223.86	-1.19%
2019			184,398	21.05	184,801	21.10	0.54%	834	15	221.15	-1.21%
2020			185,796	21.15	186,555	21.24	0.76%	848	14	219.10	-0.93%
2021			186,089	21.24	187,218	21.37	0.16%	862	14	215.90	-1.46%
2022			186,973	21.34	188,385	21.51	0.48%	876	14	213.50	-1.11%
2023			187,973	21.46	189,568	21.64	0.53%	890	14	211.30	-1.03%
2024			189,621	21.59	191,270	21.77	0.88%	903	14	209.91	-0.66%
2025			190,282	21.72	191,926	21.91	0.35%	917	14	207.50	-1.15%
2026			191,413	21.85	193,058	22.04	0.59%	930	13	205.77	-0.84%

Table 10 – Medium General Service History and Retail Load Forecast

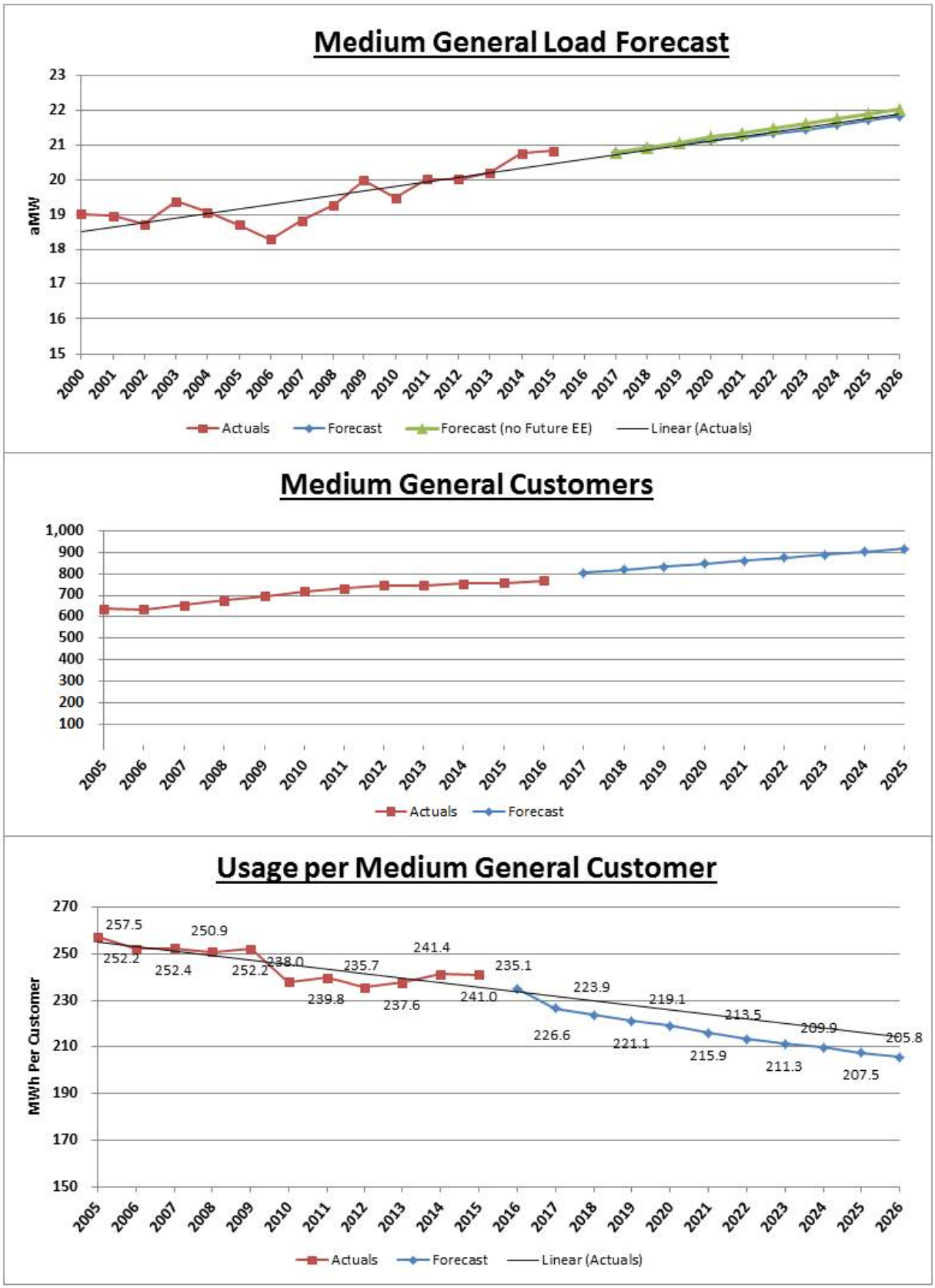


Figure 6 – Medium General Service Retail Load Forecast, Customer Forecast, Usage per Customer

Large General Service	
Load Growth	
Average Growth	Range
-0.79%	2017-2021
-0.67%	2017-2026

Year	Actuals		Forecast		Forecast - No Conservation		% Change	Cust Count	Change	Usage Per Cust	% Change
	MWh	aMW	MWh	aMW	MWh	aMW					
2000	247,522	28.18									
2001	220,952	25.22					-10.73%				
2002	219,625	25.07					-0.60%				
2003	225,799	25.78					2.81%				
2004	240,192	27.34					6.37%				
2005	242,555	27.69					0.98%	122		1,989.52	
2006	236,908	27.04					-2.33%	126	4	1,881.46	-5.43%
2007	223,317	25.49					-5.74%	128	2	1,742.39	-7.39%
2008	224,958	25.61					0.73%	131	3	1,715.05	-1.57%
2009	233,410	26.65					3.76%	134	2	1,747.30	1.88%
2010	218,686	24.96					-6.31%	135	2	1,618.90	-7.35%
2011	209,669	23.93					-4.12%	136	1	1,539.80	-4.89%
2012	217,377	24.75					3.68%	142	6	1,532.62	-0.47%
2013	219,315	25.04					0.89%	144	2	1,520.38	-0.80%
2014	226,679	25.88					3.36%	148	4	1,531.62	0.74%
2015	226,175	25.82					-0.22%	151	3	1,496.20	-2.31%
2016	223,268	25.42					-1.29%	157	6	1,421.33	-5.00%
2017			219,459	25.05	219,512	25.06	-1.71%	158	1	1,388.98	-2.28%
2018			218,110	24.90	218,505	24.94	-0.61%	158	-	1,380.44	-0.61%
2019			216,443	24.71	217,497	24.83	-0.76%	158	-	1,369.89	-0.76%
2020			215,073	24.48	217,059	24.71	-0.63%	158	-	1,361.22	-0.63%
2021			212,597	24.27	215,547	24.61	-1.15%	158	-	1,345.55	-1.15%
2022			210,906	24.08	214,597	24.50	-0.79%	158	-	1,334.85	-0.79%
2023			209,479	23.91	213,648	24.39	-0.68%	158	-	1,325.81	-0.68%
2024			208,926	23.78	213,236	24.28	-0.26%	158	-	1,322.32	-0.26%
2025			207,443	23.68	211,741	24.17	-0.71%	158	-	1,312.93	-0.71%
2026			206,545	23.58	210,844	24.07	-0.43%	158	-	1,307.25	-0.43%

Table 11 – Large General Service History and Retail Load Forecast

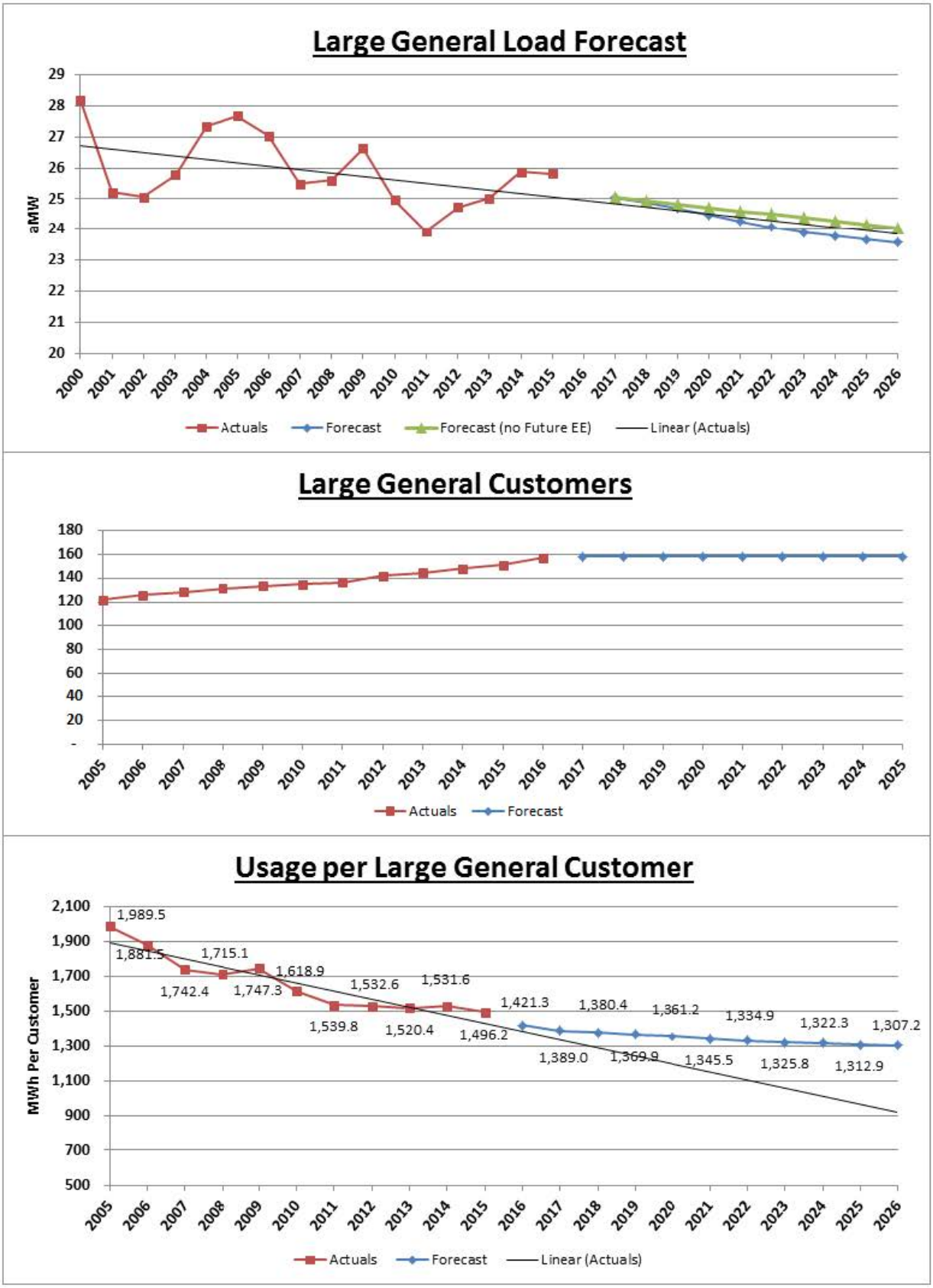


Figure 7 – Large General Service Retail Load Forecast, Customer Forecast, Usage per Customer

LARGE INDUSTRIAL SALES

Historically, Large Industrial sales have fluctuated based on market demands for the plant's product and had an average annual decrease of 2.18% from 2012 to 2016. In 2016, energy sales followed the trend decreasing by 3.48% compared to 2015. The decrease is attributed to the continued decline from two large conservation projects completed at the plant: the first being a large compressor upgrade; the second being a lighting project upgrade. Both projects significantly reduced the energy consumption by the customer.

During the five year and ten year planning period, the Large Industrial customer class is not expected to add any new customers with energy usage expected to remain flat as well. The Forecast originally showed an increase in energy usage, but staff adjusted the Forecast for to be flat due to the observed decreases from 2012 to 2016 and future expected conservation acquisitions. See **Table 12** and **Figure 8** below for more detail.

Large Industrial	
Load Growth	
Average Growth	Range
0.00%	2017-2021
0.00%	2017-2026

Year	Actuals		Forecast		Forecast - No Conservation		% Change	Cust Count	Change	Usage Per Cust	% Change
	MWh	aMW	MWh	aMW	MWh	aMW					
2000	220,913	25.15									
2001	70,897	8.09					-67.91%				
2002	80,551	9.20					13.62%				
2003	58,054	6.63					-27.93%				
2004	69,479	7.91					19.68%				
2005	53,286	6.08					-23.31%	3		17,761.93	
2006	37,456	4.28					-29.71%	3	-	12,485.31	-29.71%
2007	49,045	5.60					30.94%	3	-	16,348.38	30.94%
2008	47,760	5.44					-2.62%	3	-	15,920.10	-2.62%
2009	38,909	4.44					-18.53%	3	-	12,969.69	-18.53%
2010	55,365	6.32					42.29%	3	-	18,454.89	42.29%
2011	65,411	7.47					18.15%	3	-	21,803.60	18.15%
2012	70,575	8.03					7.90%	3	-	23,525.06	7.90%
2013	69,803	7.97					-1.09%	3	-	23,267.59	-1.09%
2014	71,869	8.20					2.96%	3	-	23,956.50	2.96%
2015	66,942	7.64					-6.86%	3	-	22,313.96	-6.86%
2016	64,612	7.36					-3.48%	5	2	12,922.45	-42.09%
2017			64,612	7.38	64,612	7.38	0.00%	5	-	12,922.40	0.00%
2018			64,612	7.38	64,612	7.38	0.00%	5	-	12,922.40	0.00%
2019			64,612	7.38	64,612	7.38	0.00%	5	-	12,922.40	0.00%
2020			64,612	7.36	64,612	7.36	0.00%	5	-	12,922.40	0.00%
2021			64,612	7.38	64,612	7.38	0.00%	5	-	12,922.40	0.00%
2022			64,612	7.38	64,612	7.38	0.00%	5	-	12,922.40	0.00%
2023			64,612	7.38	64,612	7.38	0.00%	5	-	12,922.40	0.00%
2024			64,612	7.36	64,612	7.36	0.00%	5	-	12,922.40	0.00%
2025			64,612	7.38	64,612	7.38	0.00%	5	-	12,922.40	0.00%
2026			64,612	7.38	64,612	7.38	0.00%	5	-	12,922.40	0.00%

Table 12 – Large Industrial History and Retail Load Forecast

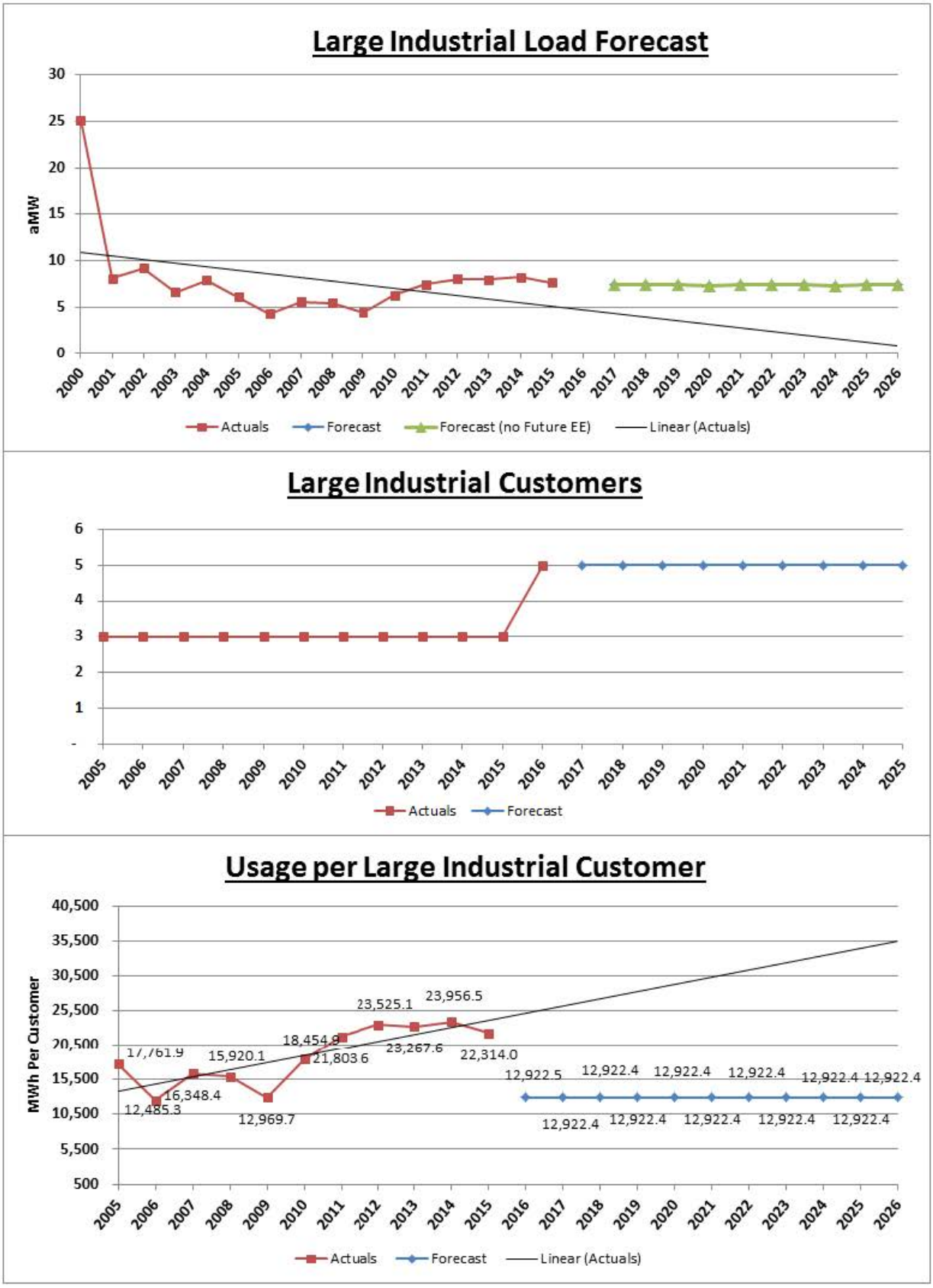


Figure 8 – Large Industrial Retail Load Forecast, Customer Forecast, Usage per Customer

IRRIGATION SALES

The Small Irrigation class has experienced a declining trend losing on average five customers annually since 2012. The Forecast continues the trend and predicts losing an additional six customers annually with the AARG decreasing by 0.07% per year during the five year and ten year planning periods. See **Table 13** and **Figure 9** for more detail.

The Large Irrigation class tends to show strong yearly fluctuations due to weather and crop rotation. The 2016 actual energy sales decreased 7.12% compared to 2015. The Forecast originally showed an increase in energy usage, but staff adjusted the Large Irrigation class to remain flat over the five year and ten year planning periods. The adjustment was made because the trend established by the forecast model was unrealistic due to the increases observed from 2013 to 2015 during an expansion by a large farmer. Future expansion is not anticipated during the planning period. Due to the severe impact weather has on this customer class and the decline in energy consumption observed during 2016, staff developed a mild summer scenario that can be found in **Appendix B**. See **Table 14** and **Figure 10** for more detail.

Small Irrigation	
Load Growth	
Average Growth	Range
-0.07%	2017-2021
-0.07%	2017-2026

Year	Actuals		Forecast		Forecast - No Conservation		% Change	Cust Count	Change	Usage Per Cust	% Change
	MWh	aMW	MWh	aMW	MWh	aMW					
2000	16,917	1.93									
2001	15,951	1.82					-5.71%				
2002	16,119	1.84					1.05%				
2003	15,873	1.81					-1.52%				
2004	15,071	1.72					-5.05%				
2005	15,724	1.80					4.33%	622		25.27	
2006	14,305	1.63					-9.03%	614	(8)	23.30	-7.79%
2007	15,849	1.81					10.79%	607	(7)	26.10	11.99%
2008	16,043	1.83					1.22%	615	8	26.07	-0.11%
2009	16,884	1.93					5.24%	615	(1)	27.46	5.34%
2010	14,446	1.65					-14.44%	602	(13)	24.00	-12.61%
2011	14,607	1.67					1.11%	582	(20)	25.10	4.61%
2012	15,165	1.73					3.82%	563	(19)	26.95	7.34%
2013	15,211	1.74					0.31%	564	1	26.98	0.11%
2014	17,209	1.96					13.13%	563	(1)	30.59	13.38%
2015	16,425	1.87					-4.56%	560	(3)	29.33	-4.12%
2016	15,597	1.78					-5.04%	558	(3)	27.98	-4.61%
2017			15,950	1.82	15,950	1.82	2.26%	552	(6)	28.90	3.31%
2018			15,943	1.82	15,943	1.82	-0.05%	546	(6)	29.20	1.02%
2019			15,943	1.82	15,943	1.82	0.00%	540	(6)	29.52	1.11%
2020			15,935	1.81	15,935	1.81	-0.05%	534	(6)	29.86	1.16%
2021			15,906	1.82	15,906	1.82	-0.18%	528	(6)	30.15	0.97%
2022			15,899	1.81	15,899	1.81	-0.05%	521	(6)	30.50	1.15%
2023			15,892	1.81	15,892	1.81	-0.05%	515	(6)	30.86	1.17%
2024			15,877	1.81	15,877	1.81	-0.09%	509	(6)	31.20	1.10%
2025			15,869	1.81	15,869	1.81	-0.05%	503	(6)	31.58	1.23%
2026			15,855	1.81	15,855	1.81	-0.09%	496	(6)	31.96	1.20%

Table 13 – Small Irrigation History and Retail Load Forecast

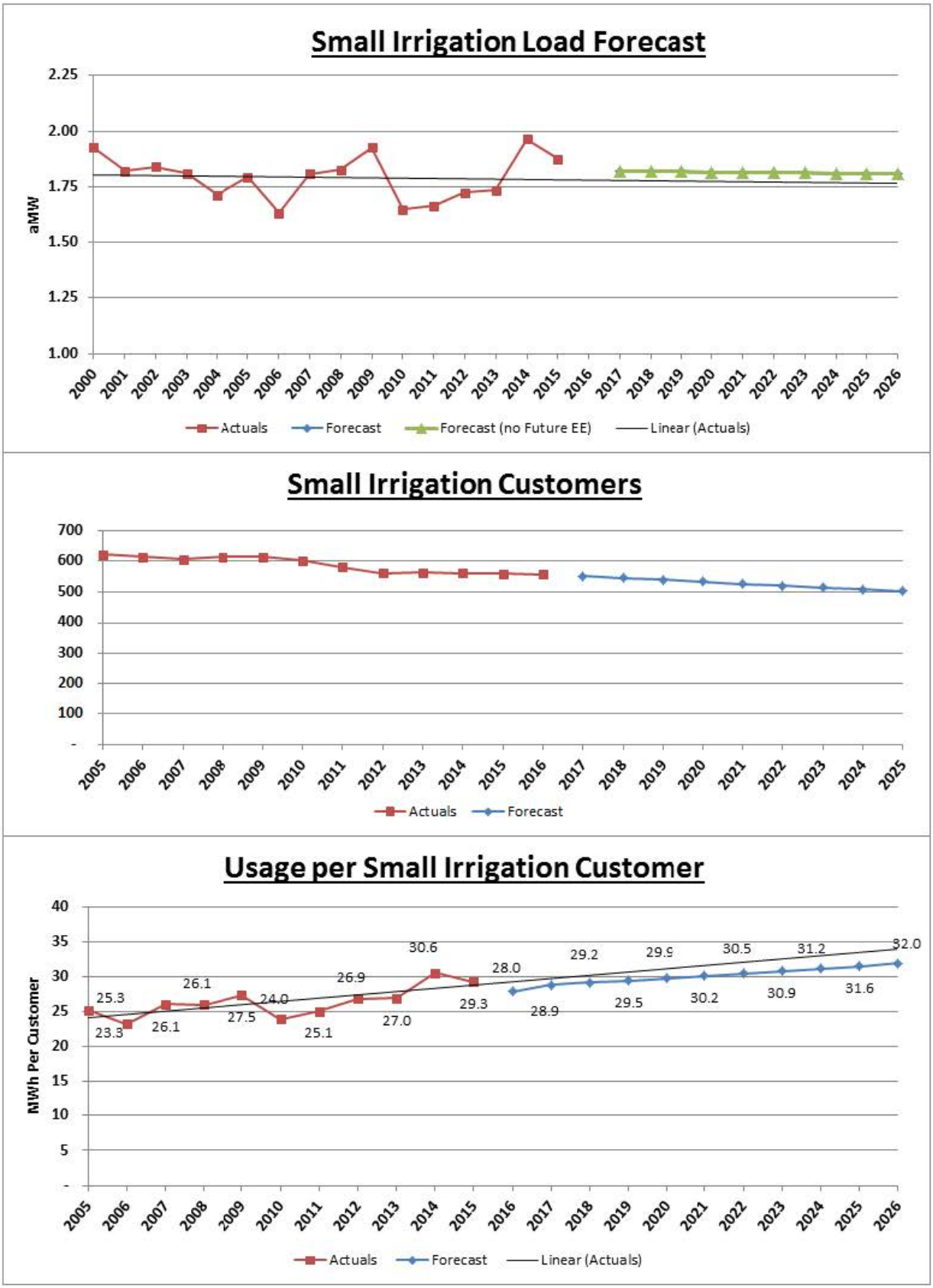


Figure 9 – Small Irrigation Retail Load Forecast, Customer Forecast, Usage per Customer

Large Irrigation	
Load Growth	
Average Growth	Range
0.00%	2017-2021
0.00%	2017-2026

Year	Actuals		Forecast		Forecast - No Conservation		% Change	Cust Count	Change	Usage Per Cust	% Change
	MWh	aMW	MWh	aMW	MWh	aMW					
2000	368,836	41.99									
2001	359,731	41.07					-2.47%				
2002	366,431	41.83					1.86%				
2003	385,995	44.06					5.34%				
2004	360,292	41.02					-6.66%				
2005	381,927	43.60					6.00%	96		3,978.41	
2006	353,743	40.38					-7.38%	99	3	3,588.26	-9.81%
2007	386,402	44.11					9.23%	110	11	3,526.10	-1.73%
2008	391,389	44.56					1.29%	121	12	3,223.52	-8.58%
2009	410,386	46.85					4.85%	131	10	3,132.72	-2.82%
2010	356,875	40.74					-13.04%	134	3	2,664.91	-14.93%
2011	367,393	41.94					2.95%	140	6	2,624.23	-1.53%
2012	370,573	42.19					0.87%	158	18	2,345.40	-10.63%
2013	387,408	44.22					4.54%	208	50	1,859.56	-20.71%
2014	455,435	51.99					17.56%	225	17	2,025.65	8.93%
2015	451,777	51.57					-0.80%	234	9	1,932.74	-4.59%
2016	419,588	47.77					-7.12%	233	(1)	1,801.45	-6.79%
2017			436,000	49.77	436,000	49.77	3.91%	230	(3)	1,895.65	5.23%
2018			436,000	49.77	436,000	49.77	0.00%	230	-	1,895.65	0.00%
2019			436,000	49.77	436,000	49.77	0.00%	230	-	1,895.65	0.00%
2020			436,000	49.64	436,000	49.64	0.00%	230	-	1,895.65	0.00%
2021			436,000	49.77	436,000	49.77	0.00%	230	-	1,895.65	0.00%
2022			436,000	49.77	436,000	49.77	0.00%	230	-	1,895.65	0.00%
2023			436,000	49.77	436,000	49.77	0.00%	230	-	1,895.65	0.00%
2024			436,000	49.64	436,000	49.64	0.00%	230	-	1,895.65	0.00%
2025			436,000	49.77	436,000	49.77	0.00%	230	-	1,895.65	0.00%
2026			436,000	49.77	436,000	49.77	0.00%	230	-	1,895.65	0.00%

Table 14 – Large Irrigation History and Retail Load Forecast

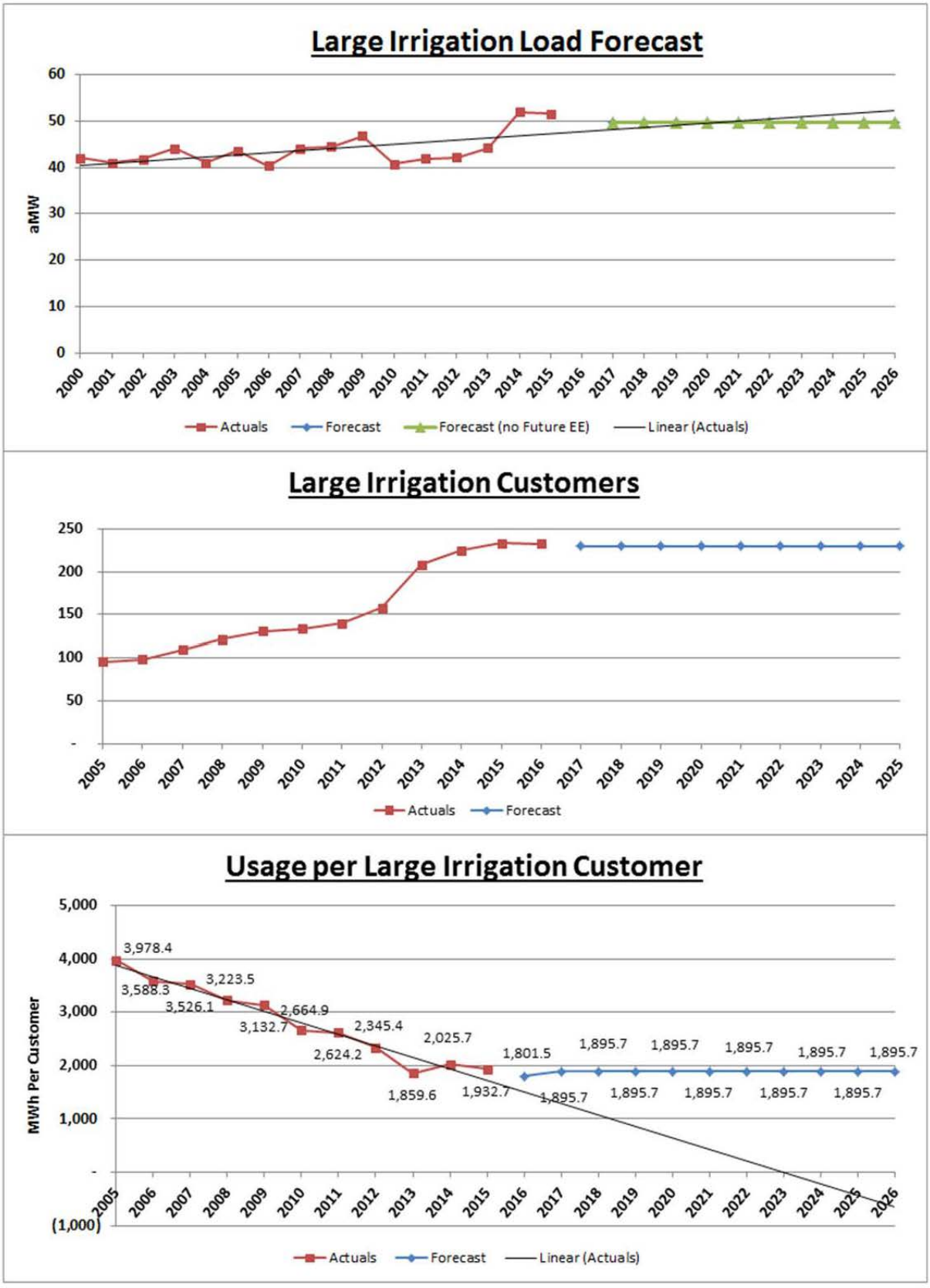


Figure 10 – Large Irrigation Retail Load Forecast, Customer Forecast, Usage per Customer

STREET AND SECURITY LIGHTING

This category consists of street and security lights. Over the next ten years, Street Light energy sales are projected to decrease at an average rate of 1.97% annually. Over the same time period, Security Light energy sales are forecasted to grow at an average rate of 0.91% per year.

TOTAL SYSTEM

The Total System forecast is an aggregation of the forecasts of each customer class. During the past five years, the District observed an AARG of 0.73% while adding an average of 689 customers per year. The Total System Forecast shows a slight decrease from what was observed from 2012 to 2016 with an AARG of 0.27% during the five year planning period and 0.30% for the ten year planning period. While the District anticipates continuing to add a similar number of customers during the planning period, energy usage is not expected to grow at the pace as observed previously. As mentioned earlier, increases in energy efficiency, conservation and new building codes and standards are having a noticeable impact not only on the District, but also on the electric industry as a whole. See **Table 15** and **Figure 11** below for more detail.

Total System	
Load Growth	
Average Growth	Range
0.27%	2017-2021
0.30%	2017-2026

Year	Actuals		Forecast		Forecast - No Conservation		% Change	Cust Count	Change	Usage Per Cust	% Change
	MWh	aMW	MWh	aMW	MWh	aMW					
2000	1,779,257	202.56									
2001	1,569,982	179.22					-11.76%				
2002	1,587,678	181.24					1.13%				
2003	1,580,751	180.45					-0.44%				
2004	1,597,054	181.81					1.03%				
2005	1,602,508	182.93					0.34%	44,389		36.10	
2006	1,555,710	177.59					-2.92%	44,855	466	34.68	-3.93%
2007	1,607,265	183.48					3.31%	45,570	715	35.27	1.69%
2008	1,639,856	186.69					2.03%	46,601	1,031	35.19	-0.23%
2009	1,726,341	197.07					5.27%	47,074	473	36.67	4.22%
2010	1,592,802	181.83					-7.74%	47,616	542	33.45	-8.79%
2011	1,648,362	188.17					3.49%	48,197	581	34.20	2.24%
2012	1,645,277	187.30					-0.19%	48,710	513	33.78	-1.24%
2013	1,696,774	193.70					3.13%	49,519	809	34.26	1.44%
2014	1,781,322	203.35					4.98%	50,052	533	35.59	3.87%
2015	1,738,022	198.40					-2.43%	50,761	709	34.24	-3.79%
2016	1,694,078	192.86					-2.53%	51,642	881	32.80	-4.19%
2017			1,746,052	199.32	1,746,208	199.34	3.07%	52,550	907	33.23	1.29%
2018			1,752,043	200.00	1,753,113	200.13	0.34%	53,260	710	32.90	-0.99%
2019			1,756,996	200.57	1,759,836	200.89	0.28%	53,965	706	32.56	-1.03%
2020			1,765,511	200.99	1,770,850	201.60	0.48%	54,654	689	32.30	-0.78%
2021			1,765,239	201.51	1,773,166	202.42	-0.02%	55,325	671	31.91	-1.23%
2022			1,769,850	202.04	1,779,764	203.17	0.26%	55,995	670	31.61	-0.94%
2023			1,775,064	202.63	1,786,260	203.91	0.29%	56,665	670	31.33	-0.89%
2024			1,785,402	203.26	1,796,977	204.57	0.58%	57,336	671	31.14	-0.59%
2025			1,787,710	204.08	1,799,254	205.39	0.13%	57,996	660	30.82	-1.01%
2026			1,794,019	204.80	1,805,563	206.11	0.35%	58,644	648	30.59	-0.76%

Table 15 – Total System History and Retail Load Forecast

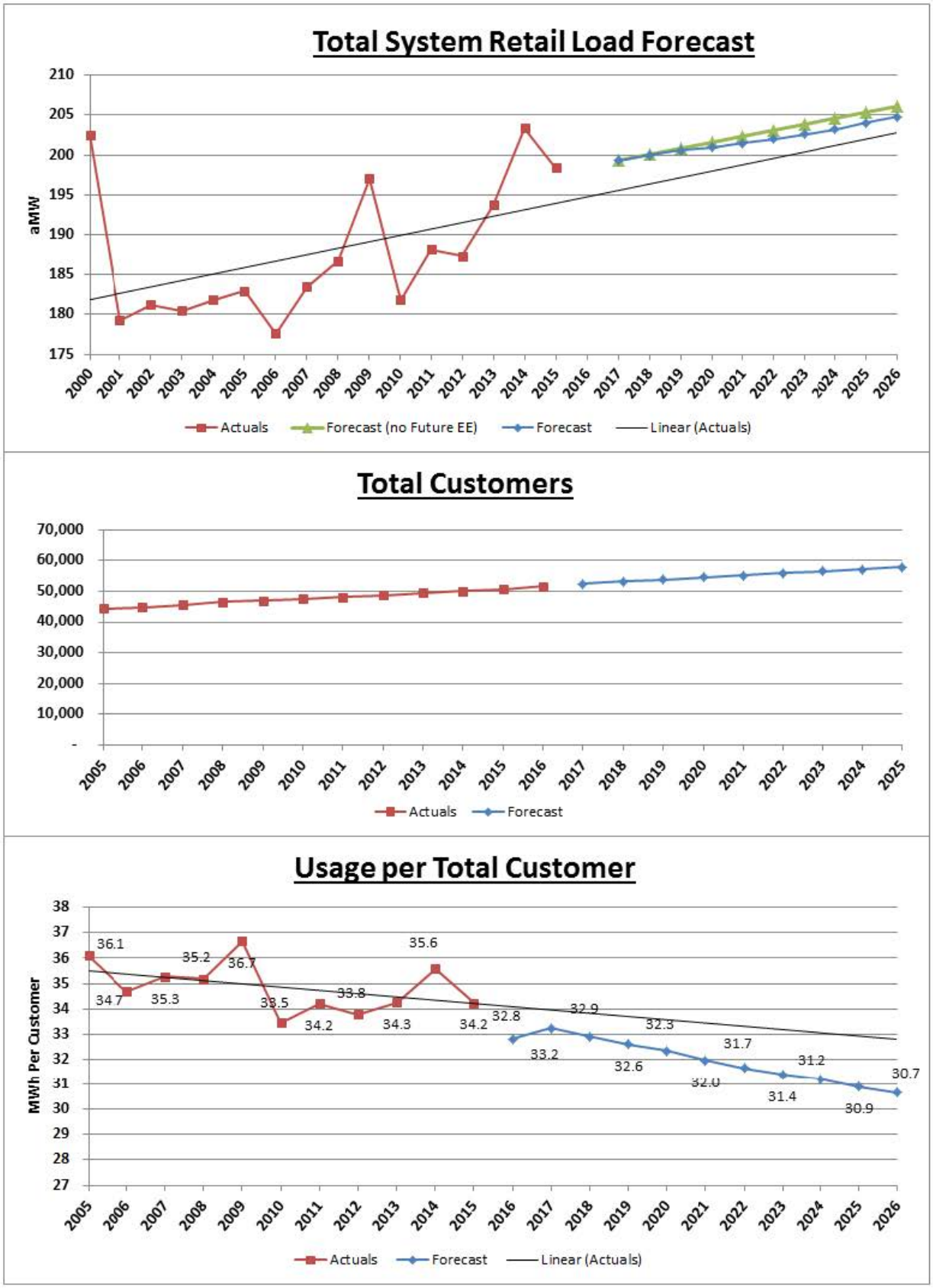


Figure 11 – Total System Retail Load Forecast, Customer Forecast, Usage per Customer

LOAD FORECAST UNCERTAINTIES

While every effort is made to have the most accurate forecast possible, the unknown is always a factor when looking ten years into the future. In an effort to mitigate the unknown, three forecasts are studied with the Medium Case forecast being adopted as the most expected for current economic conditions and average weather. As mentioned previously in addition to the Low Case, Medium Case and High Case, staff also assessed the impacts of a mild summer to understand the impact a mild summer would have District's energy sales. See **Appendix B** for more information about a specific scenario considered.

CONCLUSIONS

The 2017 Forecast's Base Case scenario expects an AARG of 0.30**%** for the ten year planning period which is down from 0.41% projected in last year's Forecast. By the year 2026, this would result in an annual average power increase of **12 aMW** over the 2016 load of 199 aMW at the BPA POD.

See **Table 16** a breakdown of the five year and ten year AARG by customer class.

	Residential	Sm Gen	Med Gen	Lrg General	Lrg Ind	Sm. Irr	Lrg Irr	Street Lights	Sec. Lights	Unmetered	Total System
Five Year AARG	0.72%	0.44%	0.52%	-0.79%	0.00%	-0.07%	0.00%	-2.24%	0.42%	0.72%	0.27%
Ten Year AARG	0.73%	0.45%	0.54%	-0.67%	0.00%	-0.07%	0.00%	-1.98%	0.91%	0.81%	0.30%

Table 16 – Average Annual Rates of Growth by Customer Class

TEN YEAR FORECAST TO 2026

Appendix A includes a breakdown of each load forecast scenario, customer counts and the District's normalized historical actuals compared to the Base Case forecast for the next ten years.

Included in **Appendix A** are the following five tables:

- **Table 1 – Load Forecast Summary (including Conservation)** shows the annual historical and forecasted summaries of the number of customers, Retail energy sales, peak demand, average annual loads at BPA POD and average annual Wholesale loads for each forecast scenario. All values are shown are net of the load reductions associated with the District conservation activities.
- **Table 2 – Customer Metered Load – Historical and Forecasted (including Conservation) – Low Case** shows the annual historical and forecasted energy sales by customer class, the total BPA POD loads and total Wholesale loads for the Low Case. All values are shown are net of the load reductions associated with the District conservation activities
- **Table 3 – Customer Metered Load – Historical and Forecasted (including Conservation) – Base Case** shows the annual historical and forecasted energy sales by customer class, the total BPA POD loads and total Wholesale loads for the Base Case. All values are shown are net of the load reductions associated with the District conservation activities

- **Table 4 – Customer Metered Load – Historical and Forecasted (including Conservation) – High Case** shows the annual historical and forecasted energy sales by customer class, the total BPA POD loads and total Wholesale loads for the High Case. All values are shown are net of the load reductions associated with the District conservation activities
- **Table 5 – Use per Customer in kWh – Historical and Forecasted (including Conservation) – Base Case** shows the annual historical and forecasted average use per customer in kWh for all classes. All values are shown are net of the load reductions associated with the District conservation activities.

Appendix A

2017 LOAD FORECAST SUMMARY (INCLUDING CONSERVATION) **Table 1**

YEAR	NUMBER OF CUSTOMERS			TOTAL RETAIL SALES aMW			PEAK SYSTEM DEMAND MW @ POD			TOTAL LOADS aMW @ POD			TOTAL WHOLESALE LOADS (aMW)		
	LOW CASE	BASE CASE	HIGH CASE	LOW CASE	BASE CASE	HIGH CASE	LOW CASE	BASE CASE	HIGH CASE	LOW CASE	BASE CASE	HIGH CASE	LOW CASE	BASE CASE	HIGH CASE
2000	41,896	41,896	41,896	202.6	202.6	202.6	396	396	396	210.1	210.1	210.1	213.6	213.6	213.6
2001	42,491	42,491	42,491	179.2	179.2	179.2	352	352	352	187.8	187.8	187.8	190.9	190.9	190.9
2002	42,455	42,455	42,455	181.2	181.2	181.2	374	374	374	187.1	187.1	187.1	190.2	190.2	190.2
2003	43,459	43,459	43,459	180.5	180.5	180.5	384	384	384	186.7	186.7	186.7	189.7	189.7	189.7
2004	44,262	44,262	44,262	181.8	181.8	181.8	382	382	382	187.4	187.4	187.4	190.4	190.4	190.4
2005	44,628	44,628	44,628	182.9	182.9	182.9	366	366	366	187.5	187.5	187.5	190.6	190.6	190.6
2006	45,302	45,302	45,302	177.6	177.6	177.6	373	373	373	182.9	182.9	182.9	185.9	185.9	185.9
2007	45,930	45,930	45,930	183.5	183.5	183.5	374	374	374	190.2	190.2	190.2	193.3	193.3	193.3
2008	46,903	46,903	46,903	186.7	186.7	186.7	397	397	397	194.0	194.0	194.0	197.2	197.2	197.2
2009	47,328	47,328	47,328	197.1	197.1	197.1	401	401	401	203.6	203.6	203.6	206.9	206.9	206.9
2010	47,937	47,937	47,937	181.8	181.8	181.8	391	391	391	188.8	188.8	188.8	191.9	191.9	191.9
2011	48,455	48,455	48,455	188.2	188.2	188.2	380	380	380	194.3	194.3	194.3	197.5	197.5	197.5
2012	49,059	49,059	49,059	187.3	187.3	187.3	404	404	404	193.1	193.1	193.1	196.3	196.3	196.3
2013	49,816	49,816	49,816	193.7	193.7	193.7	422	422	422	202.3	202.3	202.3	205.6	205.6	205.6
2014	50,052	50,052	50,052	203.3	203.3	203.3	430	430	430	208.4	208.4	208.4	211.8	211.8	211.8
2015	50,762	50,762	50,762	198.4	198.4	198.4	429	429	429	205.5	205.5	205.5	208.9	208.9	208.9
2016	51,643	51,643	51,643	192.9	192.9	192.9	425	425	425	199.3	199.3	199.3	202.5	202.5	202.5
2017	52,460	52,550	53,302	190.1	199.3	207.8	417	432	445	196.3	205.8	214.6	199.3	209.0	217.9
2018	52,951	53,260	54,233	190.6	200.0	208.8	418	433	447	196.7	206.5	215.5	199.8	209.7	218.9
2019	53,439	53,965	55,170	190.9	200.6	209.6	419	434	448	197.1	207.0	216.4	200.2	210.3	219.7
2020	53,897	54,654	56,077	191.6	201.0	210.8	420	435	450	197.8	207.5	217.6	200.9	210.7	221.0
2021	54,354	55,325	56,982	191.4	201.5	211.0	420	436	451	197.6	208.0	217.9	200.6	211.3	221.2
2022	54,809	55,995	57,884	191.7	202.0	211.8	421	436	453	197.8	208.6	218.6	200.9	211.8	222.1
2023	55,268	56,665	58,790	192.0	202.6	212.6	422	437	454	198.2	209.2	219.5	201.3	212.4	222.9
2024	55,725	57,336	59,692	192.9	203.3	214.1	423	439	456	199.2	209.8	221.0	202.3	213.1	224.5
2025	56,158	57,996	60,590	193.0	204.1	214.6	424	440	457	199.2	210.7	221.5	202.3	214.0	225.0
2026	56,589	58,644	61,483	193.5	204.8	215.6	424	441	459	199.7	211.4	222.5	202.8	214.7	226.0
AV RATE 2017-2021	0.89%	1.29%	1.68%	0.16%	0.27%	0.38%	0.19%	0.23%	0.35%	0.16%	0.27%	0.38%	0.16%	0.27%	0.38%
AV RATE 2017-2026	0.85%	1.23%	1.60%	0.19%	0.30%	0.41%	0.18%	0.23%	0.34%	0.19%	0.30%	0.41%	0.19%	0.30%	0.41%

Appendix A

CUSTOMER METERED LOAD - HISTORICAL AND FORECASTED (INCLUDING CONSERVATION) **Table 2**
LOW CASE

	RESIDENTIAL aMW SALES	SMALL GEN SERVICE aMW SALES	MEDIUM GEN SERVICE aMW SALES	LARGE GEN SERVICE aMW SALES	LARGE INDUSTRIAL aMW SALES	SMALL IRRIGATION aMW SALES	LARGE IRRIGATION aMW SALES	STREET LIGHTS aMW SALES	SECURITY LIGHTS aMW SALES	UNMETERED ACCOUNTS aMW SALES	TOTAL SALES aMW	ANNUAL CHANGE %	TOTAL @ BPA POD LOADS aMW	TOTAL WHOLESALE LOADS aMW
2000	72.5	13.2	19.0	28.2	25.1	1.9	42.0	0.4	0.1	0.1	202.6	3.3%	210.1	213.6
2001	70.5	12.9	19.0	25.2	8.1	1.8	41.1	0.4	0.1	0.1	179.2	-11.8%	187.8	190.9
2002	71.0	12.9	18.7	25.1	9.2	1.8	41.8	0.4	0.1	0.1	181.2	1.1%	187.1	190.2
2003	69.0	12.9	19.4	25.8	6.6	1.8	44.1	0.4	0.1	0.3	180.5	-0.4%	186.7	189.7
2004	70.7	13.2	19.1	27.3	7.9	1.7	41.0	0.5	0.1	0.3	181.8	1.0%	187.4	190.4
2005	71.1	13.1	18.7	27.7	6.1	1.8	43.6	0.5	0.1	0.3	182.9	0.3%	187.5	190.6
2006	72.2	12.9	18.3	27.0	4.3	1.6	40.4	0.5	0.1	0.3	177.6	-2.9%	182.9	185.9
2007	73.6	13.1	18.9	25.5	5.6	1.8	44.1	0.5	0.1	0.3	183.5	3.3%	190.2	193.3
2008	75.9	13.2	19.3	25.6	5.4	1.8	44.6	0.5	0.1	0.3	186.7	2.0%	194.0	197.2
2009	82.4	13.9	20.0	26.6	4.4	1.9	46.8	0.5	0.1	0.3	197.1	5.3%	203.6	206.9
2010	74.7	13.0	19.5	25.0	6.3	1.6	40.7	0.5	0.1	0.3	181.8	-7.7%	188.8	191.9
2011	78.5	13.5	20.0	23.9	7.5	1.7	41.9	0.6	0.1	0.3	188.2	3.5%	194.3	197.5
2012	76.0	13.6	20.0	24.7	8.0	1.7	42.2	0.5	0.1	0.3	187.3	-0.2%	193.1	196.3
2013	79.7	14.0	20.2	25.0	8.0	1.7	44.2	0.3	0.1	0.3	193.7	3.1%	202.3	205.6
2014	79.5	14.2	20.8	25.9	8.2	2.0	52.0	0.3	0.1	0.3	203.3	5.0%	208.4	211.8
2015	76.0	13.9	20.8	25.8	7.6	1.9	51.6	0.3	0.2	0.3	198.4	-2.4%	205.5	208.9
2016	75.3	13.9	20.5	25.4	7.4	1.8	47.8	0.3	0.1	0.4	192.9	-2.8%	199.3	202.6
2017	71.2	13.5	20.3	25.7	7.4	1.5	49.8	0.3	0.1	0.3	190.1	-1.4%	196.3	199.3
2018	71.7	13.5	20.3	25.6	7.4	1.5	49.8	0.3	0.1	0.3	190.6	0.2%	196.7	199.8
2019	72.0	13.6	20.4	25.4	7.4	1.5	49.8	0.3	0.1	0.4	190.9	0.2%	197.1	200.2
2020	72.7	13.7	20.5	25.3	7.4	1.5	49.8	0.3	0.1	0.4	191.6	0.4%	197.8	200.9
2021	72.7	13.7	20.5	25.1	7.4	1.5	49.8	0.3	0.2	0.4	191.4	-0.1%	197.6	200.6
2022	73.0	13.7	20.6	24.9	7.4	1.5	49.8	0.3	0.2	0.4	191.7	0.1%	197.8	200.9
2023	73.4	13.7	20.6	24.8	7.4	1.5	49.8	0.3	0.2	0.4	192.0	0.2%	198.2	201.3
2024	74.1	13.8	20.8	24.7	7.4	1.5	49.8	0.3	0.2	0.4	192.9	0.5%	199.2	202.3
2025	74.3	13.8	20.8	24.6	7.4	1.5	49.8	0.3	0.2	0.4	193.0	0.0%	199.2	202.3
2026	74.7	13.9	20.9	24.5	7.4	1.5	49.8	0.3	0.2	0.4	193.5	0.2%	199.7	202.8
AV RATE 2017-2021	0.51%	0.29%	0.32%	-0.63%	0.00%	-0.06%	0.00%	-1.42%	0.42%	0.42%	0.16%		-0.19%	-0.21%
AV RATE 2017-2026	0.53%	0.30%	0.35%	-0.51%	0.00%	-0.06%	0.00%	-1.44%	0.73%	0.50%	0.19%		-0.01%	-0.02%

Appendix A

CUSTOMER METERED LOAD - HISTORICAL AND FORECASTED (INCLUDING CONSERVATION)
BASE CASE

Table 3

	RESIDENTIAL aMW SALES	SMALL GEN SERVICE aMW SALES	MEDIUM GEN SERVICE aMW SALES	LARGE GEN SERVICE aMW SALES	LARGE INDUSTRIAL aMW SALES	SMALL IRRIGATION aMW SALES	LARGE IRRIGATION aMW SALES	STREET LIGHTS aMW SALES	SECURITY LIGHTS aMW SALES	UNMETERED ACCOUNTS aMW SALES	TOTAL SALES aMW	ANNUAL CHANGE %	TOTAL @ BPA POD LOADS aMW	TOTAL WHOLESALE LOADS aMW
2000	72.5	13.2	19.0	28.2	25.1	1.9	42.0	0.4	0.1	0.1	202.6	3.3%	210.1	213.6
2001	70.5	12.9	19.0	25.2	8.1	1.8	41.1	0.4	0.1	0.1	179.2	-11.5%	187.8	190.9
2002	71.0	12.9	18.7	25.1	9.2	1.8	41.8	0.4	0.1	0.1	181.2	1.1%	187.1	190.2
2003	69.0	12.9	19.4	25.8	6.6	1.8	44.1	0.4	0.1	0.3	180.5	-0.4%	186.7	189.7
2004	70.7	13.2	19.1	27.3	7.9	1.7	41.0	0.5	0.1	0.3	181.8	0.8%	187.4	190.4
2005	71.1	13.1	18.7	27.7	6.1	1.8	43.6	0.5	0.1	0.3	182.9	0.6%	187.5	190.6
2006	72.2	12.9	18.3	27.0	4.3	1.6	40.4	0.5	0.1	0.3	177.6	-2.9%	182.9	185.9
2007	73.6	13.1	18.9	25.5	5.6	1.8	44.1	0.5	0.1	0.3	183.5	3.3%	190.2	193.3
2008	75.9	13.2	19.3	25.6	5.4	1.8	44.6	0.5	0.1	0.3	186.7	1.8%	194.0	197.2
2009	82.4	13.9	20.0	26.6	4.4	1.9	46.8	0.5	0.1	0.3	197.1	5.6%	203.6	206.9
2010	74.7	13.0	19.5	25.0	6.3	1.6	40.7	0.5	0.1	0.3	181.8	-7.7%	188.8	191.9
2011	78.5	13.5	20.0	23.9	7.5	1.7	41.9	0.6	0.1	0.3	188.2	3.5%	194.3	197.5
2012	76.0	13.6	20.0	24.7	8.0	1.7	42.2	0.5	0.1	0.3	187.3	-0.5%	193.1	196.3
2013	79.7	14.0	20.2	25.0	8.0	1.7	44.2	0.3	0.1	0.3	193.7	3.4%	202.3	205.6
2014	79.5	14.2	20.8	25.9	8.2	2.0	52.0	0.3	0.1	0.3	203.3	5.0%	208.4	211.8
2015	76.0	13.9	20.8	25.8	7.6	1.9	51.6	0.3	0.2	0.3	198.4	-2.4%	205.5	208.9
2016	75.3	13.9	20.5	25.4	7.4	1.8	47.8	0.3	0.1	0.4	192.9	-2.8%	199.3	202.6
2017	79.6	14.1	20.8	25.1	7.4	1.8	49.8	0.3	0.1	0.3	199.3	3.4%	205.8	209.0
2018	80.3	14.1	20.9	24.9	7.4	1.8	49.8	0.3	0.1	0.4	200.0	0.3%	206.5	209.7
2019	80.9	14.2	21.1	24.7	7.4	1.8	49.8	0.3	0.1	0.4	200.6	0.3%	207.0	210.3
2020	81.5	14.2	21.2	24.5	7.4	1.8	49.6	0.3	0.2	0.4	201.0	0.2%	207.5	210.7
2021	82.0	14.3	21.2	24.3	7.4	1.8	49.8	0.3	0.2	0.4	201.5	0.3%	208.0	211.3
2022	82.5	14.4	21.3	24.1	7.4	1.8	49.8	0.3	0.2	0.4	202.0	0.3%	208.6	211.8
2023	83.1	14.4	21.5	23.9	7.4	1.8	49.8	0.3	0.2	0.4	202.6	0.3%	209.2	212.4
2024	83.8	14.5	21.6	23.8	7.4	1.8	49.6	0.3	0.2	0.4	203.3	0.3%	209.8	213.1
2025	84.4	14.6	21.7	23.7	7.4	1.8	49.8	0.3	0.2	0.4	204.1	0.4%	210.7	214.0
2026	85.0	14.6	21.9	23.6	7.4	1.8	49.8	0.3	0.2	0.4	204.8	0.4%	211.4	214.7
AV RATE 2017-2021	0.72%	0.44%	0.52%	-0.79%	0.00%	-0.07%	0.00%	-2.24%	0.42%	0.72%	0.27%		0.27%	0.27%
AV RATE 2017-2026	0.73%	0.45%	0.54%	-0.67%	0.00%	-0.07%	0.00%	-1.98%	0.91%	0.81%	0.30%		0.30%	0.30%

Appendix A

CUSTOMER METERED LOAD - HISTORICAL AND FORECASTED (INCLUDING CONSERVATION)
HIGH CASE

Table 4

	RESIDENTIAL aMW SALES	SMALL GEN SERVICE aMW SALES	MEDIUM GEN SERVICE aMW SALES	LARGE GEN SERVICE aMW SALES	LARGE INDUSTRIAL aMW SALES	SMALL IRRIGATION aMW SALES	LARGE IRRIGATION aMW SALES	STREET LIGHTS aMW SALES	SECURITY LIGHTS aMW SALES	UNMETERED ACCOUNTS aMW SALES	TOTAL SALES aMW	ANNUAL CHANGE %	TOTAL @ BPA POD LOADS aMW	TOTAL WHOLESALE LOADS aMW
2000	72.5	13.2	19.0	28.2	25.1	1.9	42.0	0.4	0.1	0.1	202.6	3.3%	210.1	213.6
2001	70.5	12.9	19.0	25.2	8.1	1.8	41.1	0.4	0.1	0.1	179.2	-11.5%	187.8	190.9
2002	71.0	12.9	18.7	25.1	9.2	1.8	41.8	0.4	0.1	0.1	181.2	1.1%	187.1	190.2
2003	69.0	12.9	19.4	25.8	6.6	1.8	44.1	0.4	0.1	0.3	180.5	-0.4%	186.7	189.7
2004	70.7	13.2	19.1	27.3	7.9	1.7	41.0	0.5	0.1	0.3	181.8	0.8%	187.4	190.4
2005	71.1	13.1	18.7	27.7	6.1	1.8	43.6	0.5	0.1	0.3	182.9	0.6%	187.5	190.6
2006	72.2	12.9	18.3	27.0	4.3	1.6	40.4	0.5	0.1	0.3	177.6	-2.9%	182.9	185.9
2007	73.6	13.1	18.9	25.5	5.6	1.8	44.1	0.5	0.1	0.3	183.5	3.3%	190.2	193.3
2008	75.9	13.2	19.3	25.6	5.4	1.8	44.6	0.5	0.1	0.3	186.7	1.8%	194.0	197.2
2009	82.4	13.9	20.0	26.6	4.4	1.9	46.8	0.5	0.1	0.3	197.1	5.6%	203.6	206.9
2010	74.7	13.0	19.5	25.0	6.3	1.6	40.7	0.5	0.1	0.3	181.8	-7.7%	188.8	191.9
2011	78.5	13.5	20.0	23.9	7.5	1.7	41.9	0.6	0.1	0.3	188.2	3.5%	194.3	197.5
2012	76.0	13.6	20.0	24.7	8.0	1.7	42.2	0.5	0.1	0.3	187.3	-0.5%	193.1	196.3
2013	79.7	14.0	20.2	25.0	8.0	1.7	44.2	0.3	0.1	0.3	193.7	3.4%	202.3	205.6
2014	79.5	14.2	20.8	25.9	8.2	2.0	52.0	0.3	0.1	0.3	203.3	5.0%	208.4	211.8
2015	76.0	13.9	20.8	25.8	7.6	1.9	51.6	0.3	0.2	0.3	198.4	-2.4%	205.5	208.9
2016	75.3	13.9	20.5	25.4	7.4	1.8	47.8	0.3	0.1	0.4	192.9	-2.8%	199.3	202.6
2017	86.8	14.6	21.3	25.2	7.4	2.1	49.8	0.3	0.1	0.3	207.8	7.8%	214.6	217.9
2018	87.6	14.7	21.5	25.0	7.4	2.1	49.8	0.3	0.1	0.4	208.8	0.4%	215.5	218.9
2019	88.4	14.8	21.7	24.7	7.4	2.1	49.8	0.3	0.2	0.4	209.6	0.4%	216.4	219.7
2020	89.5	14.9	21.9	24.5	7.4	2.1	49.8	0.3	0.2	0.4	210.8	0.6%	217.6	221.0
2021	90.0	14.9	21.9	24.2	7.4	2.1	49.8	0.3	0.2	0.4	211.0	0.1%	217.9	221.2
2022	90.7	15.0	22.1	24.0	7.4	2.1	49.8	0.3	0.2	0.4	211.8	0.4%	218.6	222.1
2023	91.5	15.1	22.2	23.8	7.4	2.1	49.8	0.3	0.2	0.4	212.6	0.4%	219.5	222.9
2024	92.7	15.2	22.5	23.7	7.4	2.0	49.8	0.3	0.2	0.4	214.1	0.7%	221.0	224.5
2025	93.3	15.3	22.6	23.5	7.4	2.0	49.8	0.2	0.2	0.4	214.6	0.2%	221.5	225.0
2026	94.1	15.4	22.8	23.3	7.4	2.0	49.8	0.2	0.2	0.4	215.6	0.5%	222.5	226.0
AV RATE 2017-2021	0.90%	0.58%	0.71%	-0.94%	0.00%	-0.08%	0.00%	-2.05%	1.65%	1.07%	0.38%		2.22%	2.20%
AV RATE 2017-2026	0.90%	0.59%	0.73%	-0.82%	0.00%	-0.09%	0.00%	-2.51%	1.42%	0.88%	0.41%		1.18%	1.17%

Appendix A

USAGE PER CUSTOMER IN KWH - HISTORICAL AND FORECASTED (INCLUDING CONSERVATION) Table 5
BASE CASE

	RESIDENTIAL USE PER CUSTOMER	SMALL GEN USE PER CUSTOMER	MEDIUM GEN USE PER CUSTOMER	LARGE GEN USE PER CUSTOMER	LARGE IND USE PER CUSTOMER	SMALL IRR USE PER CUSTOMER	LARGE IRR USE PER CUSTOMER	STREET LIGHT USE PER CUSTOMER	SECURITY USE PER CUSTOMER	UNMETERED USE PER ACCOUNT	OVERALL USE PER CUSTOMER
2000	18,207	29,934	284,530	2,426,689	73,637,600	26,269	4,610,455	500,431	699	6,569	42,468
2001	17,724	28,787	248,952	1,545,119	23,632,237	23,933	2,587,995	506,783	525	59,191	36,949
2002	17,644	28,517	265,262	2,014,909	26,850,190	25,069	3,777,644	399,277	752	2,284	37,397
2003	16,764	27,690	274,201	1,998,214	19,351,268	24,725	4,020,780	422,990	744	6,421	36,373
2004	16,878	27,822	264,389	1,968,784	23,159,528	24,037	3,753,041	439,687	753	6,788	36,082
2005	16,721	27,788	261,631	1,971,996	17,761,932	25,403	3,978,407	508,368	743	7,059	35,908
2006	16,724	26,632	250,296	1,865,415	12,485,305	23,762	3,502,406	453,740	716	8,003	34,341
2007	16,831	26,607	248,399	1,704,706	16,348,383	26,024	3,512,746	453,740	712	8,041	34,992
2008	17,046	26,010	248,274	1,704,225	15,920,098	26,086	3,156,362	468,669	719	8,046	34,963
2009	18,304	27,114	247,899	1,728,966	12,969,692	27,678	3,085,607	474,203	715	8,099	36,476
2010	16,380	25,062	235,680	1,619,899	18,454,887	24,320	2,745,195	482,159	723	7,999	33,227
2011	17,015	25,861	234,891	1,487,012	21,803,603	25,491	2,587,273	614,671	734	8,288	34,018
2012	16,311	25,671	237,195	1,520,121	23,525,055	27,324	2,273,457	459,597	731	8,270	33,537
2013	16,792	26,105	236,333	1,502,161	23,267,593	27,018	1,777,101	305,647	838	8,301	34,061
2014	16,724	25,741	239,681	1,504,273	23,657,100	25,352	1,749,526	308,703	840	8,301	33,775
2015	15,705	25,165	240,990	1,496,196	22,313,962	29,330	1,932,736	300,405	921	8,352	34,239
2016	16,225	25,299	236,393	1,461,506	23,170,994	28,294	1,748,300	302,560	924	8,311	34,172
2017	15,895	24,558	226,552	1,388,980	12,922,400	28,904	1,713,163	291,172	863	8,341	33,227
2018	15,804	24,317	223,861	1,380,444	12,922,400	29,199	1,620,818	285,466	860	8,462	32,896
2019	15,709	24,070	221,145	1,369,891	12,922,400	29,524	1,538,371	275,732	857	8,442	32,558
2020	15,672	23,904	219,099	1,361,222	12,922,400	29,865	1,465,136	276,506	871	8,486	32,303
2021	15,519	23,607	215,902	1,345,548	12,922,400	30,154	1,400,803	265,999	865	8,501	31,907
2022	15,433	23,387	213,501	1,334,851	12,922,400	30,502	1,341,883	265,999	881	8,620	31,607
2023	15,356	23,182	211,305	1,325,815	12,922,400	30,857	1,287,718	256,266	902	8,601	31,325
2024	15,345	23,058	209,912	1,322,317	12,922,400	31,197	1,237,757	253,760	901	8,643	31,139
2025	15,228	22,814	207,505	1,312,930	12,922,400	31,581	1,192,071	246,532	896	8,639	30,825
2026	15,168	22,641	205,766	1,307,247	12,922,400	31,960	1,150,396	243,333	907	8,778	30,592
AV RATE 2017-2021	-0.86%	-1.41%	-1.88%	-1.76%	-13.58%	1.36%	-4.32%	-2.23%	-1.47%	0.52%	-1.40%
AV RATE 2017-2026	-0.70%	-1.14%	-1.44%	-1.18%	-6.28%	1.23%	-4.17%	-2.25%	-0.34%	0.43%	-1.14%

Appendix B

ADDITIONAL SCENARIO ANALYSIS

As mentioned earlier, the Forecast is used as a critical input to a number of different important analyses including Rate Analysis, Budgeting and Power Requirements Planning. Staff recognizes annual loads will vary from the District's annual Forecast as the only thing we are guaranteed when developing the Forecast is that it will be wrong. As seen in **Figure 1**, the forecasts have evolved over the last five years and have started to trend downward. Forecasts peaked in 2015 after the completion of a large irrigation expansion in 2014 and have since trended downward similar to what has been observed regionally by the Pacific Northwest Utilities Conference Committee (PNUCC).

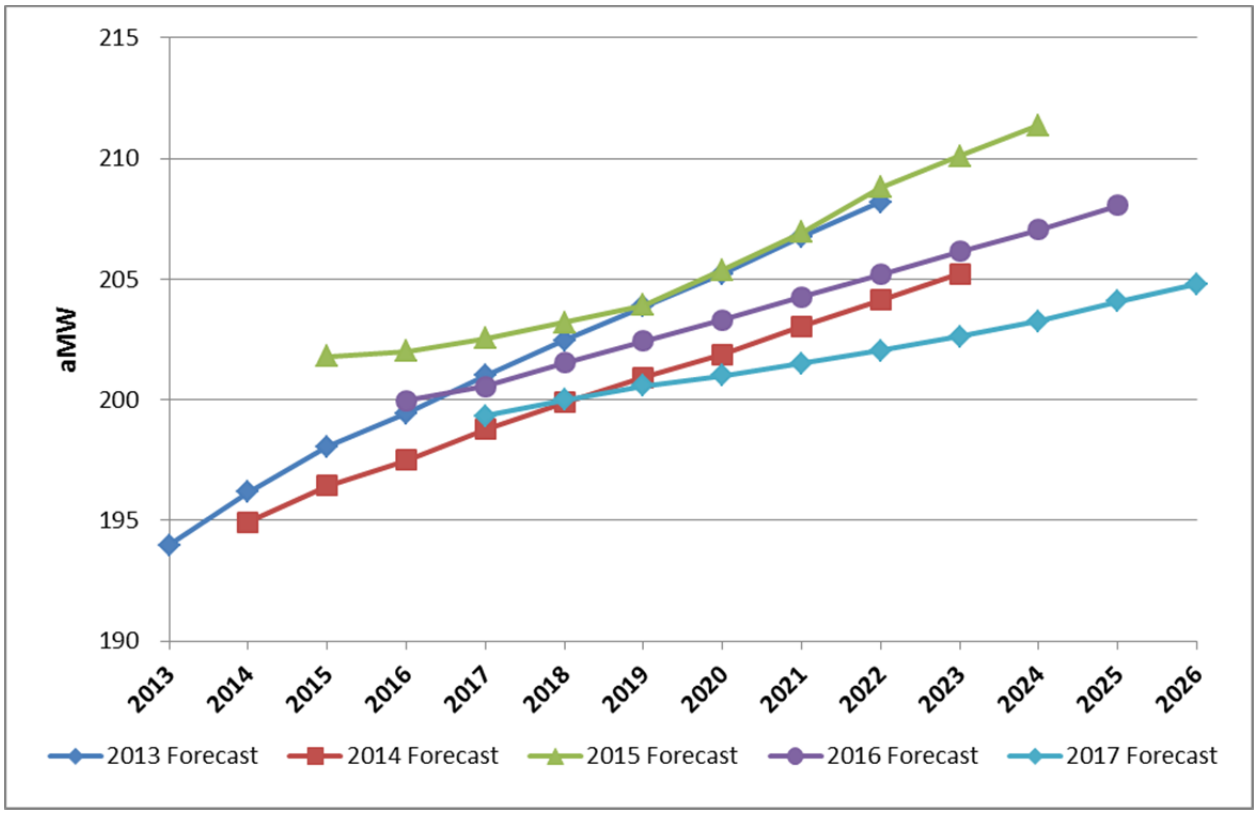


Figure 1 – Historical Ten Year Forecasts (2013-2017)

The changes in each year's Ten Year Forecast is driven mostly by the history observed and what the previous year's actual loads were as that has a direct impact on the trend established in the Forecast. As shown in the chart **Figure 2**, since 2013, District Forecasts saw a 0-4% range of variances in annual forecasts versus actual loads.

Appendix B

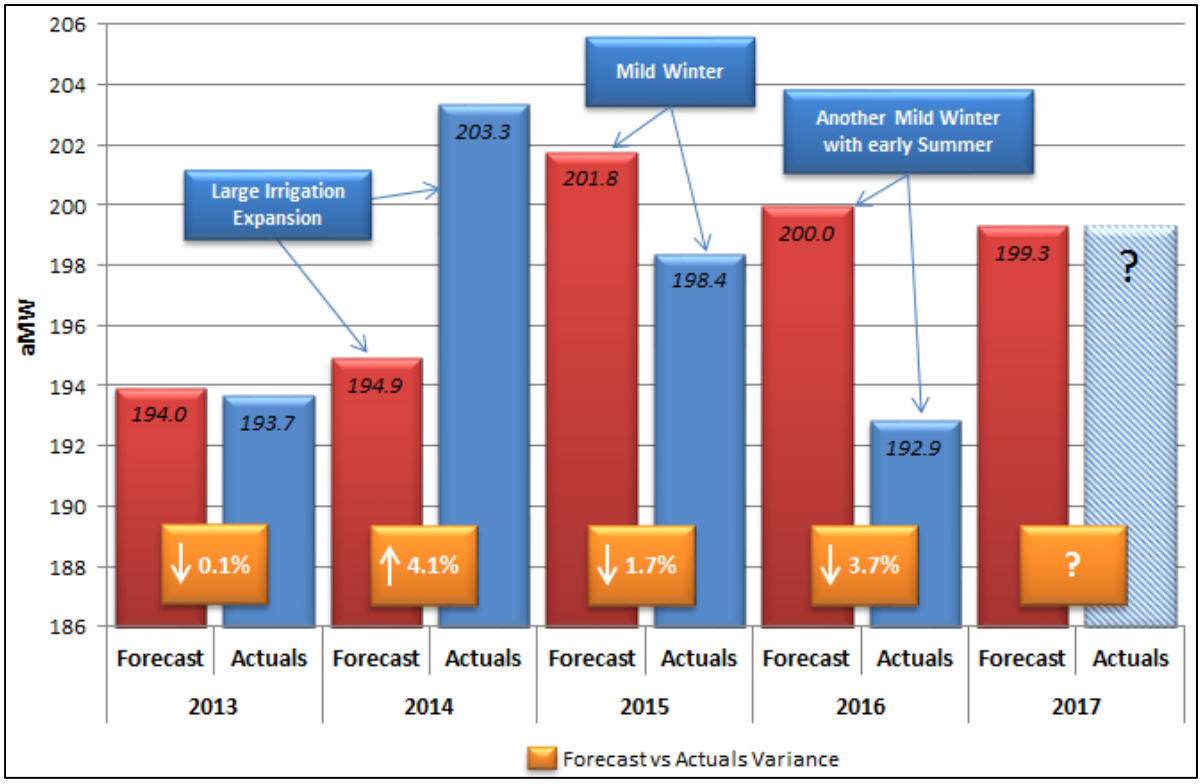


Figure 2 – Forecasts vs Actuals (2013-2017)

Each year staff strives to improve Forecast modeling assumptions and better understand areas that could impact Forecast results. Although many scenarios are ran during the Forecast modeling process, Appendix B describes two additional hypothetical scenarios that could result in either load growth or load loss for the remainder of 2017. Again, these are only two scenarios but the purpose is to demonstrate annual variances to the Forecast will often occur, and here are two potential impacts that are on our radar for this year.

The first scenario relates to the impact that weather has on loads and specifically the possible reduction in loads due to a mild summer. The second scenario relates to unexpected load growth from a new commercial customer such as a small 2 aMW data center. The information described below was not modeled in the Base Case and is for information only.

Scenario 1 – Impacts of 2017 Mild Summer

District staff determined that 2011 was an appropriate year to use and base the analysis on because it was a mild summer and had a similar water year as 2017 has observed so far. The water year is relevant because it speaks to the amount of moisture and precipitation that was observed during that year as well.

Here are the steps taken:

- Rerun the forecast for 2017 and determine the reduction by customer class.
- Shape the annual reduction into the months of June-September 2017 pro-rata based on actual 2011 June-September degree days.

Appendix B

- Subtract these monthly values by customer class from the current expected forecast values for June-Sep, 2017.

Table 1 below shows the monthly load reductions by customer class. **Table 2** shows the monthly load forecast net of the reductions while **Figure 3** highlights differences between the 2017 Base Case and the values shown in **Table 2**. This scenario shows a greater impact to loads during the summer months which correlates to the District being a summer peaking utility.

Date	Residential	Small General Service	Medium General Service	Large General Service	Large Industrial	Small Irrigation	Large Irrigation	Street Lights	Security Lights	Unmetered	Total
Jan-17	0	0	0	0	0	0	0	0	0	0	0
Feb-17	0	0	0	0	0	0	0	0	0	0	0
Mar-17	0	0	0	0	0	0	0	0	0	0	0
Apr-17	0	0	0	0	0	0	0	0	0	0	0
May-17	0	0	0	0	0	0	0	0	0	0	0
Jun-17	0.9	0.3	0.3	1.1	0.8	0.1	2.4	0	0	0	5.8
Jul-17	2.4	0.8	0.8	2.9	2.3	0.2	6.4	0	0	0	15.8
Aug-17	3.6	1.2	1.2	4.3	3.4	0.3	9.6	0	0	0	23.7
Sep-17	1.2	0.4	0.4	1.5	1.2	0.1	3.3	0	0	0	8.1
Oct-17	0	0	0	0	0	0	0	0	0	0	0
Nov-17	0	0	0	0	0	0	0	0	0	0	0
Dec-17	0	0	0	0	0	0	0	0	0	0	0

Table 1 – 2017 Monthly Reductions due to mild Summer (aMW)

Date	Residential	Small General Service	Medium General Service	Large General Service	Large Industrial	Small Irrigation	Large Irrigation	Street Lights	Security Lights	Unmetered	Total
Jan-17	124.2	16.1	22.0	24.1	7.7	0.0	0.3	0.3	0.2	0.3	195.1
Feb-17	108.7	15.1	21.2	23.5	7.2	0.0	0.4	0.3	0.2	0.3	176.8
Mar-17	78.5	12.1	18.1	21.9	7.5	0.7	15.8	0.3	0.2	0.3	155.4
Apr-17	64.4	12.2	18.8	22.8	7.5	2.0	57.1	0.3	0.2	0.3	185.6
May-17	55.0	12.5	18.9	23.4	7.0	3.0	86.8	0.3	0.1	0.3	207.4
Jun-17	63.8	13.8	20.5	23.9	6.7	3.6	128.9	0.3	0.1	0.3	262.0
Jul-17	75.2	14.7	21.2	23.4	5.1	4.0	121.7	0.3	0.1	0.3	266.0
Aug-17	80.7	15.4	21.8	23.4	4.6	3.7	80.7	0.3	0.2	0.4	231.2
Sep-17	68.3	14.6	21.6	26.2	5.4	2.7	46.8	0.3	0.2	0.4	186.4
Oct-17	54.4	12.6	21.3	28.1	7.8	1.4	29.5	0.3	0.2	0.4	155.9
Nov-17	68.4	12.1	20.3	25.7	7.5	0.0	3.9	0.3	0.2	0.4	138.8
Dec-17	107.3	14.7	21.1	24.4	7.2	0.0	0.3	0.3	0.2	0.4	175.8

Table 2 – 2017 Base Case reduced due to mild Summer (aMW)

Appendix B

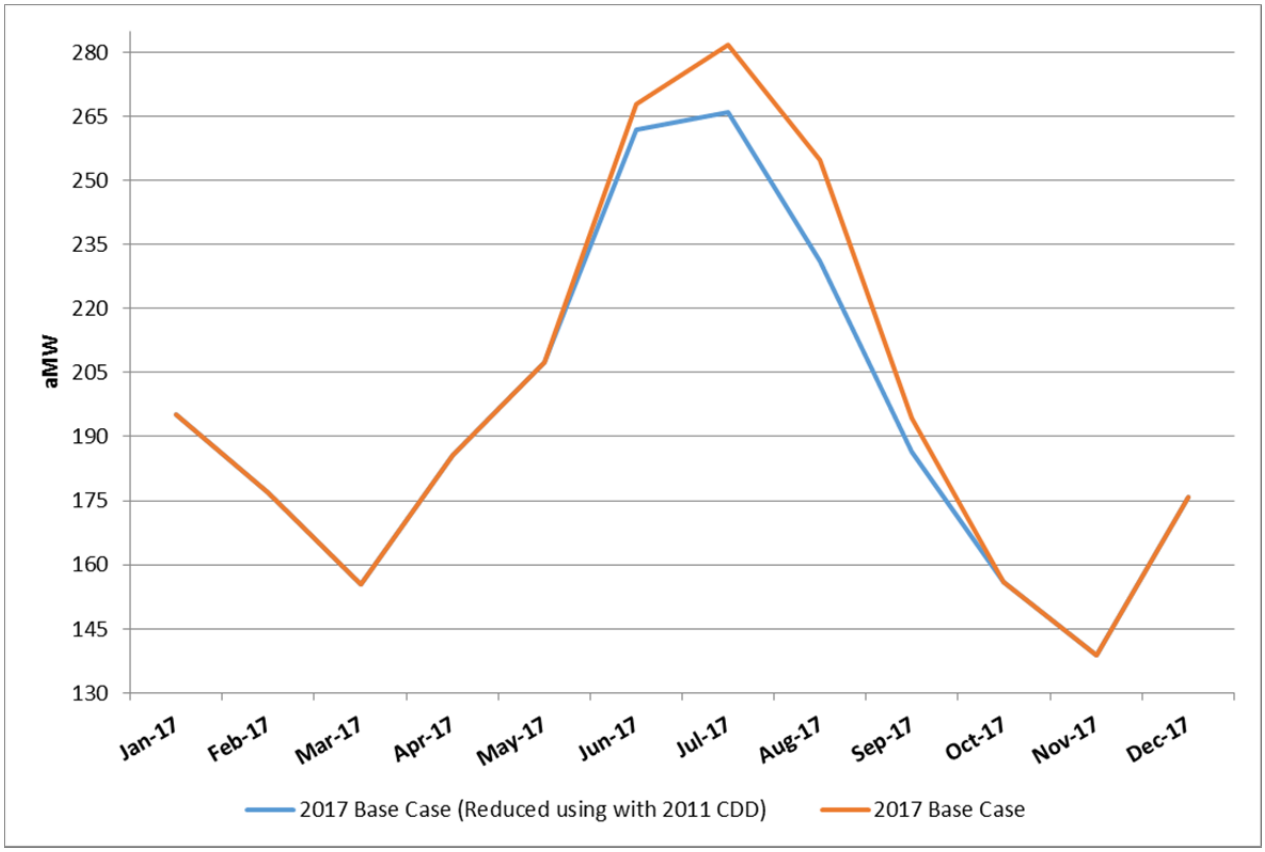


Figure 3 – 2017 Total System Forecast vs Reduced Forecast

Scenario 2 – Impact of New 2 aMW Server Farm

During the development of the Forecast, District staff received an inquiry related to potentially adding a 2 aMW server farm. This type of load would fall under the Large General Service customer class and the increase is reflected in **Table 3** below. The difference between the 2017 Total System Forecast and 2017 Forecast with the New Server Farm load is shown in **Figure 4**. This scenario shows less of an impact to the annual Forecast due to 1) the flat load profile shape of a server farm which operates 24 hours a day, and 2) scenario 2 is only 2aMW of load vs the 4aMW of load reduction under scenario 1.

Appendix B

Date	Residential	Small General Service	Medium General Service	Large General Service	Large Industrial	Small Irrigation	Large Irrigation	Street Lights	Security Lights	Unmetered	Total
Jan-17	124.2	16.1	22.0	25.5	7.7	0.0	0.3	0.3	0.2	0.3	196.5
Feb-17	108.7	15.1	21.2	24.9	7.2	0.0	0.4	0.3	0.2	0.3	178.2
Mar-17	78.5	12.1	18.1	23.3	7.5	0.7	15.8	0.3	0.2	0.3	156.8
Apr-17	64.4	12.2	18.8	24.2	7.5	2.0	57.1	0.3	0.2	0.3	187.0
May-17	55.0	12.5	18.9	24.8	7.0	3.0	86.8	0.3	0.1	0.3	208.8
Jun-17	64.7	14.1	20.8	26.4	7.6	3.6	131.2	0.3	0.1	0.3	269.2
Jul-17	77.6	15.5	22.0	27.7	7.3	4.2	128.1	0.3	0.1	0.3	283.2
Aug-17	84.3	16.6	23.0	29.2	8.0	4.0	90.4	0.3	0.2	0.4	256.3
Sep-17	69.5	15.0	22.0	29.1	6.6	2.8	50.1	0.3	0.2	0.4	195.8
Oct-17	54.4	12.6	21.3	29.5	7.8	1.4	29.5	0.3	0.2	0.4	157.3
Nov-17	68.4	12.1	20.3	27.1	7.5	0.0	3.9	0.3	0.2	0.4	140.2
Dec-17	107.3	14.7	21.1	25.8	7.2	0.0	0.3	0.3	0.2	0.4	177.2

Table 3 – 2017 Forecast with Monthly Increase due to Server Farm (aMW)

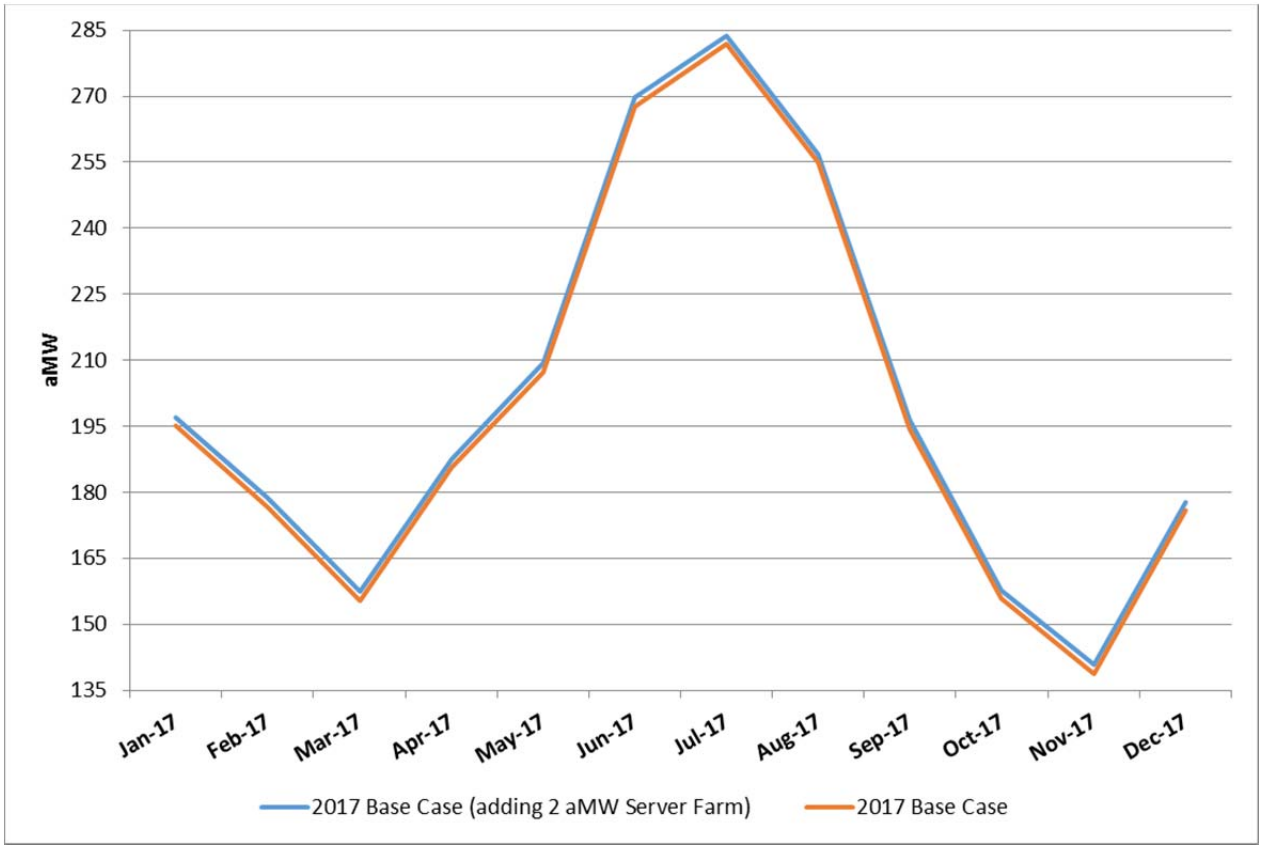


Figure 4 – 2017 Total System Forecast vs Increased Forecast

CAPITAL REQUIREMENTS PLAN

TAB 9

Capital Requirements Plan - Combined
Summary - 2018 Budget

Capital Category	Year (amounts in constant year dollars)					
	Original Budget 2017	Amended Budget 2017	2018	2019	2020	2021
Transmission (Table 1)	$ 1,086,756	$ 1,364,335	$ 2,679,540	$ 1,673,935	$ 2,607,580	$ 397,517
Distribution (Table 2)	8,717,757	10,039,298	12,461,687	12,563,911	12,793,727	10,040,114
Broadband (Table 3)	960,656	1,292,238	1,385,586	1,367,818	1,313,125	768,764
General Plant (Table 4)	1,072,169	983,469	1,494,492	950,000	733,000	677,755
Information Technology (Table 5)	1,480,464	1,187,777	1,390,643	917,643	800,000	800,000
Capitalized Allocations	1,540,475	1,540,474	-	-	-	-
Capitalized Interest	182,746	182,746	254,477	262,100	273,711	190,262
Gross Capital	**15,041,023**	**16,590,336**	**19,666,425**	**17,735,407**	**18,521,144**	**12,874,412**
Capital Contributions (Table 6)	(1,057,223)	(1,256,023)	(1,376,749)	(1,328,209)	(1,318,992)	(1,304,142)
Net Capital	**$ 13,983,800**	**$ 15,334,313**	**$ 18,289,676**	**$ 16,407,197**	**$ 17,202,152**	**$ 11,570,271**

Capital Requirements Plan
Transmission (Table 1)

			Accounting Codes			Year (amounts in constant year dollars)					
Project Description	Project	Comments	Dept	Activity	FERC	Original Budget 2017	Amended Budget 2017	2018	2019	2020	2021
BPA Interconnection - Leslie Sub Tap	507586	BPA L0387, 50% per Lease Agmt. w/COR	21	total	n/a	208,627		217,078			
See also Substation item		Internal Labor	21	labor	350.00						
		Construction Contracts	21	021	350.00	208,627					
		Miscellaneous Construction Expense	21	018	350.00			217,078			
		Professional Services	21	061	350.00						
BPA Interconnection - Southridge Sub/Line Tap	511679	BPA L0372	21	total	n/a		67,500	605,000			
See also Substation item		Internal Labor	21	labor	350.00						
		Construction Contracts	21	021	350.00						
		Miscellaneous Construction Expense	21	018	350.00		65,000	600,000			
		Professional Services	21	061	350.00		2,500	5,000			
BPA McNary 115 kV Point of Delivery	tbd	50% of Upgrades to McNary-Badger Canyon Line	21	total	n/a			550,000			
		Internal Labor	21	labor	350.00						
		Construction Contracts	21	021	350.00						
		Miscellaneous Construction Expense	21	018	350.00			550,000			
		Professional Services	21	061	350.00						
Transmission Steel Pole - Kennedy Rd.	124832	Resolve easement issue and provide tap to Reata	21	total	n/a		87,577				
		Internal Labor	21	labor	350.00		30,342				
		Construction Contracts	21	021	350.00		52,454				
		Professional Services	21	061	350.00		162				
		Materials & Supplies	21	012	350.00		3,735				
		Materials - Line Devices	21	122	350.00		-				
		Materials - Allocation	96	006	350.00		884				
Transmission Line - Sunheaven#2 to Prior #4	124255	8.25 mi - 397.5 ACSR - River System (TRIP-A)	21	total	n/a	549,008	760,921				
		Internal Labor	21	labor	350.00	20,500	53,754				
		Construction Contracts	21	021	350.00	359,138	728,872				
		Professional Services	21	061	350.00	15,000	1,733				
		Materials & Supplies	21	012	350.00	134,235	(18,472)				
		Materials - Allocation	96	006	350.00	20,135	(4,966)				
Transmission Line - Sunset Rd. to Dallas Rd.	503229	6.0 mi - BPA L0409, Reata tie w/City of Richland (L0408)	21	total	n/a	200,000	65,000	1,044,320	1,283,000		
		Internal Labor	21	labor	350.00			84,000			
		Construction Contracts	21	021	350.00				660,000		
		Miscellaneous Construction Expense	21	018	350.00		50,000	550,000			
		Professional Services	21	061	350.00	200,000	15,000	145,000			
		Land & Land Rights	21	125	350.00			265,320			
		Materials & Supplies	21	012	350.00				498,000		
		Materials - Line Devices	21	122	350.00				50,000		
		Materials - Allocation	96	006	350.00				75,000		
Transmission Line - Phillips to Spaw	511742	15.8 mi - 397.5 ACSR - River System (TRIP-E,F)	21	total	n/a		20,000		245,690	2,211,210	
		Internal Labor	21	labor	350.00						
		Miscellaneous Construction Expense	21	018	350.00		20,000				
		Land & Land Rights	21	125	350.00						
Transmission Line - Hwy 240 to Canal Sub	tbd	0.5 mi - To Vista Field/Edison St. substation property	21	total	n/a			45,000		250,000	
See also Substation item		Internal Labor	21	labor	350.00						
		Construction Contracts	21	021	350.00						
		Miscellaneous Construction Expense	21	018	350.00			20,000			
		Professional Services	21	061	350.00			25,000			
Transmission Line - Mabton to Prosser tie	tbd	10.2 mi - 50% w/Benton REA	21	061	350.00						125,000
Transmission Line - Klickitat to Horse Heaven tie	tbd	11.0 mi - 50% w/Klickitat PUD	21	061	350.00						125,000
Switch Upgrade/Additions	tbd	$37 K per switch	21	total	n/a	62,000	296,000	148,000	74,000	74,000	74,000
		Internal Labor	21	labor	350.00	16,000	66,000	33,000			
		Materials - Line Devices	21	122	350.00	40,000	200,000	100,000			
		Materials - Allocation	96	006	350.00	6,000	30,000	15,000			
Poles & Fixtures, Misc repairs	n/a	Replace Poles/Davit Arms	21	total	n/a	15,000	15,000	15,000	15,000	15,000	15,000
		Internal Labor	21	labor	350.00	6,950	6,950	6,950			
		Materials & Supplies	21	012	350.00	7,000	7,000	7,000			
		Materials - Allocation	96	006	350.00	1,050	1,050	1,050			
Misc		BPUD Labor & Overheads				52,121	52,337	55,142	56,245	57,370	58,517
Transmission (Table 1)						**$ 1,086,756**	**$ 1,364,335**	**$ 2,679,540**	**$ 1,673,935**	**$ 2,607,580**	**$ 397,517**

Capital Requirements Plan
Distribution (Table 2)

			Accounting Codes			Year (amounts in constant year dollars)					
Project Description	Project	Comments	Dept	Activity	FERC	Original Budget 2017	Amended Budget 2017	2018	2019	2020	2021
SUBSTATIONS	**Tnode**	**Plan of Service - Substation Projects**									
Power Quality Metering -SEL-735 Meters	multiple	H2F#2, Prior #1 Bay 1&2, Paterson #1 & #2 (5 total)	n/a	total	362.00		50,000				
		Internal Labor	n/a	labor	362.00		29,750				
		Materials - Substation	21	121	362.00		17,750				
		Materials - Allocation	96	006	362.00		2,500				
Power Quality Metering - SEL-735 Meters	tbd	H2F #3,4; Prior #2,3,4; Sunheaven #1,2,River; Sandpiper (9 total)	n/a	total	362.00			90,000			
		Internal Labor	n/a	labor	362.00			53,550			
		Materials - Substation	21	121	362.00			31,950			
		Materials - Allocation	96	006	362.00			4,500			
Circuit Switcher Addition - Highlands #1	S05-129018	Improve sub xfmr protection	n/a	total	362.00	200,000	218,097				
		Internal Labor	n/a	labor	362.00	63,500	99,204				
		Construction Contracts	21	021	362.00	10,000	15,341				
		Materials - Substation	21	121	362.00	110,000	96,207				
		Materials - Allocation	96	006	362.00	16,500	7,345				
Circuit Switcher Addition - Highlands #2	S05-129005	Improve sub xfmr protection	n/a	total	362.00	200,000	200,000				
		Internal Labor	n/a	labor	362.00	63,500	63,500				
		Construction Contracts	21	021	362.00	10,000	10,000				
		Materials - Substation	21	121	362.00	110,000	110,000				
		Materials - Allocation	96	006	362.00	16,500	16,500				
Diff. Relay for Circuit Switcher - Highlands #3	S06-129071	Improve sub xfmr protection	n/a	total	362.00	75,000	75,000				
		Internal Labor	n/a	labor	362.00	36,000	36,000				
		Construction Contracts	21	021	362.00	8,000	8,000				
		Materials - Substation	21	121	362.00	26,957	26,957				
		Materials - Allocation	96	006	362.00	4,043	4,043				
Metalclad/Breaker/Relay Replacement - Highlands #3	S28-129071	Air-breaker & metal-clad replacement (H7-H9)	n/a	total	362.00	400,000	387,000				
		Internal Labor	n/a	labor	362.00	100,000	42,000				
		Materials - Substation	21	121	362.00	260,870	300,000				
		Materials - Allocation	96	006	362.00	39,130	45,000				
Oil Breaker Replacement - Prosser S780B	130488		n/a	total	362.00	-	37,962				
		Internal Labor	n/a	labor	362.00		4,750				
		Materials - Substation	21	121	362.00		28,880				
		Materials - Allocation	96	006	362.00		4,332				
Feeder Position Addition - Phillips P8R	129274		n/a	total	362.00	50,000	37,962				
		Internal Labor	n/a	labor	362.00	16,000	4,750				
		Materials - Substation	21	121	362.00	29,565	28,880				
		Materials - Allocation	96	006	362.00	4,435	4,332				
Feeder Position Addition - Sunset Road S4R	tbd	Reata outage support	n/a	total	362.00	-	37,962				
		Internal Labor	n/a	labor	362.00		4,750				
		Materials - Substation	21	121	362.00		28,880				
		Materials - Allocation	96	006	362.00		4,332				
Breaker Retrofit - Gum Street	124557	Air-breaker retrofit (G1-G4)	n/a	total	362.00	150,000	115,628				
		Internal Labor	n/a	labor	362.00	21,000	9,317				
		Materials - Substation	21	121	362.00	112,000	106,311				
		Materials - Allocation	96	006	362.00	17,000	-				
Xfmr & Feeder Relay Upgrade - Orchard View	509129	Replace Basler 50/51 & DPU relays (O1-O4)	n/a	total	362.00		34,000	-			
		Internal Labor	n/a	labor	362.00		15,600				
		Materials - Substation	21	121	362.00		16,000				
		Materials - Allocation	96	006	362.00		2,400				
Ely AC & DC Control Power	129019		n/a	total	362.00		13,400				
		Internal Labor	n/a	labor	362.00		10,000				
		Materials - Substation	21	121	362.00		3,400				
		Materials - Allocation	96	006	362.00						
River Plan of Service - Paterson #1 Step-up Upgrade	510520		n/a	total	362.00		75,000				
		Internal Labor	n/a	labor	362.00		15,000				
		Construction Contracts	21	021	362.00						
		Materials - Substation	21	121	362.00		60,000				
		Materials - Allocation	96	006	362.00						

Capital Requirements Plan
Distribution (Table 2)

			Accounting Codes			Year (amounts in constant year dollars)					
Project Description	Project	Comments	Dept	Activity	FERC	Original Budget 2017	Amended Budget 2017	2018	2019	2020	2021
New Substation Bay - Orchard View #2	511761	Placeholder Future Southridge West/Vista Field	n/a	total	362.00		-	-			
See also Distribution feeder getaway system improv. item		Internal Labor	n/a	labor	362.00						
		Construction Contracts	21	021	362.00						
		Professional Services	21	061	362.00						
		Substation Transformers & Regulators	21	120	362.00						
		Materials - Substation	21	121	362.00						
		Materials - Allocation	96	006	362.00						
New Substation - Leslie	S27-507586	Lease Agreement w/City of Richland	n/a	total	362.00		520,051	2,170,290			
See also Transmission interconnection item		Internal Labor	n/a	labor	362.00						
See also Distribution feeder getaway system improv. item		Construction Contracts	21	021	362.00			-			
		Professional Services	21	061	362.00		288,314				
Benton PUD Balance of Plant Estimate		Substation Transformers & Regulators	21	120	362.00			1,384,477			
50% of Shared Facilities (RES Conservative Estimate)		Materials - Substation	21	121	362.00			785,813			
Rent Payment (One Time)		Land & Land Rights	21	125	360.00		231,737				
		Materials - Allocation	96	006	362.00			-			
Xfmr & Feeder Relay Upgrade - Ely #1	S10-509174	Replace DPU/TPU & electro-mechanical relays (E1-E4)	n/a	total	362.00	25,000		34,000			
		Internal Labor	n/a	labor	362.00	10,000		15,600			
		Materials - Substation	21	121	362.00	13,044		16,000			
		Materials - Allocation	96	006	362.00	1,957		2,400			
Xfmr & Feeder Relay Upgrade - Ely #2	S10-507908	Replace DPU/TPU & electro-mechanical relays (E5-E8)	n/a	total	362.00	25,000		34,000			
		Internal Labor	n/a	labor	362.00	10,000		15,600			
		Materials - Substation	21	121	362.00	13,044		16,000			
		Materials - Allocation	96	006	362.00	1,957		2,400			
Breaker Retrofit - Vista #2	S28	Air-breaker retrofit (V5 & V8 Only)	n/a	total	362.00			57,815			
		Internal Labor	n/a	labor	362.00			4,659			
		Materials - Substation	21	121	362.00			53,156			
		Materials - Allocation	96	006	362.00			-			
Benton City Substation Upgrade	S13	Ckt Swr, Pwr Xfmr w/LTC, Relays	21	tbd	362.00				1,300,000		
Berrian Sub 5kV Breaker Addition		Mitigate fuse overload	n/a	total	362.00			75,000			
		Internal Labor	n/a	labor	362.00			25,000			
		Materials - Substation	21	121	362.00			50,000			
Cap Banks - River System Subs	S01		21	total	362.00				300,000	350,000	
		River System Capacitor Bank Analysis/Specifications	21	061	362.00			50,000			
Circuit Switcher Addition - Prosser #2	S05	Improve sub xfmr protection	21	tbd	362.00				200,000		
Circuit Switcher Addition - Prosser #1	S05	Improve sub xfmr protection	21	tbd	362.00				200,000		
Control House Addition & Batteries - Gum Street	S09		n/a	tbd	362.00				145,000		
Xfmr & Feeder Relay Upgrade - Gum Street	507908	Replace DPU/TPU & electro-mechanical relays (G1-G4)	n/a	total	362.00				34,000		
Feeder Relay Upgrade - Vista #2	509129	Replace Basler 50/51 & DPU relays (O1-O4)	n/a	tbd	362.00			-	34,000		
Nine Canyon Substation		Nine Canyon Harmonic Analysis/Specifications	21	061	362.00			50,000			
New Substation - Southridge			n/a	total	362.00					2,100,000	
Power Xfmr LTC Retrofit - Riverfront TLH-21	S03		n/a	tbd	362.00					335,000	
Breaker Replacement & Relay Upgrade - Angus #1, #2, #3	S28	Breaker and relay replacement with reclosers (A1-A9)	n/a	tbd	362.00					250,000	
Feeder Relay Upgrade - Vista #1	S10	Replace electro-mechanical relays (V1-V4)	n/a	tbd	362.00	-				34,000	
New Substation - Edison		Vista Field/Edison St. property (Placeholder)	n/a	total	362.00						
Hedges Substation Upgrades	S31	Ckt Swr, Pwr Xfmr w/LTC, Relays	n/a	tbd	362.00						1,220,000
Feeder Relay Upgrade - Hedges	S10	Replace Form 4C controls (H1-H4)	n/a	tbd	362.00						25,000
Xfmr & Feeder Relay Upgrade - Riverfront	S10	Replace electro-mechanical relays (xfmr & RF1-RF4)	n/a	tbd	362.00	-					25,000
Substation Misc. Aux. Equip., Relays/Controls	S10		n/a	total	362.00	25,000	25,000	25,000	25,000	25,000	25,000
Transformer Relay Upgrade - Mobile	124328	Internal Labor	n/a	labor	362.00	10,000	10,000	10,000			
Feeder Relay Upgrade - Cold Creek	124345	Materials - Substation	21	121	362.00	13,050	13,050	13,050			
		Materials - Allocation	96	006	362.00	1,950	1,950	1,950			
Project Subtotal						**1,150,000**	**1,827,062**	**2,586,105**	**2,238,000**	**3,094,000**	**1,295,000**

Capital Requirements Plan
Distribution (Table 2)

			Accounting Codes			Year (amounts in constant year dollars)					
Project Description	Project	Comments	Dept	Activity	FERC	Original Budget 2017	Amended Budget 2017	2018	2019	2020	2021
SCADA	**TNode**	**Supervisory Control & Data Acquisition**									
Distribution regulators SCADA comm.	tbd	SCADA System (total of 40 three-phase banks @12k ea)	n/a	total	380.00	228,000	60,000	420,000			
		Internal Labor	varies	labor	380.00	96,900	25,500	178,500			
		Materials - Allocation	96	006	380.00	17,100	4,500	31,500			
		SCADA Master Station Equipment	21	126	380.00						
		SCADA Communications Equipment	21	127	380.00	114,000	30,000	210,000			
		SCADA Substation Equipment	21	128	380.00						
		SCADA Travel & Non-District Labor	21	129	380.00						
Distribution capacitor bank SCADA comm. & control	tbd	SCADA System (total of 50 existing switched @ $7k ea)	n/a	total	380.00				175,000	175,000	
		Internal Labor	varies	labor	380.00						
		Materials - Allocation	96	006	380.00						
		SCADA Master Station Equipment	21	126	380.00						
		SCADA Communications Equipment	21	127	380.00						
		SCADA Substation Equipment	21	128	380.00						
		SCADA Travel & Non-District Labor	21	129	380.00						
Substation RTU and communications upgrades	misc.	Includes fiber to substations	n/a	total	380.00	50,000	50,000	50,000	50,000	50,000	50,000
		Internal Labor	varies	labor	380.00	15,500	15,500	15,500			
		Materials - Allocation	96	006	380.00	4,500	4,500	4,500			
		SCADA Master Station Equipment	21	126	380.00						
		SCADA Communications Equipment	21	127	380.00	15,000	15,000	15,000			
		SCADA Substation Equipment	21	128	380.00	15,000	15,000	15,000			
		SCADA Travel & Non-District Labor	21	129	380.00						
Distribution Automation for Voltage Optimization	varies		n/a	total	380.00		115,000				
		Internal Labor	varies	labor	380.00		40,000				
		Materials - Allocation	96	006	380.00						
		SCADA Master Station Equipment	21	126	380.00						
		SCADA Communications Equipment	21	127	380.00		75,000				
		SCADA Substation Equipment	21	128	380.00						
		SCADA Travel & Non-District Labor	21	129	380.00						
Project Subtotal						**278,000**	**225,000**	**470,000**	**225,000**	**225,000**	**50,000**
DIST_5_YR_PLAN	**TNode**	**Plan of Service - Distribution Projects**									
RTA-1, extend dbl ckt OH south along Badger Rd.	126376	West Kennewick - Badger Canyon	n/a	total	Alloc. Below	27,500	36,744				
	POS12-52 ext.	Internal Labor	n/a	labor	Alloc. Below	12,500	18,978				
		Material	21	mat	Alloc. Below	15,000	17,766				
RTA-2, recond. #4, Badger Rd. L25A to L70R	118868	West Kennewick - Badger Canyon	n/a	total	Alloc. Below	295,000	254,707				
	POS12-60	Internal Labor	n/a	labor	Alloc. Below	145,000	126,218				
		Material	21	mat	Alloc. Below	150,000	128,489				
New 250 kVA regulator on Meals Rd E/O Piert Rd.	130359	East Kennewick	n/a	total	Alloc. Below	115,000	128,720				
	POS16-96	Internal Labor	n/a	labor	Alloc. Below	60,000	40,661				
		Material	21	mat	Alloc. Below	55,000	88,059				
New switch Clearwater W/O Utah St	505811	West Kennewick	n/a	total	Alloc. Below	12,000	12,000				
	POS16-90	Internal Labor	n/a	labor	Alloc. Below	5,000	5,000				
		Material	21	mat	Alloc. Below	7,000	7,000				
New 114.3 kVA regulator on Dallas Rd E/O Badger Rd.	505914	West Kennewick	n/a	total	Alloc. Below	75,000	75,000				
	POS16-92	Internal Labor	n/a	labor	Alloc. Below	30,000	30,000				
		Material	21	mat	Alloc. Below	45,000	45,000				
New switch Piert Rd S/O Chemical Dr.	505918	East Kennewick	n/a	total	Alloc. Below	12,000	12,000				
	POS16-93	Internal Labor	n/a	labor	Alloc. Below	5,000	5,000				
		Material	21	mat	Alloc. Below	7,000	7,000				
New switch Game Farm Rd W/O Finley Rd.	505923	East Kennewick	n/a	total	Alloc. Below	12,000	12,000				
	POS16-94	Internal Labor	n/a	labor	Alloc. Below	5,000	5,000				
		Material	21	mat	Alloc. Below	7,000	7,000				
VIS-1 to VIS-6, UG tie across W. Quinault Ave.	505924	West Kennewick	n/a	total	Alloc. Below	100,000	100,000				
	POS10-38	Internal Labor	n/a	labor	Alloc. Below	25,000	25,000				
		Material	21	mat	Alloc. Below	75,000	75,000				
RTA-1, Upgrade L685V from 167kVA to 250kVA	505926	West Kennewick - Badger Canyon	n/a	total	Alloc. Below	95,000	95,000				
	POS14-70	Internal Labor	n/a	labor	Alloc. Below	50,000	50,000				
		Material	21	mat	Alloc. Below	45,000	45,000				
RTA-2, Recond. Badger Rd. Between L80R & L50A	130405	West Kennewick - Badger Canyon	n/a	total	Alloc. Below	354,000	354,000				
	POS14-80	Internal Labor	n/a	labor	Alloc. Below	174,000	174,000				
		Material	21	mat	Alloc. Below	180,000	180,000				

Capital Requirements Plan
Distribution (Table 2)

			Accounting Codes			Year (amounts in constant year dollars)					
Project Description	Project	Comments	Dept	Activity	FERC	Original Budget 2017	Amended Budget 2017	2018	2019	2020	2021
GUM-1, GUM-4, recond. 3/0, E. 19th Ave.	121125	East Kennewick	n/a	total	Alloc. Below	215,000	215,000				
	POS14-09	Internal Labor	n/a	labor	Alloc. Below	108,000	108,000				
	POS08-06	Material	21	mat	Alloc. Below	107,000	107,000				
HED-2, reliability and sectionalizing	tbd	East Kennewick	n/a	total	Alloc. Below	56,000	56,000				
	POS16-97	Internal Labor	n/a	labor	Alloc. Below	32,000	32,000				
		Material	21	mat	Alloc. Below	24,000	24,000				
HED-4, reliability and sectionalizing	tbd	East Kennewick	n/a	total	Alloc. Below	75,000	75,000				
	POS16-98	Internal Labor	n/a	labor	Alloc. Below	45,000	45,000				
		Material	21	mat	Alloc. Below	30,000	30,000				
New switch Reata W/O I-82 Crossing	505870	West Kennewick	n/a	total	Alloc. Below	12,000		12,000			
	POS16-91	Internal Labor	n/a	labor	Alloc. Below	5,000		5,000			
		Material	21	mat	Alloc. Below	7,000		7,000			
SSR-3, relocate and recond. OH line	tbd	Benton City	n/a	total	Alloc. Below				434,000		
	POS10-36	Internal Labor	n/a	labor	Alloc. Below				217,000		
		Material	21	mat	Alloc. Below				217,000		
BEC-2, reliability and sectionalizing	505927	Benton City	n/a	total	Alloc. Below			50,000			
	POS16-99	Internal Labor	n/a	labor	Alloc. Below			24,000			
		Material	21	mat	Alloc. Below			26,000			
PHI-8, new feeder north to Cochrane	tbd	East Kennewick	n/a	total	Alloc. Below			210,000			
	POS14-81	Internal Labor	n/a	labor	Alloc. Below			120,000			
		Material	21	mat	Alloc. Below			90,000			
Voltage Optimization - Kennewick	503528	Distribution efficiency project for conservation	n/a	total	Alloc. Below			400,000			
	POS14-83	Internal Labor	n/a	labor	Alloc. Below			225,000			
		Material	21	mat	Alloc. Below			175,000			
Farm Plan of Service Projects			n/a	total	Alloc. Below			177,500			
Prior 3 Regulator and Recloser		Internal Labor	n/a	labor	Alloc. Below			35,500			
Whitcomb Regulators		Material	21	mat	Alloc. Below			142,000			
RTA-3, extend UG west along Sagebrush Rd.	POS10-32	West Kennewick - Badger Canyon	n/a	total	Alloc. Below				205,000		
RTA-1, extend OH from Reata Rd. south	POS10-31	West Kennewick - Badger Canyon	n/a	total	Alloc. Below				46,000		
GUM-4, dbl. cir. on 36th, recond. 3/0 on Oak St.	POS10-10	East Kennewick	n/a	tbd	Alloc. Below				144,000		
HED-3, recond. #4, Terril Rd.	POS10-19	East Kennewick	n/a	tbd	Alloc. Below				156,000		
HED-4, recond. #6, Bernath Rd.	POS10-21	East Kennewick	n/a	tbd	Alloc. Below				216,000		
HED-4, recond. 3/0, Perkins Rd.	POS10-20	East Kennewick	n/a	tbd	Alloc. Below				380,000		
GUM-4, recond. #4, Game Farm Rd.	POS10-13	East Kennewick	n/a	tbd	Alloc. Below				200,000		
GUM-4, recond. #4, S. Oak St.	POS10-12	East Kennewick	n/a	tbd	Alloc. Below				135,000		
HED-4, reliability and sectionalizing.	POS16-98	East Kennewick	n/a	tbd	Alloc. Below				75,000		
ZEH-3, recond. 1/0 to serve GUM-3	POS12-54	East Kennewick	n/a	tbd	Alloc. Below					80,000	
RTA-2, Recond. Badger Rd. Between L766A & L80R	POS-79 13037	West Kennewick - Badger Canyon	n/a	total	Alloc. Below					130,000	
HED-2, recond #266.8, Finley Rd	POS16-95	East Kennewick	n/a	tbd	Alloc. Below	245,000				245,000	
ZEH-1, new OH line and UG tie with E7	POS10-39	West Kennewick	n/a	tbd	Alloc. Below					134,000	
GUM-4, new OH tie HED-3, Game Farm to Terrill	POS10-14	East Kennewick	n/a	tbd	Alloc. Below					91,000	
BEC-3, new feeder to east to tie with SSR-1	POS12-58	Benton City	n/a	tbd	Alloc. Below					170,000	
ELY-8, recond. 3/0, near Ely St.	POS12-56	East Kennewick	n/a	tbd	Alloc. Below					36,000	
Voltage Optimization - Future	POS-83	Distribution efficiency project for conservation	n/a	tbd	Alloc. Below					500,000	
GUM-4, HED-3, recond. 3/0, Bowles Rd.	POS10-11	East Kennewick	n/a	tbd	Alloc. Below						261,000
HIG-4, recond. 3/0, W. 10th Ave.	POS10-15	West Kennewick	n/a	tbd	Alloc. Below						85,000
KEN-8, convert OH to UG across fairgrounds	POS10-22	East Kennewick	n/a	tbd	Alloc. Below						160,000
ZEH-4, new OH tie to GUM-4 at Game Farm Rd.	POS10-41	East Kennewick	n/a	tbd	Alloc. Below						106,000
Project Subtotal						**1,700,500**	**1,426,171**	**849,500**	**2,425,000**	**1,386,000**	**612,000**

Capital Requirements Plan
Distribution (Table 2)

Project Description	Project	Comments	Accounting Codes			Year (amounts in constant year dollars)					
			Dept	Activity	FERC	Original Budget 2017	Amended Budget 2017	2018	2019	2020	2021
CUSTOMER GROWTH											
NO_PROJECT_TREE	No TNode	Services (Set Xfmr and Run Secondary)	varies	varies	Alloc. Below	1,567,500	1,625,000	1,775,000	1,765,000	1,722,500	1,677,500
DIST_BSE_GROWTH	TNode	Distribution Line Extension	varies	varies	Alloc. Below	1,428,140	1,428,140	1,442,421	1,456,846	1,471,414	1,471,414
DIST_IRR_FACLTY	TNode	Distribution Irrigation Facilities	varies	varies	Alloc. Below	80,000	80,000	80,000	80,000	80,000	80,000
SERVICE_POLES	TNode	Service Poles	varies	varies	Alloc. Below	20,000	20,000	20,000	20,000	20,000	20,000
DIST_SYS_IMPROV	TNode	Routine system improvement projects	varies	varies	Alloc. Below	309,151	309,151	311,242	313,355	315,489	315,489
Large System Improvements	n/a	Projects (>$100K), not in the Five Year Plan Plan of Service	n/a	total	Alloc. Below						
City of Kenn - Bob Olson Parkway	125924	COK expedited new roadway (electrical portion)	n/a	total	Alloc. Below		396,323				
		Internal Labor	varies	labor	Alloc. Below		29,078				
		Construction Contracts	21	021	Alloc. Below		179,626				
		Materials - Allocation	96	006	Alloc. Below						
		Materials & Supplies	21	012	Alloc. Below		139,422				
		Materials - Line Devices	21	122	Alloc. Below		48,197				
Sunset Road SSR-4 New Feeder Getaway	tbd	West Kennewick Winter Outage Contingency Requirement	n/a	total	Alloc. Below		122,970				
See also Substation S4R addition line item		Internal Labor	varies	labor	Alloc. Below		42,000				
		Construction Contracts	21	021	Alloc. Below		-				
		Materials - Allocation	96	006	Alloc. Below						
		Materials & Supplies	21	012	Alloc. Below		60,470				
		Materials - Line Devices	21	122	Alloc. Below		20,500				
Leslie Sub Feeder Getaways	tbd	Install Getaways & Re-configure existing Feeders in Area	n/a	total	Alloc. Below		-	219,750			
See also Substation addition line item		Internal Labor	varies	labor	Alloc. Below			56,000			
		Construction Contracts	21	021	Alloc. Below						
		Materials - Allocation	96	006	Alloc. Below			18,750			
		Materials & Supplies	21	012	Alloc. Below			125,000			
		Materials - Line Devices	21	122	Alloc. Below			20,000			
Orchard View Bay #2 Sub Feeder Getaways	tbd	Conduit System future Southridge West Tie Lines	n/a	total	Alloc. Below		-	402,500			
See also Substation addition line item		Internal Labor	varies	labor	Alloc. Below						
		Construction Contracts	21	021	Alloc. Below						
		Materials - Allocation	96	006	Alloc. Below			52,500			
		Materials & Supplies	21	012	Alloc. Below			350,000			
		Materials - Line Devices	21	122	Alloc. Below						
Southridge Sub Feeder Getaways	tbd	Install Getaways & Re-configure existing Feeders in Area	n/a	total	Alloc. Below					400,000	
Edison Street Sub Feeder Getaways	tbd	Install Getaways & Re-configure existing Feeders in Area	n/a	total	Alloc. Below						400,000
Project Subtotal						**3,404,791**	**3,981,584**	**4,250,913**	**3,635,201**	**4,009,403**	**3,964,403**
REPAIR & REPLACEMENT - OTHER											
DIST_OTH_MAINT	TNode	Other Maintenance - Capitalized Distribution System Repairs	varies	varies	Alloc. Below	265,000	265,000	265,000	265,000	265,000	265,000
DIST_POLE_REINF	TNode	Distribution Pole Reinforcement	varies	varies	Alloc. Below	-	-	-	-	-	-
DIST_POLE_REPLC	TNode	Distribution Pole Replacement	varies	varies	Alloc. Below	40,000	40,000	40,000	40,000	40,000	40,000
TROUBLE_ORDERS	TNode	Trouble Orders	varies	varies	Alloc. Below	190,000	190,000	190,000	190,000	190,000	190,000
NESC_COMPLIANCE	TNode	Joint Use NESC Corrections (Materials)	varies	varies	Alloc. Below	150,000	150,000	150,000	150,000	150,000	150,000
JU_INSPECTION	TNode	Joint Use Make Ready and PUPI Arm Installations	varies	varies	Alloc. Below	15,000	15,000	15,000	15,000	15,000	15,000
Project Subtotal						**660,000**	**660,000**	**660,000**	**660,000**	**660,000**	**660,000**
REPAIR & REPLACEMENT - CABLE											
DIST_CBL_INJECT	TNode	Underground Distribution Cable Injection	21	total	Alloc. Below	500,000	-	-	-	-	-
		Internal Labor	varies	labor	Alloc. Below	85,000	-	-			
		Construction Contracts	21	021	Alloc. Below	415,000	-	-			
DIST_CBL_REPLACE	TNode	Underground Distribution Cable Replacement	21	total	Alloc. Below	750,000	1,314,752	1,000,000	1,000,000	1,000,000	1,000,000
		Internal Labor	varies	labor	Alloc. Below	43,000	70,000	85,000			
		Construction Contracts	21	021	Alloc. Below	649,500	1,140,677	800,000			
		Materials - Allocation	96	006	Alloc. Below	7,500	13,575	15,000			
		Materials & Supplies	21	012	Alloc. Below	50,000	90,500	100,000			
Project Subtotal						**1,250,000**	**1,314,752**	**1,000,000**	**1,000,000**	**1,000,000**	**1,000,000**

Capital Requirements Plan
Distribution (Table 2)

			Accounting Codes			Year (amounts in constant year dollars)					
Project Description	Project	Comments	Dept	Activity	FERC	Original Budget 2017	Amended Budget 2017	2018	2019	2020	2021
DISTRIBUTION PLANT - TOTAL FROM ABOVE											
Agrium (Chevron & Phillips) property acquisition		Land & Land Rights	21	125	360.00						
		Land & Land Rights	21	125	360.00						
		Structures & Improvements	n/a	varies	361.00						
SUBSTATIONS		Station Equipment	n/a	varies	362.00	1,150,000	1,827,062	2,586,105	2,238,000	3,094,000	1,295,000
		Poles, Towers & Fixtures	n/a	varies	364.00	830,687	837,117	761,448	961,192	826,759	699,094
ALLOCATIONS FROM ABOVE:		O.H. Cond. & Dev.	n/a	varies	365.00	519,734	488,306	389,437	654,556	478,762	338,092
CUSTOMER GROWTH		Underground Conduit	n/a	varies	366.00	1,426,594	1,509,895	1,321,775	1,469,184	1,366,559	1,235,069
REPAIR & REPLACEMENT - OTHER		U.G. Cond. & Dev.	n/a	varies	367.00	2,138,439	2,222,248	1,937,409	2,306,474	2,055,284	1,788,839
REPAIR & REPLACEMENT - CABLE		Line Transformers	n/a	varies	368.10	1,171,186	1,249,068	1,210,212	1,332,992	1,245,335	1,112,045
DIST_5_YR_PLAN		Services - Overhead	n/a	varies	369.10	55,750	60,147	59,957	61,677	60,224	55,904
		Services - Underground	n/a	varies	369.20	872,900	1,015,727	1,080,176	934,125	1,022,481	1,007,361
METERS		Meters	n/a	varies	370.00	200,000	200,000	200,000	200,000	200,000	200,000
CUST_LIGHTING		Security Lighting (Installations on Cust. Premise)	n/a	varies	372.00						
STREET_LIGHTING		Street Lighting	n/a	varies	373.00	-		-	-	-	
SCADA (Project Subtotal from above)		SCADA System	n/a	varies	380.00	278,000	225,000	470,000	225,000	225,000	50,000
Project Subtotal						**8,643,291**	**9,634,569**	**10,016,518**	**10,383,201**	**10,574,403**	**7,781,403**
COST_COLLECTION											
Joint Use NESC Corrections (Contractor Labor)		(Contractor Labor for approx. 100 Pole Change Outs per Year)	21	021	364.00			250,000	250,000	250,000	250,000
Project Subtotal						**-**	**-**	**250,000**	**250,000**	**250,000**	**250,000**
INDIRECT CAPITAL											
Internal costs - indirect capital		Labor & Benefits				74,466	404,729	568,684	580,058	591,659	603,492
		Other Distribution Capital						302,316			
		BPUD Allocations (Equipment & Constr. Overhead)						1,324,169	1,350,652	1,377,665	1,405,219
Project Subtotal						**74,466**	**404,729**	**2,195,169**	**1,930,710**	**1,969,324**	**2,008,711**
Distribution (Table 2)						**$ 8,717,757**	**$ 10,039,298**	**$ 12,461,687**	**$ 12,563,911**	**$ 12,793,727**	**$ 10,040,114**
		New Customer Growth: All Classes Medium Case				627	650	710	706	689	671

Capital Requirements Plan
Broadband (Table 3)

			Accounting Codes			Year (amounts in constant year dollars)					
Project Description	Project Mgr.	Comments	Dept	Activity	FERC	Original Budget 2017	Amended Budget 2017	2018	2019	2020	2021
Fiber Backbone	Nall	Future Backbone Upgrades	46	12 & 20	397.30	25,000	25,000	100,000	100,000	100,000	75,000
		Sunheaven to Prosser Loop Cost Share				100,000		100,000			
		Southridge/Bob Olson Development				75,000	75,000				
		Port of Kennewick Wine Village U.G.					65,000				
Project Subtotal						**200,000**	**165,000**	**200,000**	**100,000**	**100,000**	**75,000**
Fiber Laterals	Nall	Strategic Lateral Extensions	46	12 & 20	397.30	50,000	150,000	100,000	150,000	150,000	-
	Nall	Cell Sites	46	12 & 20	397.30						
		Airflow Spoiler Project	46	12 & 20	397.30			65,986	65,986		
Project Subtotal						**50,000**	**150,000**	**165,986**	**215,986**	**150,000**	**-**
Fiber Customer Connects		Line Extension Policy				50,000	50,000	75,000	75,000	75,000	-
	Nall	Multi Tenant and Small Business	46	12 & 20	397.20	200,000	500,000	600,000	600,000	600,000	350,000
Project Subtotal						**250,000**	**550,000**	**675,000**	**675,000**	**675,000**	**350,000**
Premise Electronics	Nall	Premise Electronics	46	136	397.25	40,000	40,000	75,000	75,000	75,000	25,000
Project Subtotal						**40,000**	**40,000**	**75,000**	**75,000**	**75,000**	**25,000**
Electronics	Nall	Broadband Electronics	46	136	397.40	200,000	50,000	75,000	75,000	75,000	75,000
	Nall	Vista Node	46	136	397.74		75,000				
	Nall	Orchard View Node	46	136	397.72		75,000				
Project Subtotal						**200,000**	**200,000**	**75,000**	**75,000**	**75,000**	**75,000**
Fiber Conduit	Nall	New Developments	46	12 & 20	397.20	20,000	20,000	20,000	20,000	20,000	20,000
Project Subtotal						**20,000**	**20,000**	**20,000**	**20,000**	**20,000**	**20,000**
Labor & Benefits	Nall	NoaNet NCS Srvcs	Engr	11 & 40		152,360	143,238	155,200	166,832	178,125	183,764
		District Internal				48,296	24,000	19,400	40,000	40,000	40,000
Project Subtotal						**200,656**	**167,238**	**174,600**	**206,832**	**218,125**	**223,764**
Broadband (Table 3)						**$ 960,656**	**$ 1,292,238**	**$ 1,385,586**	**$ 1,367,818**	**$ 1,313,125**	**$ 768,764**

Capital Requirements Plan
General Plant (Table 4)
General Plant includes land, structures, tools, office, transportation, stores, lab, and communications equipment

			Accounting Codes			Year (amounts in constant year dollars)					
Project Description	Project Mgr.	Comments	Dept	Activity	FERC	Original Budget 2017	Amended Budget 2017	2018	2019	2020	2021
Director of Operations	Hunter	Office Furniture	31	132	391.05	$ 5,000	$ 5,000	$ 5,000			
		Projected Capital Equip - Ops	31						5,000	5,000	5,000
Project Subtotal						**5,000**	**5,000**	**5,000**	**5,000**	**5,000**	**5,000**
Supt of Trans and Dist	Inman	Locator	32	134	584						
	Inman	SAIDI Saver Fault Finder	32	134	394	15,000	$ 15,000				
	Inman	Underground Cable Puller (moved to 38)	32	134	584						
	Inman	Projected Capital Equip - Line	32						45,000	45,000	45,000
Project Subtotal						**15,000**	**15,000**	**-**	**45,000**	**45,000**	**45,000**
Meter Shop	Hollenbeck	Meter Test Standard	34	135	397						
	Hollenbeck	Power Quality Meter Recorder	34	135	395						
	Hollenbeck	800 MHz Radio	34	135	397.00	5,000	$ 5,000				
	Hollenbeck	Relay Test Set	34	135	395.00						
	Hollenbeck	Ethernet Cable Tester	34	135	395	5,000	$ 5,000				
	Hollenbeck	CT Verification	34	135	395.00						
	Hollenbeck	Power Quality Meter	34	135	395	12,000	$ 12,000				
	Hollenbeck	Fault Locator	34	135	395					52,000	
	Hollenbeck	Power Quality Recorder	34	135	395			14,000			
	Hollenbeck	Meter Test Standard	34	135	395				60,000		
	Hollenbeck	CT Verification Tester	34	135	395					25,000	
		Projected Capital Equip - Meter	34	135	395						20,000
Project Subtotal						**22,000**	**22,000**	**14,000**	**60,000**	**77,000**	**20,000**
Transformer Shop	Gaston/Szendre	Infrared	35	135	395						
	Gaston/Szendre	TTR/Micro Ohm	35	135	395.00						
	Gaston/Szendre	Recloser Test Set	35	135	395.00			59,000			
	Gaston/Szendre	Vacuum Bottle Tester	35	135	395.00			10,000			
	Gaston/Szendre	Transformer Gas Tester	35	135	395.00				15,000		
	Gaston/Szendre	TTR and Winding Resistance Tester	35	135	395.00					26,000	
	Gaston/Szendre	Micro Ohm Tester	35	135	395.00						7,755
	Gaston/Szendre	Projected Capital Equip - Xfr Shop	35	135	395.00						
Project Subtotal						**-**	**-**	**69,000**	**15,000**	**26,000**	**7,755**

Capital Requirements Plan
General Plant (Table 4)
General Plant includes land, structures, tools, office, transportation, stores, lab, and communications equipment

			Accounting Codes			Year (amounts in constant year dollars)					
Project Description	Project Mgr.	Comments	Dept	Activity	FERC	Original Budget 2017	Amended Budget 2017	2018	2019	2020	2021
Auto Shop	Schafer/Kintzley		37	134	394						
		Projected Capital Equip - Auto Shop	37	134							
Project Subtotal						-	-	-	-	-	-
Supt of Support Services											
	Schafer	Wallpaper hallway office 124-127 (Admin)	38	131	390	6,500	$ 6,500				
	Schafer	Wall paper hallway office #128 A,B, & C (Admin)	38	131	390	6,500	$ 6,500				
	Schafer	Remodel Office Space #128 A,B, & C (Admin)	38	131	390	22,000	$ 22,000				
	Schafer	HVAC (Admin)	38	131	390	200,000	$ 200,000				
	Schafer	Dry Fire System Building #3 & #2 (Ops)	38	131	390.01	33,000	$ 33,000				
	Schafer	Asphalt Replacement (Admin)	38	131	390	50,000	$ 50,000				
	Schafer	Asphalt Sealing - Prosser (O&M)	38	131	390		$ -				
	Schafer	LED Lights over Dock (390.01)	38	131	390	6,000	$ 6,000				
	Schafer	Rolling Gate in Pole Yard (Ops)	38	131	390.01	10,000	$ 10,000				
	Schafer	Compressors & Dryers Units 3 & 4 (Admin)	38	131	390	6,000	$ 6,000				
	Schafer	Kiosk Prosser Wall Mount	38	131	390.02	10,000	-	10,000			
	Schafer	Kiosk Kennewick Wall Mount	38	131	390	6,000	-	6,000			
	Schafer	Compressors & Dryers Units 2 (Admin)	38	131	390			7,500			
	Schafer	Ceiling tiles - Auditorium and Commission Rm	38	131	390			10,000			
	Schafer	Asphalt Admin Drive Through & West Parking	38	131	390			120,000			
	Schafer	Paint - Operations Dock Area	38	131	390			12,000			
	Schafer	Dry Fire System Building #3 & #2 (Ops)	38	131	390			45,000			
	Schafer	Concrete Pad - Operations	38	131	390			8,500			
	Schafer	Roof Repair - Admin Bldg	38	131	390		16,000	32,000			
	Schafer	Projected Structures and Improvements	38	131	390				200,000	200,000	200,000
Project Subtotal						**356,000**	**356,000**	**251,000**	**200,000**	**200,000**	**200,000**
Supt of Support Services	Schafer	Replace Vehicle #171 - Service Truck	38	133	392.00	130,000	-				
	Schafer	60' Bucket Truck (older bucket to become spare)	38	133	392.00	289,000	$ 289,000				
	Schafer	2 Pick-ups for Standby Kennewick	38	133	392.00	60,000	$ 60,000				
	Schafer	Replace small Bobcat #116	38	133	392.00	40,000	$ 40,000				
	Schafer	Replace #132 (Foreman's Truck)	38	133	392.00	114,000	$ 114,000				
	Schafer	Pool Vehicle (Hybrid) - Admin	38	133	392.00	20,000	$ 20,000				
	Schafer	Ranger 1000 and Trailer	38	133	392.00		$ 41,300				
	Schafer	Pool Vehicle (Electric) - Admin	38	133	392.00			28,000			
	Schafer	Digger Derrick 105'	38	133	392.00				625,000		
	Schafer	Overhead Puller	38	133	392.00					180,000	
	Schafer	Replace Vehicle #171 - Service Truck	38	133	392.00			130,000			
	Schafer	Replace #161(Foreman's Truck)	38	133	392.00			114,000			
	Schafer	Replace #128 (Line Truck)	38	133	392.00			340,000			

Capital Requirements Plan
General Plant (Table 4)
General Plant includes land, structures, tools, office, transportation, stores, lab, and communications equipment

			Accounting Codes			Year (amounts in constant year dollars)					
Project Description	Project Mgr.	Comments	Dept	Activity	FERC	Original Budget 2017	Amended Budget 2017	2018	2019	2020	2021
	Schafer	Replace #162 (Transformer Shop Pickup)	38	133	392.00			48,000			
	Schafer	Replace #123 (Power Mgmt Pickup)	38	133	392.00			32,000			
	Schafer	Replace #34 (Transformer Shop van)	38	133	392.00			140,000			
	Schafer	Engineering Project Mgr	38	133	392.00			40,000			
	Schafer	Underground Cable Puller	38	133	392.00			190,000			
	Schafer	Projected Transportation Equipment	38	133	392.00					200,000	400,000
Project Subtotal						**653,000**	**564,300**	**1,062,000**	**625,000**	**380,000**	**400,000**
Supt of Support Services	Schafer/Seger	Projected Capital Stores Equipment	39	134							
Project Subtotal						-	-	-	-	-	-
Prosser Branch	Sullivan	Replace 2 AC units (10,000/ea)	42	131	390.02	20,000	$ 20,000				
	Sullivan	HVAC 3 Units	42	131	390.02			25,000			
	Sullivan	Warehouse and Shop Lights	42	131	390.02			10,880			
	Sullivan	Wall Pack Lights	42	131	390.02			5,000			
	Sullivan	Projected Structures and Improvements									
Project Subtotal						**20,000**	**20,000**	**40,880**	-	-	-
		Labor & Ovhds for General Plant				1,169	$ 1,169	52,612			
Project Subtotal						**1,169**	**1,169**	**52,612**	-	-	-
General Plant (Table 4)						**$ 1,072,169**	**$ 983,469**	**$ 1,494,492**	**$ 950,000**	**$ 733,000**	**$ 677,755**

Capital Requirements Plan
Information Technology Department(s) (Table 5)

	Accounting Codes				Year (amounts in constant year dollars)					
Budget Category	Dept	Activity	FERC	Detail Description	Original Budget 2017	Amended Budget 2017	2018	2019	2020	2021
Enterprise Applications (Financials, HRMS, CIS, MDMS, Customer Engagement)										
	18	138	391	Kiosks (hardware)	48,000	-				
	18	61	391	Project Management for NISC	5,000	500				
	18	61	391	Implementation of NISC	165,000	200,000				
	18	61	391	Consulting for CMEP conversion for use with NISC (Sensus)	10,000	-				
	18	61	391	Contingency for NISC Project	25,000	-				
	18	61	391	NISC Enhancements (Analytics, iVUE Connect)			20,000	20,000	20,000	20,000
	18	61	391	Consulting to implement Epicor in conjunction with NISC	10,000	32,000				
	18	137	391	Fuel System (PetroVend) replacement		11,085				
	18	61	391	Crystal Reports Server Consulting			10,000			
	18	61	391	Consulting for DMS Upgrade	-		10,000			25,000
Project Subtotal					**263,000**	**243,585**	**40,000**	**20,000**	**20,000**	**45,000**
Data Analytics/Business Intelligence										
	18	137	391	Data Integration Tools (ETL)	45,000	-	45,000			
	18	137	391	Database encryption software	30,000	-		40,000		
	18	61	391	Oracle VM Consulting	35,000	35,000				
	18	137	391	Data Warehouse Database Licenses			40,000			
Project Subtotal					**110,000**	**35,000**	**85,000**	**40,000**	**-**	**-**
Operational Technology										
	15	138	391	Large display monitors for Dispatch/Outage Mgt	50,000	-	110,000			
	18	61	391	AMI Upgrade/Hosting				225,000		
	15	138	391	Hardware/licenses for network redesign; disaster recovery, virtualization, server upgrade, database replication, web server and test environment	5,000	5,000	5,000	5,000	5,000	5,000
	18	137	391	Survalent DB Express Software License	11,000	-	11,000			
				PowerWorld Transmission Software	-	6,500				
	18	61	391	Consulting and integration of Engineering Analysis software (Windmil)	5,000	15,000				
Project Subtotal					**71,000**	**26,500**	**126,000**	**230,000**	**5,000**	**5,000**

Capital Requirements Plan
Information Technology Department(s) (Table 5)

	Accounting Codes				Year (amounts in constant year dollars)					
Budget Category	Dept	Activity	FERC	Detail Description	Original Budget 2017	Amended Budget 2017	2018	2019	2020	2021
Network Infrastructure										
	15	137	391	MS Office upgrade				75,000		
	15	137	391	Windows Datacenter Server	5,000	5,000	17,000	15,000	15,000	10,000
	15	137	391	Adobe upgrade			10,000			
Email System										
	15	137	391	Exchange Server upgrade	10,000	10,000		10,000		
	15	137	391	Exchange Std CALS	10,000	10,000		10,000		
	15	61	391	Consulting for Exchange upgrade	5,000	5,000				
Business Continuity										
	15	138	391	UCS Blade servers	60,000	60,000	20,000	20,000	20,000	20,000
	15	138	391	UCS Refresh Kennewick			140,000	40,000	40,000	
	15	138	391	SAN Upgrade - Kennewick			160,000	70,000		160,000
	15	61	391	SAN Upgrade Consulting			10,000	10,000		
		138	391	Storage Solution for Big Data				30,000		
	15	138	391	Non-NetApp SSD Shelf for VDI	80,000	65,000				
Network Printing										
	15	138	391	MFPs (Pwr Mgt. & Operations)	15,000	15,000	7,500	7,500	7,500	7,500
Misc Networking										
	15	138	391	UPS upgrade - Operations	15,000	15,000				
	15	138	391	Network Switches	10,000	10,000	10,000	10,000	10,000	10,000
	15	138	391	ASA 5545x redundant Prosser			50,000			
	15	136	391	2nd Fiber Path to Prosser	100,000	-	250,000			
		136	391	Optics for Prosser Alt Fiber Path			50,000			
	15	138	391	Wireless Access Points for Operations	10,000	5,000	10,000			
	15	138	391	DMZ switch replacement	20,000	20,000				
	15	138	391	Redundant routers on Hilltops	30,000	30,000				
	15	139	391	Umatilla redundant backhaul for SCADA and AMI			50,000			
	15	138	391	Main Switch 4500 replacement	60,000	60,000				
	15	138	391	Joe Butte to Operations redundant backhaul for SCADA and AMI				50,000		
Cyber Security										
	15	138	391	RSA token replacement	10,000	10,000				10,000
	15	137	391	ASAv Firewall licenses	15,000	15,000				
	15	137	391	ISE PX grid licenses	15,000	15,000				
	15	137	391	Data Loss Prevention			40,000			
Project Subtotal					**470,000**	**350,000**	**824,500**	**347,500**	**92,500**	**217,500**
Projects Subtotal less non-IS internal labor					**914,000**	**655,085**	**1,075,500**	**637,500**	**117,500**	**267,500**

Capital Requirements Plan
Information Technology Department(s) (Table 5)

	Accounting Codes				Year (amounts in constant year dollars)					
Budget Category	Dept	Activity	FERC	Detail Description	Original Budget 2017	Amended Budget 2017	2018	2019	2020	2021
Internal Labor										
	18	11	391	AMI - IT Labor				30,000		
	18	11	391	DMS - IT Applications Labor			30,000			
	15	11	391	Network/Security/OT- IT Infrastructure Labor (1 FTE * 6 mo)	52,000	52,000	75,000	75,000	75,000	75,000
	15	11	391	Storage/Infrastructure - IT Infrastructure Labor (1 FTE * 6 mo)	10,000	10,000	60,000	25,000	10,000	60,000
	18	11	391	NISC - IT Applications Labor	115,000	172,707	44,000	44,000	44,000	44,000
	15	11	391	NISC - IT Infrastructure Labor	4,680	44,650				
	44	11	391	NISC backfill - Customer Service Labor	31,000	29,746				
	43	11	391	NISC - Key Accounts Labor	21,000	19,170				
	11	11	391	NISC - Finance Labor (0.25 FTE*3 mo)	4,414	1,514				
	14	11	391	NISC - Finance Labor (0.25 FTE*3 mo)	4,414	-				
	21	11	391	Milsoft - Engineering Labor (1 FTE * 3 mo)	13,541	14,477				
	22	11	391	NISC - Customer Engineering Labor (1 FTE * 3 mo)	13,541	36,450				
	31	11	391	NISC - Operations Labor		21,753				
	32	11	391	NISC - Supt. Of T&D Labor (0.25 FTE * 2 mo)	3,798	4,929				
	38	11	391	NISC - Supt. Of Support Svcs Labor (xxx)	843	-				
	42	11	391	NISC - Prosser Branch Labor (80 hrs)	3,682	-				
	18	11	391	Epicor - IT Applications Labor	-	10,000				
	2	11	391	Epicor - HR Dept. Labor	15,374	15,374				
	18	11	391	Data Warehouse Implementation - IT Applications Labor	46,800	-	-	-	-	-
	15	11	391	Data Warehouse Implementation - IT Infrastructure Labor	4,680	-	-			5,000
	18	11	391	Business Intelligence Software Implementation - IT Applications Labor			-	-	-	-
	15	11	391	Business Intelligence Software Implementation - IT Infrastructure Labor			-			-
	98	008	391	Payroll Taxes & Benefits @ 44% of Cap Labor	221,698	151,697	106,143	106,143	106,143	106,143
	XX	11	391	Unallocated Capital Labor		(51,775)				
Labor, Overhead and Allocations Subtotal					**566,464**	**532,692**	**315,143**	**280,143**	**235,143**	**290,143**
Projects Subtotal					**1,480,464**	**1,187,777**	**1,390,643**	**917,643**	**352,643**	**557,643**
Adjustment to annual minimum of:			**$800,000**		**(680,464)**	**(387,777)**	**(590,643)**	**(117,643)**	**447,357**	**242,357**
IT Department Total					**$1,480,464**	**$1,187,777**	**$1,390,643**	**$917,643**	**$800,000**	**$800,000**

Capital Requirements Plan
Capital Contributions (Table 6)

		Year (amounts in constant year dollars)					
Project Description	Details	Original Budget 2017	Amended Budget 2017	2018	2019	2020	2021
Electric	Angus Franklin (Tower Upgrades)	$ 17,000	$ 17,000	$ 17,000	$ 17,000	$ 17,000	$ 17,000
	Electric Other/Base Growth	1,030,223	1,040,523	1,094,749	1,096,209	1,086,992	1,072,142
	Patterson Tx		75,000				
	Joint Use Def. Correct. (50% reimbursement)			200,000	200,000	200,000	200,000
	Joint Use Make Ready 100% Reimbursement			15,000	15,000	15,000	15,000
Broadband	ENW - Nine Canyon harmonic Analysis			50,000			
	Broadband Other/Base Growth	10,000	65,000				
	Port of Kennewick Wine Village U.G.		58,500				
Total		**$ 1,057,223**	**$ 1,256,023**	**$ 1,376,749**	**$ 1,328,209**	**$ 1,318,992**	**$ 1,304,142**

Capital Plan Project Descriptions
Public Utility District No.1 of Benton County
2018 Budget

Description		Amount
Capital Projects: Transmission		
BPA Interconnection - Leslie Road	Joint w/ COR near Reata & Leslie Rd.	$217,078
BPA Interconnection - Southridge Sub	Line Tap	$605,000
BPA McNary 115 kV Point of Delivery	50% of Upgrades to McNary-Badger Canyon Line	550,000
Transmission Line - Sunset Rd. to Dallas Rd.	6.0 mi - BPA L0409, Reata tie w/City of Richland (L0408)	1,044,320
Switch Upgrade/Additions, Poles & Fixtures Misc Repairs		263,142
Total Transmission System Capital		**2,679,540**
Capital Projects: Distribution		
Substation Projects:		
New Substation - Leslie	Lease Agreement w/City of Richland	2,170,290
Xfmr & Feeder Relay Upgrade - Ely #1, Ely #2 and Berrian Sub	Breakaway Addition	153,000
Cap Banks, Harmonic Analysis & misc	River Systems Cap. Banks, 9 Canyon study, misc repairs/upgrades	262,815
Distribution Lines - Cable Replacement, Other Maintenance, Pole Replacement, Trouble Orders & Joint Use Corrections		1,495,000
Distribution Lines - Growth (New Customer Growth 710)	Distribution facilities to support customer driven system growth & Meters	3,828,663
Leslie Rd Sub. & Orchard View Sub #2 Getaways	Configure new Sub and prepare for Southridge tie in	622,250
SCADA Projects	Distribution Regulators, Substation RTU's & Communications upgrades	470,000
Joint Use Compliance and Corrections	Correct Joint Use Deficiencies (Offsetting CIAC $215,000)	415,000
Distribution Plan of Service Projects		
Voltage Optimization - Kennewick	Distribution efficiency project for conservation	400,000
PHI-8, new feeder north to Cochrane	East Kennewick	210,000
Farm Plan of Service Projects	Prior 3 Regulator and Recloser & Whitcomb Regulators	177,500
BEC-2 reliability & sectionalizing/ Reata Switch	Benton City & Switch for Reata I-82 Crossing	62,000
BPUD labor & Benefits	Labor assigned to capital and increase in benefit allocation with NISC	568,684
Other Distribution Capital	Off The Dock Labor, Construction Services & Professional Services	302,316
BPUD Allocations (Equipment & Constr. Overhead)	Change in Acctg with NISC fully allocating overheads	1,324,169
Total Distribution System Capital		**12,461,687**
Capital Projects: Broadband		
Fiber Backbone	Sunheaven to Prosser Loop Cost Share and Future upgrades	200,000
Fiber Laterals	Strategic extension and Airflow Spoiler Project	165,986
Fiber Customer Connects	Individuals, Business & Multi Tenant	675,000
Electronics, Wireless and Fiber Conduit	Broadband Electronics, Fiber Premise & Wireless Premise, Growth	150,000
NoaNet NCS Services, Fiber Conduits & BPUD Internal Costs		194,600
Total Broadband System Capital		**1,385,586**

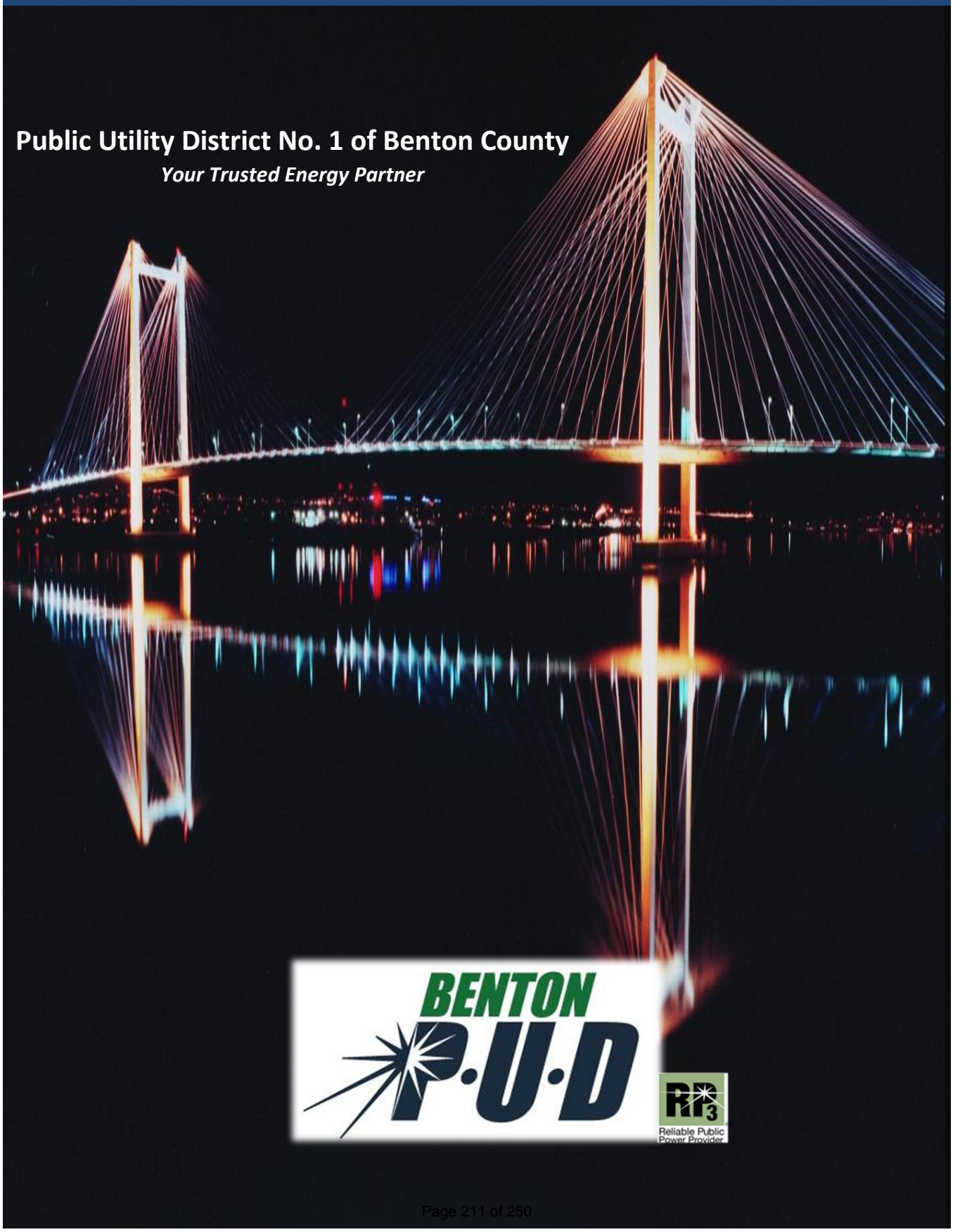
Capital Plan Project Descriptions
Public Utility District No.1 of Benton County
2018 Budget

Description		Amount
Capital Projects: General Plant		
Meter Shop	Power Quality Meter	14,000
Transformer Shop	Recloser test set & Vacuum bottle tester	69,000
Support Services	Buildings and Facilities - Maintenance and Improvements	188,612
	Asphalt Admin Drive Through & West Parking	120,000
	Prosser HVAC unit and lighting	40,880
Pool Vehicle (Electric) - Admin		28,000
Replace Vehicle #171 - Service Truck		130,000
Replace #161(Foreman's Truck)		114,000
Replace #128 (Line Truck)		340,000
Replace #162 (Transformer Shop Pickup)		48,000
Replace #123 (Power Mgmt Pickup)		32,000
Replace #34 (Transformer Shop van)		140,000
Engineering Project Mgr		40,000
Underground Cable Puller		190,000
Total General Plant Capital		**1,494,492**
Capital Projects: Information Systems		
Enterprise Applications	NISC enhancements, consulting for Crystal Reports and DMS	40,000
Data Analytics	Data integration tools and licenses	85,000
Operational Technologies	Monitors Dispatch & Outage Mgmt., Survalent license MFP's	133,500
Network Infrastructure	Windows Data center server & adobe upgrade	27,000
Business Continuity	UCS Blade Servers & SAN upgrade	330,000
Prosser Fiber	2nd Fiber Path to Prosser/share with Broadband	250,000
Prosser	ASA 5545x redundant & Optics for Prosser Alt fiber path	100,000
Cyber Security	Data Loss Prevention	40,000
Network Infrastructure	Umatilla redundant backhaul for SCADA and AMI	50,000
Network Infrastructure	network Switches & Wireless Access points for Operations	20,000
Capitalized labor & benefits	Network Security, Storage & SCADA	315,143
Total Information Systems Capital		**1,390,643**
Capitalized Interest	Cost of money used during construction projects	**254,477**
Total Capital Projects		**$19,666,425**

POWER SUPPLY PLAN

TAB 10

2018 POWER SUPPLY PLAN



Public Utility District No. 1 of Benton County

Your Trusted Energy Partner

BENTON P·U·D

Reliable Public Power Provider

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The Power Supply Plan is prepared annually to determine the District's energy requirements and resources establishing the power supply budget for the upcoming year. Looking five years out, the Power Supply Plan is developed to provide background, highlight key data assumptions and synthesize conclusions creating a "story" behind the numbers used in the 2018 budget. Key items addressed and impacting the 2018-2022 budget are highlighted below.

LOAD FORECAST

The District's 2017-2026 Load Forecast determines the resource requirements for the upcoming five year period. The District projects moderate annual retail load growth over the next five years with a retail load of 200.0 aMW forecasted for 2018. With that said, the District has experienced variances of up to 5% between past forecasts and actual loads primarily due to weather. **Figure 1** below shows the variances observed from 2013 to 2017. In addition to retail load, the District's Power Supply Plan must also include energy to cover transmission and distribution system losses on our system as well as losses on the BPA transmission system. This increases the District's total 2018 forecasted resource requirement to 209.7 aMW.

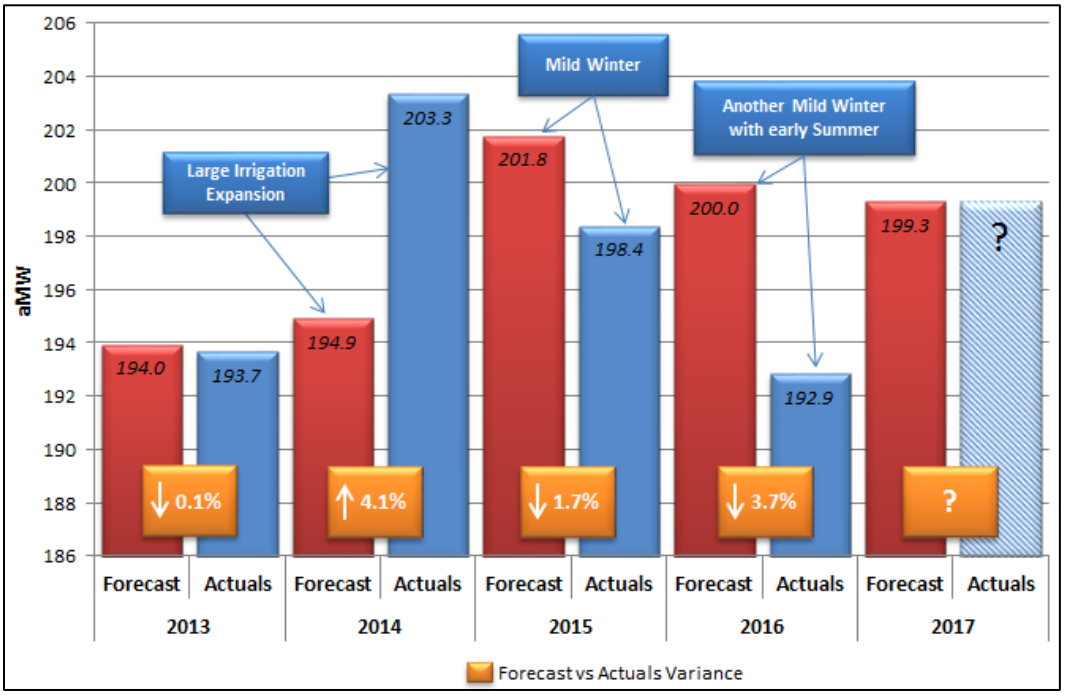


FIGURE 1 – RETAIL LOAD FORECASTS VS ACTUALS (2013-2017)

DISTRICT RESOURCES

Table 1 shows the District's firm and non-firm energy resources available to serve its loads for the five year forecast period.

Resource	Fuel	Contract Expiration	Energy (aMW)	Capacity (MW)	Firm/ Non-Firm
BPA Slice/Block[1]	Hydro/Nuclear	9/30/2028	198.049[2]	198.049	Firm
BPA Slice (Average Water Adder)[3]	Hydro	9/30/2028	26.885	26.885	Non-Firm
Frederickson Generating Station 1	Natural Gas	8/31/2022	N/A[4]	50.0	Firm
Nine Canyon Phase 1	Wind	6/30/2030	0.8	3.0	Non-Firm
Nine Canyon Phase 3	Wind	6/30/2030	1.6	6.0	Non-Firm
LL&P Wind Energy at White Creek	Wind	6/30/2027	0.9	3.0	Non-Firm
White Creek Wind I	Wind	11/30/2027	1.8	6.1	Non-Firm
Packwood	Hydro	N/A	0.9	3.7	Firm
Total			**230.935**	**296.734**	

Notes:

1 - Bonneville Power Administration(BPA)

2 - Rate Period High Water Mark (RHWM) based on Critical Water

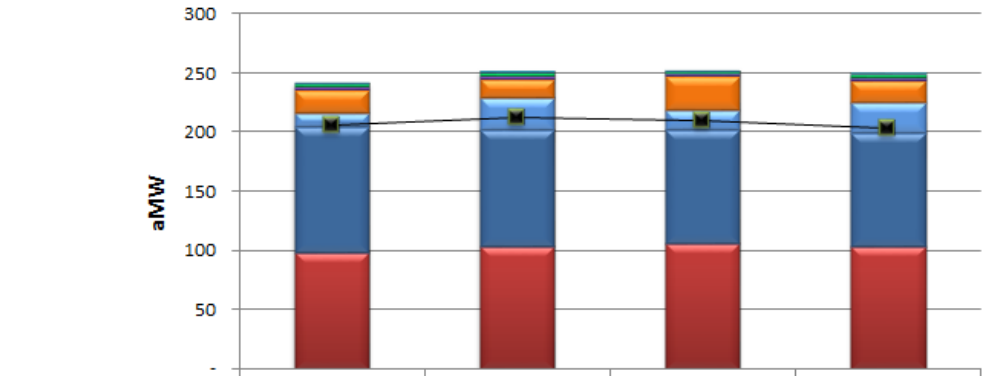
3 - Energy dependent upon the weather/water year.

4 - Energy call option where plant dispatch is dependent upon market conditions.

TABLE 1 – DISTRICT GENERATION RESOURCES

ENERGY UNCERTAINTIES

The District historically has been well positioned as seen in **Figure 2** with sufficient energy on an annual average basis from its resources to meet its load obligations including transmission and distribution losses (wholesale loads) and is a net seller of energy in the regional energy market. As seen in **Figure 3**, under expected water conditions the District has adequate resources to meet the forecasted wholesale loads on an annual basis from 2018 to 2022 and expects to continue to sell its surplus energy in the regional energy market.



	2013	2014	2015	2016
Packwood	1.55	2.06	1.39	1.54
White Creek	2.61	2.73	2.46	2.83
Nine Canyon	2.25	2.63	2.27	2.62
Frederickson	18.98	15.75	28.39	18.81
Slice Adder	11.67	26.45	16.11	25.14
Critical Slice	106.36	99.05	96.92	96.12
Block	98.28	103.37	105.51	103.50
Total Wholesale Load	205.76	211.94	209.32	203.45

FIGURE 2 – 2013–2016 HISTORICAL RESOURCES VS WHOLESALE LOADS

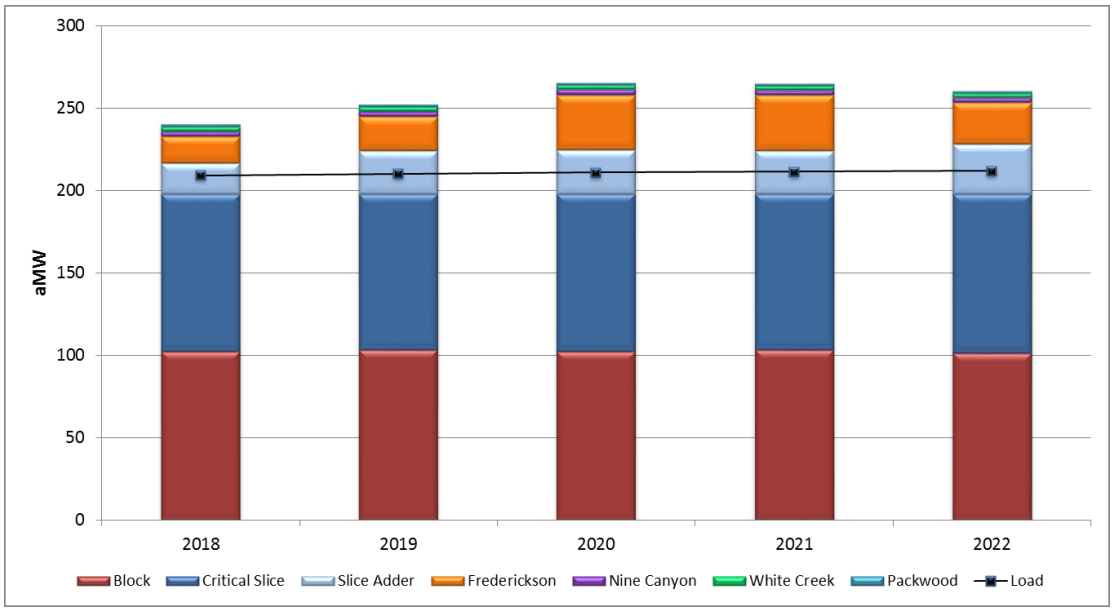


FIGURE 3 – 2018-2022 RESOURCES VS FORECASTED WHOLESALE LOADS

While **Figure 3** shows 100% of the District's annual energy needs being covered by BPA resources, monthly energy variations where load exceeds supply results in actual net energy from BPA only accounting for 85% of the total resource requirement. The balance during those months comes from market purchases and dispatching Frederickson to meet load requirements. Similar to loads being influenced by weather, the biggest driver of energy uncertainty is weather related. The amount of precipitation and snowpack each year will have an impact on the amount of hydro generation the District will be allocated. In addition to the amount of precipitation and snowpack observed, the timing of when the precipitation occurs and when the snowpack melts is a significant driver of energy uncertainty and impacts the District's sales of surplus energy in the regional energy market.

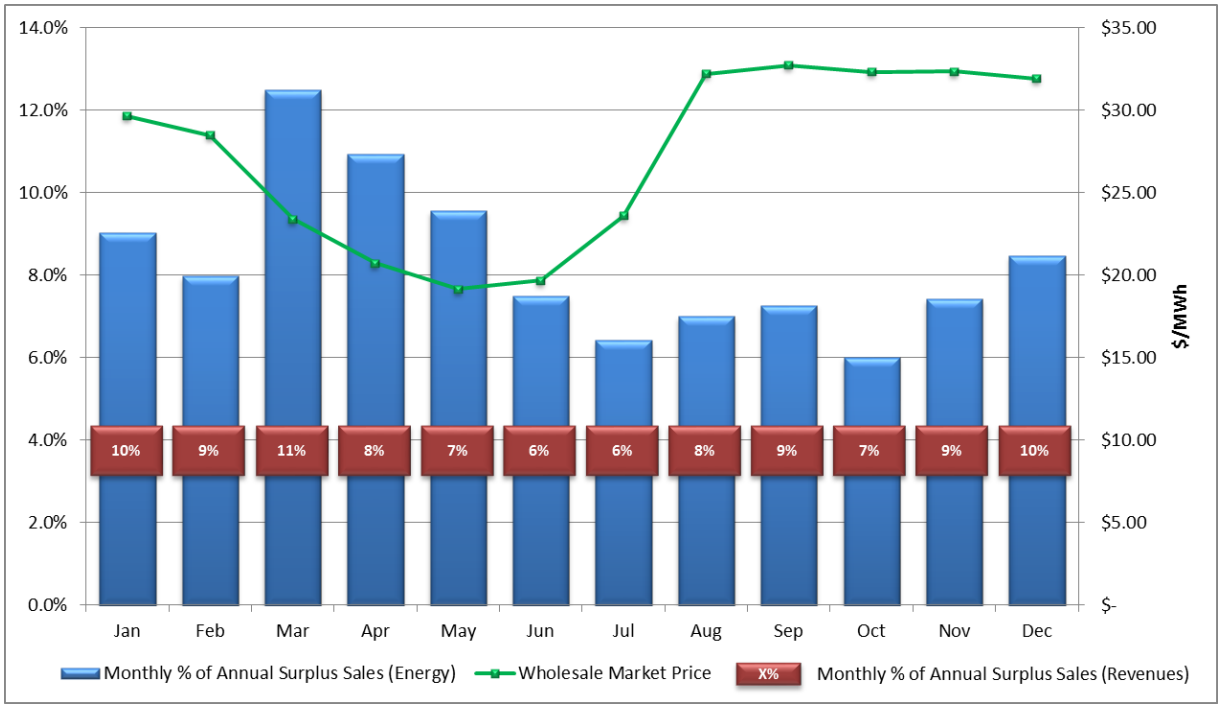


FIGURE 4 – 2012-2016 AVG MONTHLY SURPLUS SALES VS AVG WHOLESALE MARKET PRICE WITH % OF REVENUES

Figure 4 shows the District from 2012-2016 has observed the largest volume of its surplus sales in March-May, with over 57% of the District's regional market sales occurring by June. However, the best combination of volume and price occurs during the winter between November and March with approximately 50% of annual surplus revenues occurring during those five months.

Figure 5 below shows the District's expected monthly net positions in 2018 versus the forecasted wholesale market prices including expected resource generation and hedges currently executed. Currently, the District's length occurs as prices are falling to increased generation volume in the region; whereas, the forecasted shortages occur when prices are rising. Maximizing the value of the District's surplus energy and minimizing the impact of energy shortages and fluctuating market prices plays an important role in keeping net power costs as low as possible which is why monthly the District's Risk Management Committee (RMC) reviews market conditions and expected loads compared to expected energy output to address and ensure the District is well positioned each and every month.

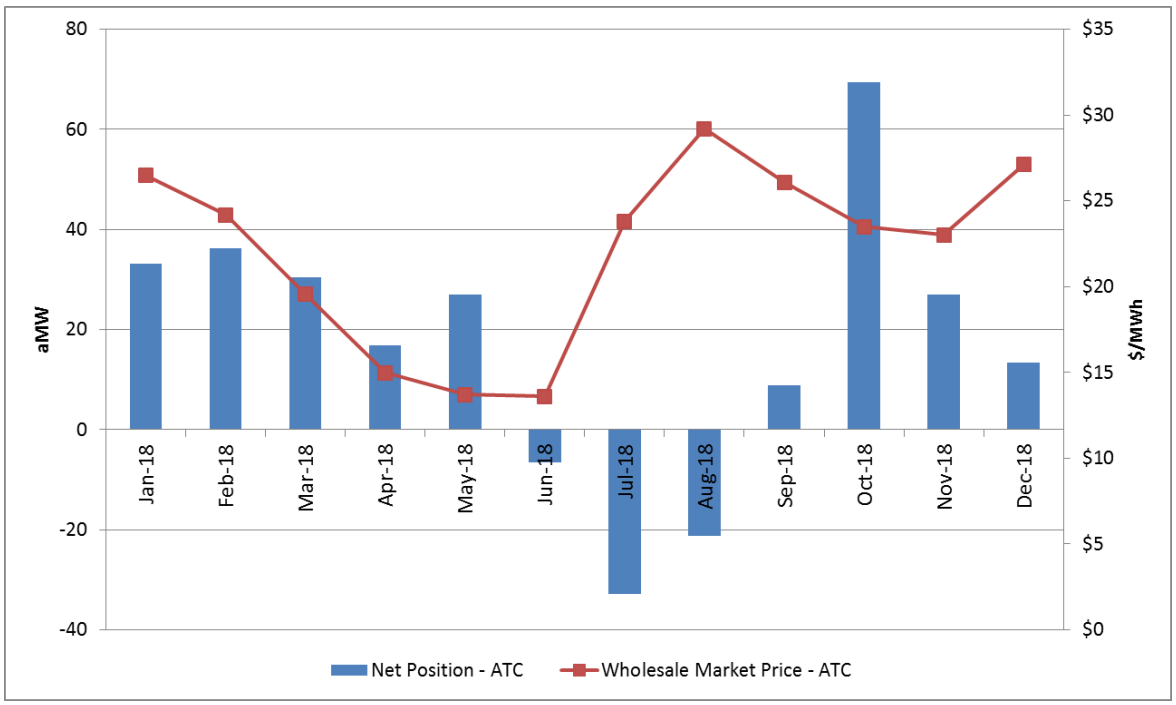


FIGURE 5 – 2018 AROUND THE CLOCK NET POSITIONS VS WHOLESALE MARKET PRICE

CAPACITY UNCERTAINTIES

Annually, the District conducts capacity studies to determine when the District could experience capacity deficits. The purpose of this study is to analyze the District's load/resource balance under extreme load conditions (i.e. District's peak summer usage when irrigation is ramped up and also experiencing heavy air conditioning from residential and commercial customers). **Figure 6** below shows daily peak demand deficits experienced from 2016. To cover the shortages, the District generally purchases from the regional energy market based on analysis and recommendations made by staff from The Energy Authority (TEA). In addition, the District also has 50 MW of capacity from the Frederickson Generating Station 1 that acts as an energy/capacity call option.

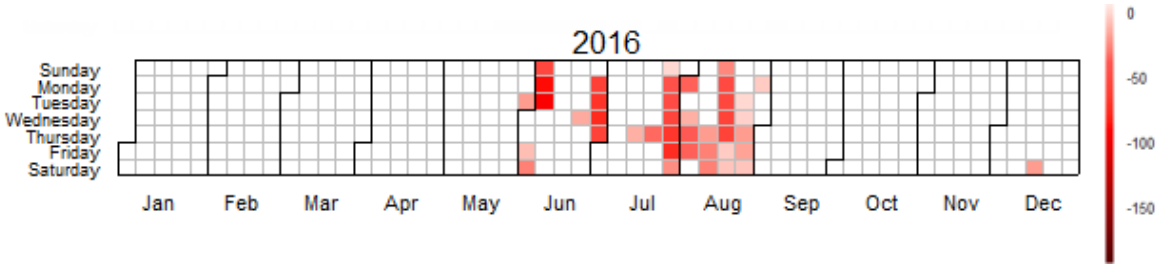


FIGURE 6 – 2016 DAILY PEAK DEMAND DEFICITS

Regional Uncertainties

Regionally, there remain a number of items that create uncertainty including a possible a spill surcharge BPA created to recover the costs associated with increased spill at the dams that is anticipated as a result of a ruling issued this past spring by the U.S. District Court for the District of Oregon. The court indicated that it will order increased spill at eight Federal Columbia River Power System dams on the lower Columbia and Snake rivers for the 2018 spring fish passage season. The surcharge would be in addition to the new power rates and would be implemented once sufficient information becomes available regarding planned annual spill levels. The District did not include a spill surcharge estimate in the 2018 budget and will closely monitor its likelihood in 2018.

In additional to the possible spill surcharge, the District received a letter from BPA stating they found an error in their calculation overestimating expected secondary revenues by $19.4M annually. Rather than correcting this error through an additional rate increase just days before the BP-18 rates were to go into effect, BPA chose to rely on their access to liquidity tools and risk mitigation strategies, up to and including the Cost Recovery Adjustment Clause (CRAC) if necessary, to recover the costs of their error. Due to the way a CRAC is assessed and calculated based on Financial Reserves, the likelihood of a CRAC triggering in FY2018 has increased. If a $10M CRAC triggers, it would be paid in FY2019 which affects the last 3 months of calendar year 2018. The total monthly cost would be approximately $11,186 and have a total impact in 2018 of $33,558. Due to the limited impact to the District, a CRAC estimate was excluded from the 2018 budget.

Stochastic Modeling

Between a possible spill surcharge, a potential CRAC, the effects of fluctuating market prices and changes in loads and resource generation due to weather variations, there remain a lot of items that create uncertainty in the District's power supply budget. To account for some of the uncertainty, the District uses Monte Carlo analysis to set its annual power supply budget. Specifically, the stochastic model simulates the distribution of annual power costs by generating a thousand scenarios of the variable inputs including: Slice generation, load, power prices and gas prices. Using these results, the District sets its 2018 budget at the 25th percentile (i.e., the probability of meeting budget is 75%) net power cost, and the 50th percentile for forecasting years beyond 2018.

Table 2 below shows net power costs using the 5th, 25th, and 50th percentile scenarios for 2018-2022.

Percentile	2018	2019	2020	2021	2022
5%	$84,834,062	$87,825,239	$90,467,779	$92,461,386	$91,557,156
25%	$82,528,313	$85,639,424	$87,953,650	$90,036,591	$88,814,948
50%	$80,767,547	$83,890,857	$85,835,386	$87,612,991	$86,566,593
Reserve Level (25% - 5%)	$2,305,749	$2,185,816	$2,514,129	$2,424,795	$2,733,991

TABLE 2 – ANNUAL BUDGET NET POWER COST PERCENTILES

CONCLUSION

The District is well positioned heading into 2018 with no particular concerns except the continued depression of wholesale market prices due to policy driven renewable buildout and low natural gas prices which will put pressure on net power costs. Additionally, weather conditions will have a major impact and drive the uncertainties going into 2018; however, the District's RMC will continue to monitor conditions to ensure known risks are appropriately hedged. In conclusion, the District's 2018 budget shows a gross power budget of $96.4 million, expected surplus sales revenue of $13.9 million for a net power budget of $82.5 million.

The District load forecast is used for the power supply budget and extends five years into the future. This information is taken from the Ten Year Load and Customer Forecast Report 2017-2026, which the Commission adopted by Resolution 2410 on June 27th, 2017. The annual wholesale load forecast is shaped monthly based on the average observed actuals over the previous three years. The monthly load forecast is then split between heavy load hours (HLH) and light load hours (LLH) as shown in **Figure 7**. The five year load forecast shows a 0.27% average annual rate of growth as shown below in **Figure 8.**

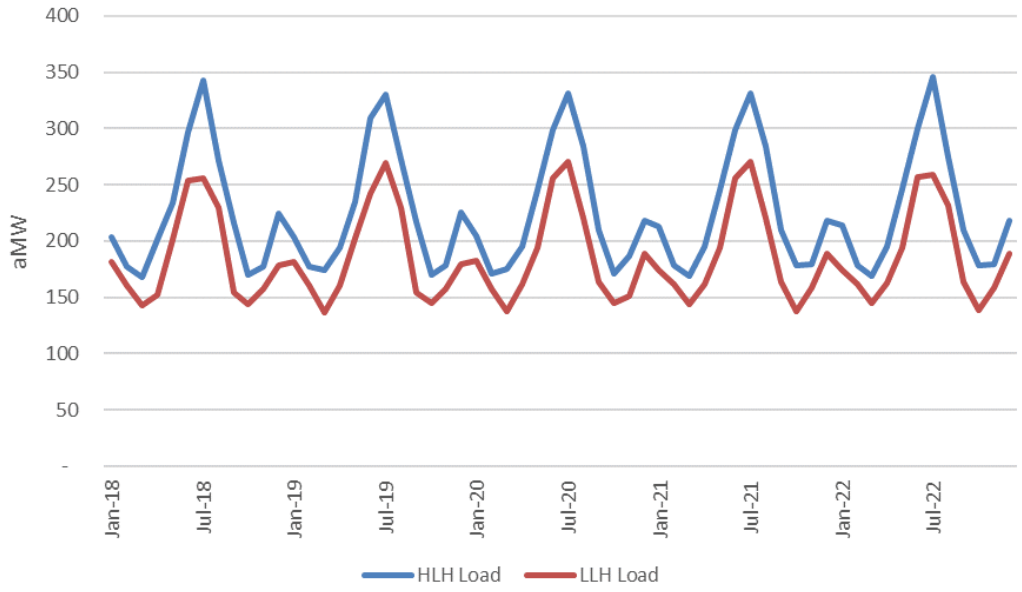


FIGURE 7 - BPUD HLH AND LLH LOADS

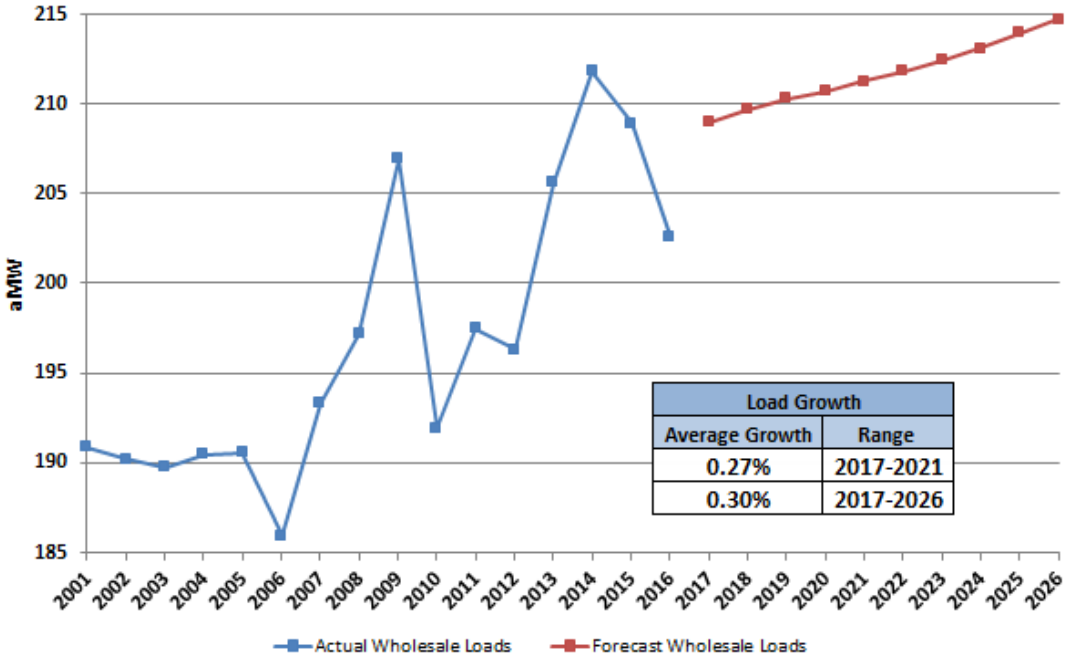


FIGURE 8 – AVERAGE ANNUAL RATE OF WHOLESALE LOAD GROWTH

SECTION II: DISTRICT RESOURCES

The District sources its power requirements through purchases from BPA, as well as from several non-federal sources of power. This section describes the District's current and expected resources over the five year period, 2018-2022.

BPA RESOURCES

The District's Power Sales Agreement with BPA is the single largest source of power to the District. The Slice/Block Product provides for the combined purchase of two distinct power services for the District based on the actual generation shape of the Federal Columbia River Power System (FCRPS). As a Block purchaser, the District receives Firm Requirements Power on a flat monthly block basis. As a Slice purchaser, the District accepts the risk of fluctuations in actual federal system output and accepts responsibility for managing its percentage share of the federal system output to serve its load. There is no guarantee that the amount of Slice output made available, combined with Firm Requirements Power made available under the Block Product, will be sufficient to meet the District's load obligations, be it hourly, daily, weekly, monthly, or annually.

Under the Slice Product, the District will receive 1.36865% of the FCRPS output (Slice customers in aggregate are purchasing approximately 23% of the FCRPS, which is lower than last year due to Klickitat PUD and Seattle City Light opting out of Slice) in FY2018. This allocation is adjusted down slightly from its initial Slice percentage of 1.38126% by the Slice Percentage Adjustment Ratio (SPAR) of 0.99087. The SPAR is adjusted every two years based on new resources that are added to the BPA system to meet new BPA customer needs. Slice is paired with the Tier 1 Block Product to meet additional demand up to the Rate Period High Water Mark (RHWM) of 198.049 aMW in FY2018 which is down from FY2017. The RWHM decrease is due to a number of factors including:

- Load annexation by City of Richland and the associated CHWM transfer
- Lower forecasted inflows into Grand Coulee
- Loss of the Idaho Falls Bulb Turbines as a Tier 1 resource
- Expiring BPA contracts
- Partially offset by reduced System Obligations

The critical Slice allocation for FY2018 is 96.129 aMW; however, actual Slice generation is dependent upon actual water flows through FCRPS. The District contracts with TEA to schedule, manage and optimize the Slice Product to maximize the value of the expected output. Tier 1 Block allocation in FY2018 is 101.92 aMW and is distributed as a fixed annual amount, which is shaped to monthly load according to BPA Block Shaping Factors. The Block shaping factors were determined based on the District's monthly load shape in FY2010. The Tier 1 Block amounts and the Block shaping factors are shown in **Table 3** and **Table 4**. As part of the BPA agreement, the District agrees to meet its load with its own resources and market purchases beyond the contracted BPA products. Currently, loads are forecasted annually to be 7.344 aMW more than the District's BPA RHWM.

The majority of the BPA power costs to the District are captured by the Composite Customer Charge, which is a function of the District's FY2018 Tier 1 Cost Allocator (TOCA) of 2.85174% and the BPA Composite Rate. BPA Costs are outlined in **Table 20 - Cost per MWh from BPA** later in the document.

Month	2018	2019	2020	2021	2022
	(aMW unless otherwise noted)				
January	105.6	107.8	105.9	107.8	105.6
February	87.7	89.5	84.9	86.5	84.7
March	78.1	79.8	78.3	79.8	78.1
April	86.8	88.6	87.0	88.6	86.8
May	105.6	107.8	105.9	107.8	105.6
June	127.7	130.4	128.1	130.4	127.7
July	150.0	153.2	150.4	153.2	150.0
August	129.6	132.3	130.0	132.3	129.6
September	89.3	91.2	89.5	91.2	89.3
October	79.7	78.2	79.7	78.0	79.7
November	87.3	85.7	87.3	85.4	87.3
December	99.3	97.5	99.3	97.2	99.3
Block Total (aMW)	101.92	104.08	101.92	104.08	101.92
Block Total (MWh)	892,820	911,713	895,266	911,713	892,820

TABLE 3 - TIER 1 BLOCK AMOUNTS

Month	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
Block Shaping Percentage	6.5	6.9	8.1	8.8	6.6	6.5	7.0	8.8	10.3	12.5	10.8	7.2

TABLE 4 - MONTHLY BLOCK SHAPING PERCENTAGES

Even with the release of BPA's final BP-18 rates for FY2018 and FY2019, a lot of uncertainty remains as BPA created a spill surcharge to recover the costs associated with increased spill that is anticipated as a result of a ruling issued this past spring by the U.S. District Court for the District of Oregon. The court indicated that it will order increased spill at eight Federal Columbia River Power System dams on the lower Columbia and Snake rivers for the 2018 spring fish passage season. The surcharge will be in addition to the new power rates and will be implemented once sufficient information becomes available regarding planned annual spill levels. The District did not include a spill surcharge estimate in the 2018 budget and will closely monitor its likelihood in 2018.

Additionally, the District received a letter from BPA stating they found an error in their calculation overestimating expected secondary revenues by $19.4M annually. Rather than correcting this error through an additional rate increase just days before the BP-18 rates were to go into effect, BPA chose to rely on their access to liquidity tools and risk mitigation strategies, up to and including the Cost Recovery Adjustment Clause (CRAC), if necessary to recover the costs of their error. Due to the way a CRAC is assessed and calculated based on Financial Reserves, the likelihood of a CRAC triggering in FY2018 has increased. However if a $10M CRAC triggers in FY2018, it would result in a monthly cost of approximately $11,186 and an impact in 2018 of $33,558 since it would only impact the last three months of 2018. Due to the limited impact to the District, a CRAC estimate was excluded from the 2018 budget.

NON-BPA RESOURCES

In addition to open market purchases, Benton PUD has five non-BPA resources: Frederickson 1 Generating Station, Nine Canyon Wind Project, LL&P Wind Energy, Inc. at White Creek, White Creek Wind I Project, and the Packwood Hydroelectric Project.

FREDERICKSON 1 GENERATING STATION

The District entered into an agreement for the purchase of 50 MW of contract capacity at a 7.1 MMBtu per megawatt hour heat rate from the Frederickson 1 Generating Station combined cycle combustion turbine (CCCT) plant located near Tacoma, WA. Each day, the District has the right, but not the obligation, to purchase output from Frederickson. Having the option to run Frederickson acts an energy call option that creates an insurance policy for the District assuring access to capacity if the wholesale market becomes constrained. Generally speaking, the decision to buy from Frederickson is based on a comparison of the spot price of power to the variable cost of running the plant. While the agreement identifies a 7.1 MMBtu per megawatt hour heat rate, the effective heat rate varies due to changes in natural gas prices and the variable operations and maintenance costs associated with running the plant. **Figure 9** provides an explanation of how natural gas is converted into electricity based on current market prices.

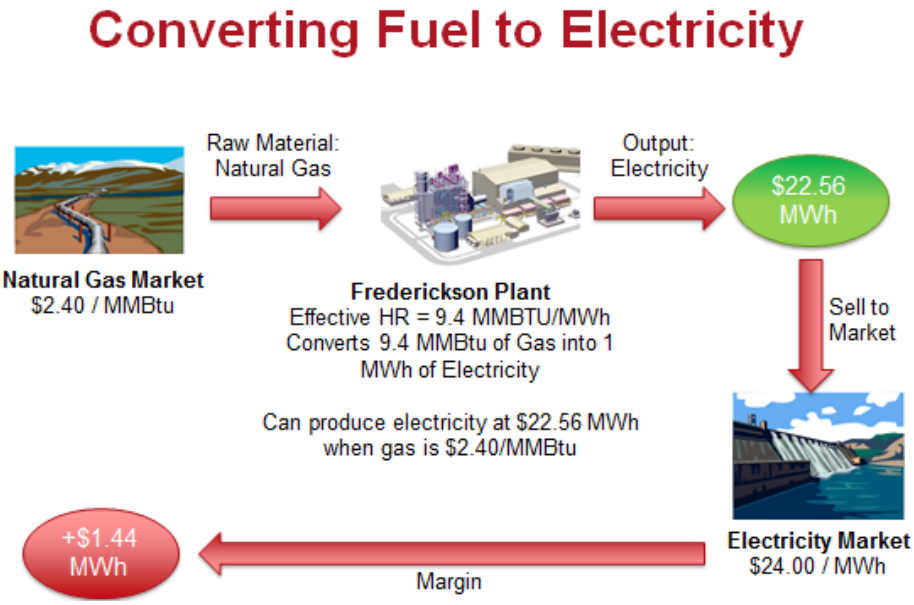


FIGURE 9: THERMAL CONVERSION OF FUEL TO ELECTRICITY

The decision to enter into an agreement for capacity from Frederickson was made during the 2000 energy crisis at a time when District loads were expected to grow significantly above our BPA contract levels and after market manipulation inflated regional power prices making the procurement of the plant output very appealing. However shortly after procurement, the market manipulation became public, expected load growth at the District did not materialize and the inflated regional power prices dropped making the asset surplus to District needs and less competitive in the regional power market. Over the years, the District's management of our share of the plant output has evolved in order to attempt to recover as much of the plant's fixed costs as possible. One option includes deriving revenue by running the plant in the daily spot market when it is expected to be "in the money". Additionally, revenue can be derived by making forward sales of the plant output and "unwinding" them when a cash

flow positive margin can be captured. "Unwinds" also free up the plant capacity to be sold in the forward market again. Use of these strategies has resulted in an average of 17% of the fixed costs being recovered on an annual basis from 2013 to 2016. The District anticipates a 9% fixed cost recovery in 2018 due to low regional market prices, but expects fixed cost recovery to rise to 29% by 2022 due to the closure of regional coal plants and low natural gas prices. **Table 5** highlights the District's forecasted fixed costs for Frederickson with a decrease in 2022 when the agreement to purchase from the plant expires.

The District is actively monitoring both federal and state regulatory policies regarding Green House Gas emissions to determine the physical and financial implications each policy could have on economically dispatching the Frederickson 1 Generating Station. The recently enacted Washington State Clean Air Rule (CAR) will apply to the owners of Frederickson. The District and TEA are monitoring the expected dispatch and the cost of Emission Credits under the rule. If the annual cost to Frederickson exceeds $1.9M, the District becomes responsible for a 75% share of the incremental cost of compliance.

Year	Annual Fixed Cost	Annual Volumetric Cost	Gross Annual Cost	YoY Increase	Fixed Cost Recovery	Net Annual Cost
2018	$7,577,872	$677,727	$8,255,599		9%	$7,512,595
2019	$7,728,568	$867,215	$8,595,784	4%	12%	$7,564,290
2020	$7,792,335	$1,413,699	$9,206,035	7%	21%	$7,272,768
2022	$7,851,265	$1,431,287	$9,282,551	1%	26%	$6,869,088
2022*	$5,281,599	$1,077,109	$6,358,708	-31%	29%	$4,514,683

*Partial year costs as Frederickson PPA expires August 2022

TABLE 5 - FREDERICKSON FIXED COSTS

NINE CANYON WIND PROJECT

The Nine Canyon Wind Project is situated on dry land wheat farms approximately eight miles southeast of Kennewick, WA in the Horse Heaven Hills. The District began purchasing renewable energy from Phase I of the project in 2002, when a Power Purchase Agreement was signed with Energy Northwest, a State of Washington Joint Operating Agency (JOA), for 3 MW of generating capacity for a commitment continuing through June 30, 2023. This purchase produces about 1 aMW of energy, at $56.91 per MWh in 2018. On October 30, 2006, the District signed an Amended and Restated Agreement with Energy Northwest, and the other purchasers, which extended the term of the Agreement through July 1, 2030 (with rights to extend the agreement in additional five-year terms).

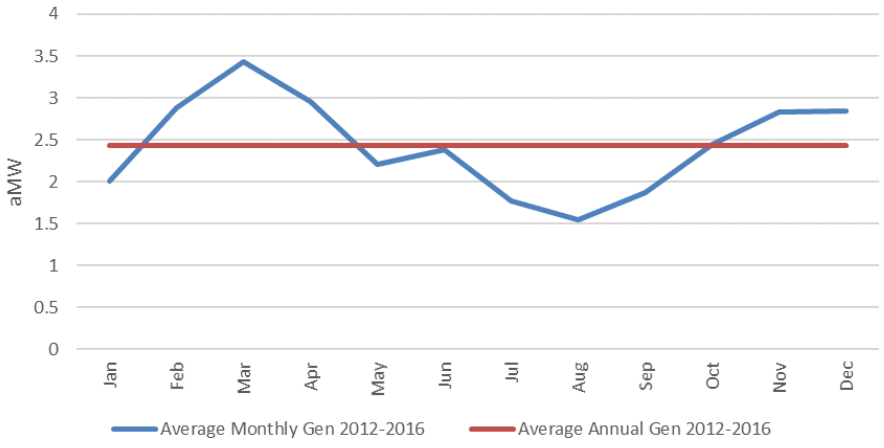


FIGURE 10 – NINE CANYON AVERAGE MONTHLY GENERATION (2012-2016)

In 2008, the District contracted to purchase an additional 6 MW (approximately 2 aMW) of energy from Phase III of the project. The cost of Phase III is $76.17 per MWh in 2018. Although Nine Canyon Wind provides an intermittent source of energy, there is no material difference in the amount of energy the District receives from month to month. **Figure 10** shows the District's share of the actual monthly generation from the Nine Canyon Wind Project for the period January 2012 through December 2016 has been lower than the projected 2.7 aMW using a 30% capacity factor.

The average cost of Phase I and Phase III is $69.75 per MWh in 2018.

Table 6 shows the annual cost of output purchased from each phase. In addition to these costs, the District incurs approximately $13,000 in transmission cost each month.

Nine Canyon Wind Project is a renewable energy resource with Environmental Attributes that qualify under the State of Washington's Energy Independence Act (EIA) and will help the District meet its renewable energy requirement under this Act.

Year	Phase I Cost ($/MWh)	Phase III Cost ($/MWh)	Total Cost per MWh	Phase I Cost per Month	Phase III Cost per Month	Total Annual Cost
2018	$56.91	$76.17	$69.75	$41,547	$111,206	$1,833,036
2019	$56.91	$76.17	$69.75	$41,547	$111,206	$1,833,036
2020	$56.91	$76.17	$69.75	$41,547	$111,206	$1,833,036
2021	$56.91	$76.17	$69.75	$41,547	$111,206	$1,833,036
2022	$56.91	$76.17	$69.75	$41,547	$111,206	$1,833,036

TABLE 6 - NINE CANYON WIND COSTS

LL&P WIND ENERGY, INC. AT WHITE CREEK

In 2007 Benton PUD entered into a 20-year contract with Lakeview Light & Power (LL&P Wind Energy, Inc.) to purchase 3 MW of capacity from the White Creek Wind Project located near Goldendale, WA. This purchase produces approximately 1 aMW of power. The cost of the renewable energy is estimated to be $63.35 per MWh in 2018. Costs escalate by 2% each year of the contract. **Table 7** shows a breakdown of the project's fixed cost assumptions through 2021.

White Creek Wind Project is a renewable energy resource with Environmental Attributes that qualify under the State of Washington's EIA and will help the District meet its renewable energy requirement under this Act.

Year	Cost per MWh	Cost per Month	Annual Cost	YoY Increase
2018	$63.35	$46,246	$554,946	2%
2019	$64.62	$47,173	$566,071	2%
2020	$65.91	$48,114	$577,372	2%
2021	$67.23	$49,077	$588,919	2%
2022	$68.57	$50,058	$600,697	2%

TABLE 7 - LL&P WIND ENERGY, INC. AT WHITE CREEK COSTS

WHITE CREEK WIND I

Benton PUD signed an agreement to purchase 6 MW from the White Creek Wind I Project capacity for a period of 19 years, with the option to purchase part of the project beginning in 2017 and each year thereafter. The District elected to not exercise its option in 2017 and doesn't anticipate exercising

option in 2018. This purchase produces approximately 2 aMW of energy. Benton PUD paid Klickitat PUD (one of the owners) a lump sum for the capital component. The total generation cost is estimated at $60.76 per MWh in 2018. Capital costs are fixed, and O&M costs escalate between 2-4% each year through 2021. **Table 8** below shows a breakdown of the fixed cost assumptions for this project. **Figure 11** shows the District's share of the actual monthly generation from both White Creek Wind purchase agreements for the period January 2012 through December 2016.

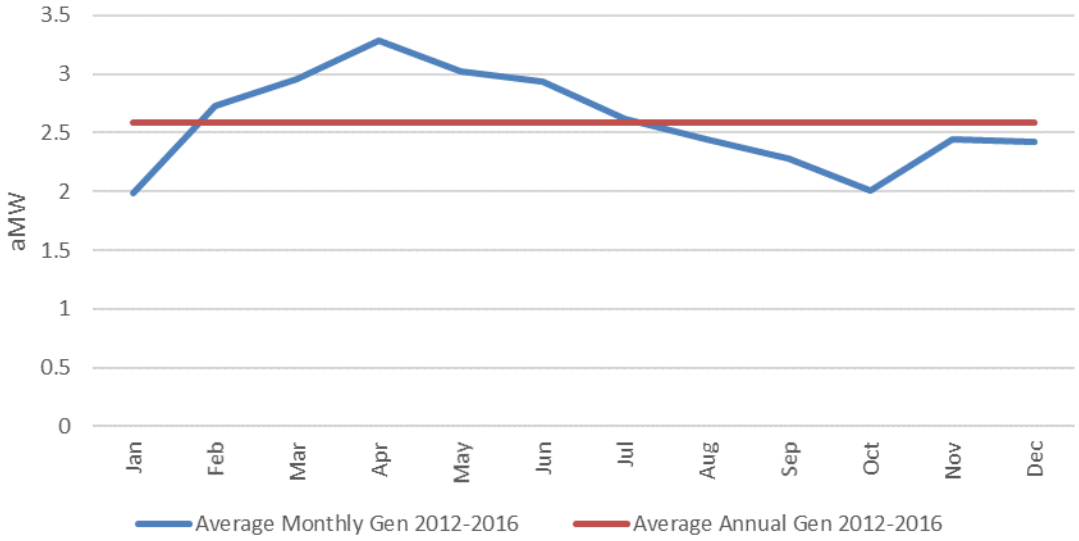


FIGURE 11 – WHITE CREEK AVERAGE MONTHLY GENERATION (2012-2016)

White Creek Wind Project is a renewable energy resource with Environmental Attributes that qualify under the State of Washington's EIA and will help the District meet its renewable energy requirement under this Act.

Year	Capital Cost per MWh	O&M Cost per MWh	Annual Capital Cost	Annual O&M Cost	Total Annual Cost
2018	$60.76	$27.75	$ 486,105	$ 578,400	$ 1,064,505
2019	$61.59	$28.50	$ 500,688	$ 578,400	$ 1,079,088
2020	$62.45	$29.44	$ 515,709	$ 578,400	$ 1,094,109
2021	$63.33	$30.32	$ 531,180	$ 578,400	$ 1,109,580
2022	$64.24	$31.23	$ 547,115	$ 578,400	$ 1,125,515

TABLE 8 - WHITE CREEK WIND I COSTS

PACKWOOD LAKE HYDROELECTRIC PROJECT

The Packwood Lake Hydroelectric Project (Packwood) is a hydroelectric generating facility with a nameplate capacity of 26.125 MW that is owned and operated by Energy Northwest, a State of Washington JOA. The project is located 5 miles east of Packwood, WA in Gifford Pinchot National Forest. Project participants include Benton PUD, Clallam PUD, Clark County PUD, Ferry County PUD, Franklin PUD, Kittitas PUD, Klickitat PUD, Lewis PUD, Mason PUD No. 3, Skamania PUD, Snohomish PUD, and Wahkiakum PUD.

Benton PUD owns a 14% share of the output from the Packwood Hydroelectric Project, equating to approximately 3.66 MW of generation capacity. The expected average output from Packwood is approximately 1 aMW. **Table 9** shows the fixed cost assumptions for the District's share of the

Packwood Hydroelectric Project. Energy Northwest recently released a long range plan summary projecting project costs through 2027 and highlighted an increase in costs of 3% annually through the study period. The long range plan includes a 10% reduction in project generation related to the anticipated new FERC license and increases in costs related to forecasted capital related and mitigation related cost increases.

This project does not qualify as a renewable resource under State of Washington's EIA.

Year	Cost per MWh	Cost per Month	Annual Cost
2018	$43.44	$31,712	$380,544
2019	$44.74	$32,663	$391,960
2020	$46.09	$33,643	$403,719
2021	$47.47	$34,653	$415,830
2022	$48.89	$35,692	$428,305

TABLE 9 - PACKWOOD HYDROELECTRIC PROJECT FIXED COSTS

TRANSMISSION

The District has a Point to Point Transmission agreement with BPA Transmission Services. The firm annual demand is 423 MW. Fixed costs for Long-Term Point to Point Transmission are budgeted at $9.1M in 2018. The District is expecting a 4% increase in transmission rates in FY2020. The District is projected to be long transmission for most hours of the year in 2018, as can be seen in **Figure 12** and **Table 10**. Net sales of surplus transmission are projected to be $900,000 per year in 2018-2022.

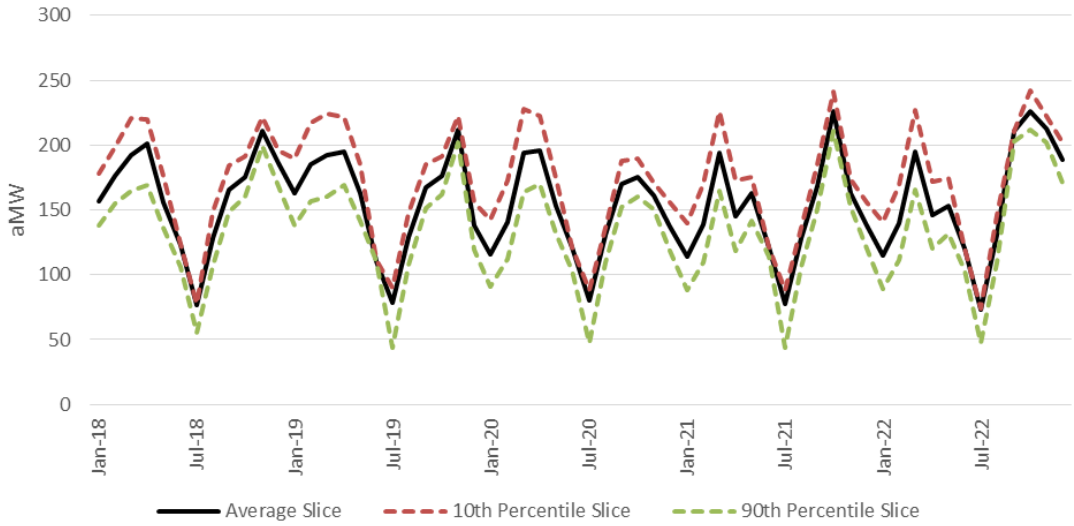


FIGURE 12 - BENTON PUD 2018-2022 LONG-TERM HLH FIRM TRANSMISSION SURPLUS, NET OF LOAD & RESOURCES

Resource Availability	BPA	Nine Canyon	White Creek	Packwood	Frederickson
2017-2022 Average	235	3.0	2.7	1.5	25
Min	191	3.0	2.4	0.1	0
Median	228	3.0	2.7	1.4	50
LTF Transmission Rights	408	9	6	0	0

TABLE 10 - BENTON PUD TRANSMISSION SNAPSHOT (AMW)

SECTION III: LOAD/RESOURCE BALANCE

This section examines the District's ability to meet its load with current resources under several Slice generation scenarios, with and without Frederickson included as a resource. The goal is to identify any capacity issues and the likelihood that they will occur.

MONTHLY LOAD/RESOURCE BALANCE: 2018

The following portion of the analysis examines the District's monthly load/resource balance at the 50th percentile Slice generation scenarios. The scenario assumes expected loads. The District's load/resource balance is examined including Frederickson (when it is economically prudent to dispatch in order to meet load), and excluding Frederickson altogether. The net positions shown, are the District's hedged financial net positions (i.e., net of forward purchases and sales already executed).

EXPECTED SLICE GENERATION SCENARIO

The figures below show the District's load/resource balance under an expected (50th percentile) Slice generation scenario with expected loads. **Figure 13** shows BPA's expected FCRPS generation under a 50th percentile Slice scenario showing that not only does slice vary substantially by month/season, load exceeds Slice/Block output during certain months of the year.

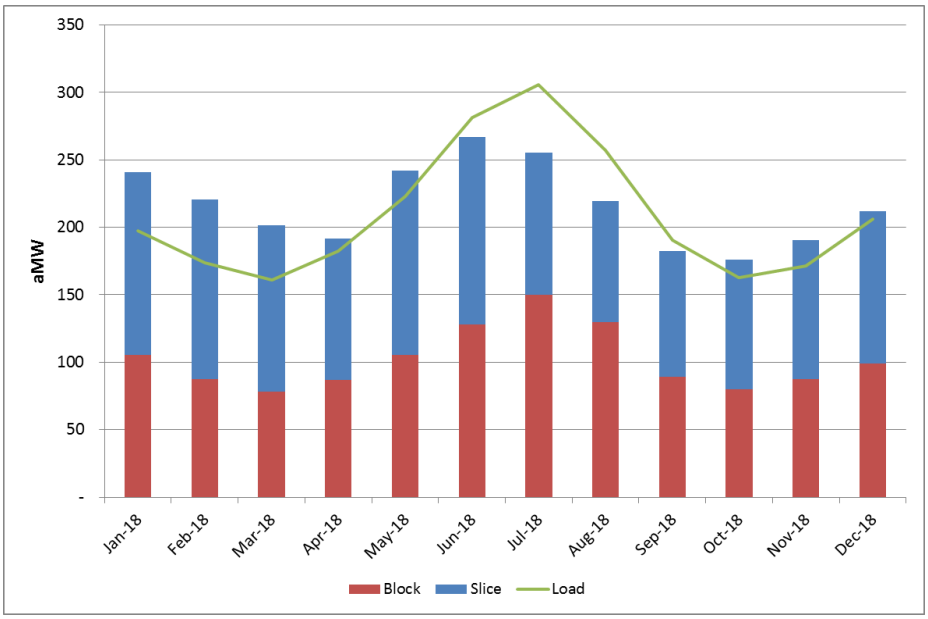


FIGURE 13 - EXPECTED 2018 MONTHLY SLICE/BLOCK GENERATION VS FORECASTED LOAD

Monthly, the District's Risk Management Committee reviews expected loads compared to expected energy output to ensure the District is well positioned to maximize the value of energy surpluses and to mitigate the risk of energy shortages and fluctuating market prices. One item that may impact the value of energy and further depress the value of the District's surplus energy is PacifiCorp's announcement to buildout almost 1,300 MW of wind in the region. **Figure 14** shows the District's hedged load/resource balance, given expected loads and with Frederickson economically dispatched in 2018. With Frederickson, the District has sufficient resources in 2018, except minor deficits in June and September with larger deficits in July and August. **Figure 15** excludes Frederickson as a resource, leading to greater

HLH deficits in the June-September period. The District actively manages the surplus and deficits to optimize value and reduce costs to customers through price risk mitigation.

Note, hedges associated with the Frederickson delta hedging program have been excluded from **Figure 14**. The delta hedging program uses financial hedges to optimize the value of the Frederickson asset but would not impact the District's actual physical position.

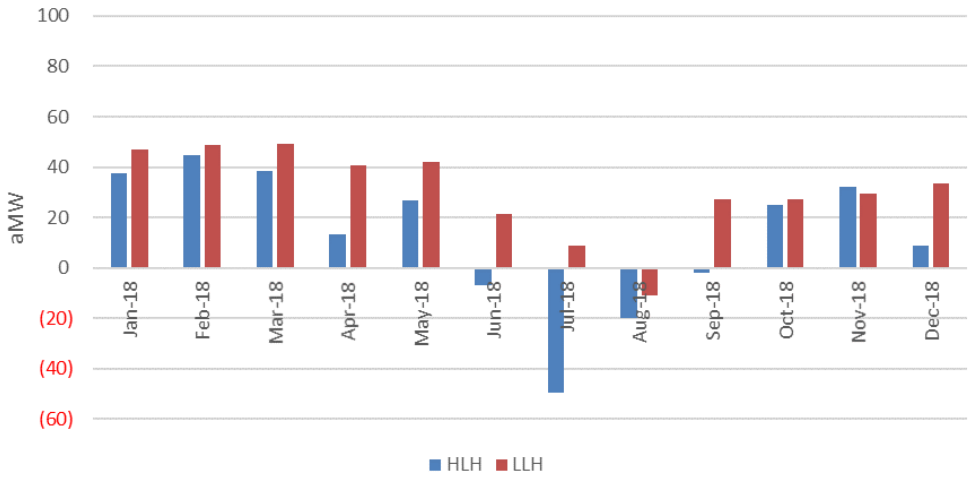


FIGURE 14 – HEDGED PORTFOLIO NET POSITION, 50TH PERCENTILE SLICE, EXPECTED LOAD, FREDERICKSON ECONOMICALLY DISPATCHED

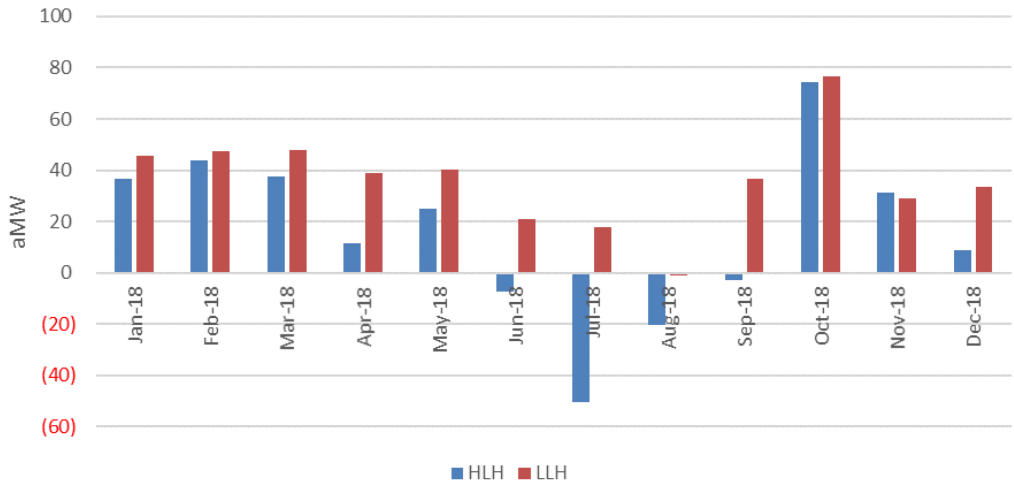


FIGURE 15 - HEDGED PORTFOLIO NET POSITION, 50TH PERCENTILE SLICE, EXPECTED LOAD, FREDERICKSON EXCLUDED

CAPACITY STUDY

The purpose of this study is to analyze the District's load/resource balance under extreme load conditions. For the peak period studies, two peak periods were analyzed:

1. Winter peaking during chum salmon spawning
2. Summer peak post runoff

This capacity analysis attempts to estimate the Slice system capability and loads during extreme events. To the benefit of this study, region-wide summer and winter events closely matching the hypothetical weather events were observed in the summer of 2014 and winter of 2014, respectively. The Slice system was also constrained in both events. In 2014, the region experienced a below-average water year in addition to the start of a major project to refurbish many of the aging turbines along the FCRPS, limiting both the fuel (water) available to run through the turbines and capacity of the power system. The limited capacity carried through to 2014 and despite it concluding as a slightly-above average water year, the event occurred during a period when the major forecasting services were projecting a severely below-average, 25th percentile water. We believe that the actual system generation is representative of the capability of the Slice system, irrespective of water year or capacity conditions. Therefore, the actual Slice system generation from those two weather events was used to determine the District's peaking capability in this study.

The District currently has a peak generation capability of roughly 340MW during the summer peak hour and about 295MW for the winter peak hour. This estimate excludes wind resources, which cannot be relied upon to generate electricity on demand. Compared to the highest peak summer and winter demand observed in the last 5 years of 431MW and 342MW, respectively, the District's demand will exceed its supply during certain periods.

Figure 16 displays a theoretical net position of the daily winter three day peak demand that was calculated by applying District's estimated peak generation capability to the hypothetical loads discussed above. **Figure 17** shows the same chart but for the summer. The Risk Management Committee (RMC) manages these deficits (i.e., the white space below the Load line) utilizing a combination of physical and financial forward purchases and call option products.

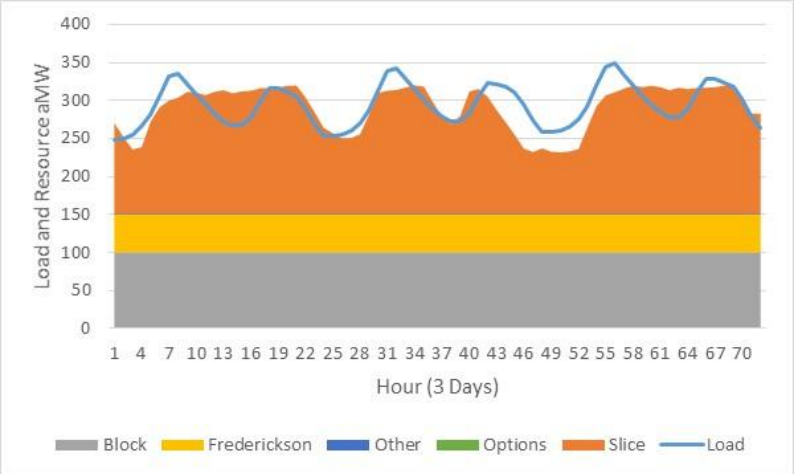


FIGURE 16: WINTER THREE DAY EXTREME LOAD/RESOURCE BALANCE

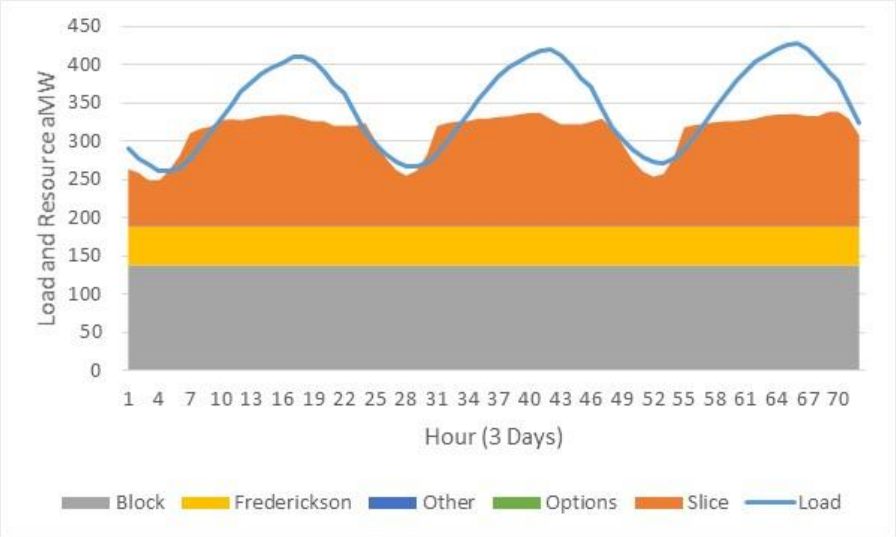


FIGURE 17: SUMMER THREE DAY EXTREME LOAD/RESOURCE BALANCE

Below **Figure 18** illustrates the relationship between hourly peak load and daily average temperature for September 2006 through August 2016. Included are the estimates of summer and winter peaking capacity discussed above. Historical weather data is provided from TEA's Weather Database. Average temperature is defined as the average of the daily high temperature and the daily low temperature.

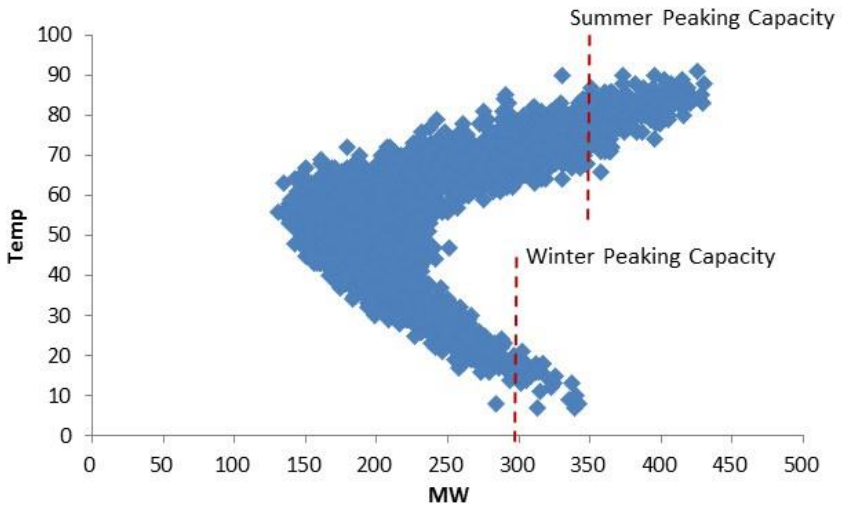


FIGURE 18: DAILY AVERAGE TEMPERATURE VS. DAILY PEAK HOURLY LOAD BETWEEN SEPTEMBER 2006 AND AUGUST 2016

The capacity analysis shows that the District is generally well supplied. Throughout the year the District carries a surplus, on average. As noted previously in the monthly load/resource balance analysis, the District faces the greatest risk of deficit capacity in the summer, while generally maintaining adequate capacity the remainder of the year. Furthermore as the District projects its positions forward, 2022 and the expiration of the District's contract for 50 MW of capacity from the Frederickson 1 Generating station is on the horizon and the District with its 2016 Integrated Resource Plan (IRP) stating that it will rely on the market. The IRP is scheduled to be updated in 2018 and the District's capacity will be addressed then.

The following section examines the District's average wholesale load/resource balance on an annual basis from 2018-2022. Note in **Table 11** that load will exceed critical slice plus block by over 10 aMW FY18, increasing to 12 aMW in FY22. As shown below, the District's other resources make up for this deficit.

	FY18	FY19	FY20	FY21	FY22
Total Wholesale Load	209.531	210.151	210.501	211.272	211.698
New Resources	0.000	0.000	0.000	0.000	0.000
Specified Resources	0.919	0.919	0.919	0.919	0.919
Preliminary Net Requirements	208.612	209.231	209.582	210.353	210.779
CHWM	204.282	204.282	204.282	204.282	204.282
RHWM	198.049	198.049	198.049	198.049	198.049
Lessor of PNR or RHWM	198.049	198.049	198.049	198.049	198.049
Above RHWM Load	10.563	11.182	11.533	12.304	12.730

TABLE 11- ANNUAL WHOLESALE LOAD/RESOURCE BALANCE, 2018-2022

Figure 19 and **Figure 20** show that, on average, the District has sufficient energy to meet its load for the next five years. Despite having surplus energy on average, the District will be deficit energy at times due to low Slice generation, high demand, or some combination of the two. The District will actively manage its load/resource balance to optimize the value of its surplus energy while mitigating price risk during deficit periods through short-term and long-term market hedges.

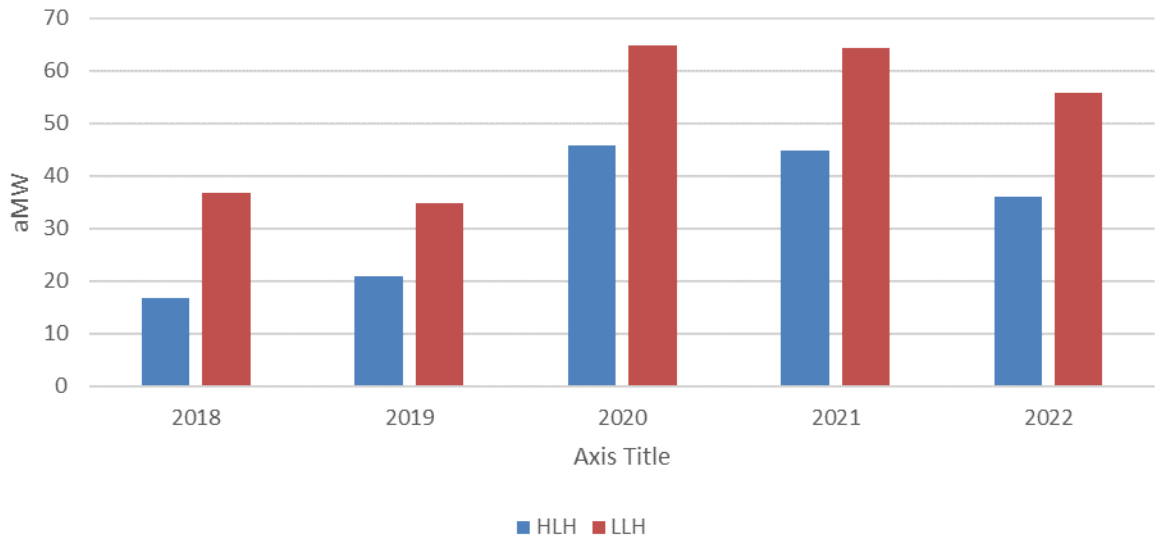


FIGURE 19 – 2018-2022 ANNUAL NET POSITION, 50TH PERCENTILE SLICE, EXPECTED LOAD, FREDERICKSON ECONOMICALLY DISPATCHED

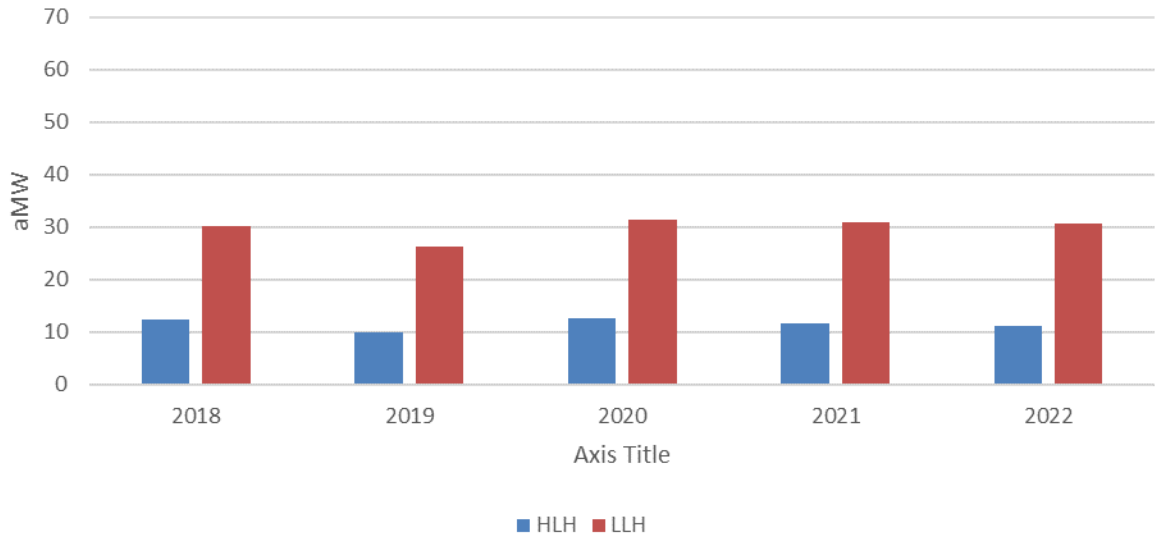


FIGURE 20 – 2018-2022 ANNUAL NET POSITION, 50TH PERCENTILE SLICE, EXPECTED LOAD, FREDERICKSON EXCLUDED

RENEWABLE LOAD/RESOURCE BALANCE: 2018-2022

The District has three resources that qualify as renewable energy sources under EIA. In order to comply with the EIA the District must meet the following targets with qualifying renewable energy, or RECs:

- At least three percent of its two year average load through December 31, 2015.
- At least nine percent of its two year average load by January 1, 2016, and each year thereafter through December 31, 2019
- At least fifteen percent of its two year average load by January 1, 2020, and each year thereafter

As can be seen in **Table 12**, it's anticipated that the District will have sufficient renewable resources to meet EIA requirements through the end of 2019. Starting in 2020, the District becomes short RECs as renewable requirements of the EIA increase to 15%.

As shown in **Table 13** in addition to the District's qualifying renewable resources, the District also entered into an agreement to purchase approximately 33,000 Bio-Fuel RECs per year beginning 2016 through 2025. On September 18, 2013, the Washington Department of Commerce issued an opinion that Biofuel's proposed landfill gas plant would be a renewable distributed-generation (DG) facility under the state's Energy Independence Act, passed as Initiative 937 in 2006. DG facilities are awarded a bonus REC in addition to each generated REC, meaning the EIA qualifying quantity of the Bio-Fuel RECs are 66,000 per year. The District also contracted to purchase unbundled RECs from the Idaho Wind Partners for output from the Yahoo Creek Wind Park, LLC from 2015 through 2024. For planning purposes, the District assumes a delivery of 31,000 REC per year; however, the output from Yahoo Creek can fluctuate due to the variability of wind. If RECs are under-delivered during a year, the District would engage in securing EIA compliant RECs on the spot market.

Year	Load (aMW)	RPS %	RPS	White Creek	Nine Canyon	BPA RECs	REC Purchases	REC Net Position
2018	206.47	9%	18.6	3	2.7	2.4	11.1	0.6
2019	207.05	9%	18.6	3	2.7	2.4	11.1	0.6
2020	207.48	15%	31.1	3	2.7	2.4	11.1	-11.9
2021	208.02	15%	31.2	3	2.7	2.4	11.1	-11.9
2022	208.56	15%	31.3	3	2.7	2.4	11.1	-12.1

TABLE 12 - RENEWABLE LOAD/RESOURCE NET POSITION

Year	Biofuel RECs	Wind Partners
2018	66,000	31,000
2019	66,000	31,000
2020	66,000	31,000
2021	66,000	31,000
2022	66,000	31,000

TABLE 13 - REC PURCHASES

As shown in **Table 12** when the District ramps up to the 15% REC requirement in 2020, new purchases are necessary. The District's strategy to meet the increased requirement is shown in **Table 14** with a small purchase in 2019 to get "ahead of the wave" and the full burden of requirement experienced in 2020. REC prices in 2019 are not firm and the District tasked TEA with producing a REC forward price curve as part of its 2016 IRP action items which should be completed during 2018.

Year	Purchase	$/MWh
2018	0	$0.00
2019	27,500	$8.00
2020	110,000	$8.00
2021	110,000	$8.00
2022	125,000	$8.00

TABLE 14 – FUTURE REC PURCHASES

SECTION IV: BUDGETING

FINANCIAL MODEL ASSUMPTIONS

This section outlines the major cost and revenue assumptions made in the Financial Model and used in the development of the District's budget.

FIXED COST ASSUMPTIONS

The following assumptions were developed by Benton PUD Power Management staff and The Energy Authority (TEA), and reviewed by Benton PUD Risk Management Committee. Assumptions are for the five year period, FY 2018-2022. Assumptions are updated at least annually. Note: fiscal year (FY) refers to the BPA fiscal year which runs from October 1 through September 30.

- **BPA Composite Charge**: This charge is designed to collect revenue for BPA based on the majority of its costs. It is based on the District's Tier One Cost Allocator (TOCA) and the BPA Composite rate. TOCA is calculated as the lesser of the District's Net Requirements (NR) and Rate Period High Water Mark (RHWM), divided by the sum of all of BPA's customer's RHWM. The RHWM is 198.049 aMW in FY2018. The NR is 205.393 aMW for FY2018. The RHWM is the limiting factor in FY201-2022 when accounting for expected future load growth. The FY2018 TOCA is 2.85174% and the Composite Charge is $2,123,112/TOCA%/month. The Composite Charge is forecast to increase by 4% in FY2020 to $2,208,036/TOCA%/month. The total cost in CY2018 is expected to be $72,654,779.
- **Non-Slice Charge:** This charge is actually a credit. It is designed to return to customers certain BPA credits, primarily their wholesale sales revenues. It is based on the District's Non-Slice TOCA (NSTOCA) and the Non-Slice BPA Rate. The NSTOCA is the difference between the District's TOCA (2.85174%) and its Slice percentage (1.36865%). In FY2018, NSTOCA is 1.48309%. The Non-Slice Rate is $(299,405)/NSTOCA %/month in FY2018. The Non-Slice Charge expected to increase by 4% to $(287,429) in FY2020. The total credit in CY 2018 is expected to be $(5,328,541).
- **BPA Cost Recovery Adjustment Charge (CRAC):** BPA rates have the provision for an adjustment to the base rates if BPA is projecting end of year reserve for risk levels lower than -$5M. BPA is expected to end FY2017 with +$11M. The likelihood of a CRAC triggering in FY2018 is about 50%. BPA's BPA-18 rates are set to add $20M to reserves. Since BPA is starting FY2018 with a +$36M cushion (5+11+20), no CRAC is included in the District's 2018 budget.
- **Slice True-Up**: Energy Northwest's long term debt was restructured during FY2014-16, resulting in Slice True-Up credits for FY2014-17. While the refinancing is not expected to change the overall cost of the debt, it back-end loaded the debt such that Slice costs are expected to be lower in the near term and higher in the long term. BPA does not project any future refinancing opportunities in 2018. Since BPA has a track record of underspending their budgets, no slice true-up is budgeted for FY18-22.
- **Load Shaping Charge:** Under the TRM, the Load Shaping Charge only applies to load following and block products. The Composite and Non-Slice Rates assume that customers receive monthly diurnal BPA power based on the monthly diurnal critical water shape of the FCRPS, which is how power is provided under the Slice product. Since the District takes the block product, it is subject to the load shaping charge. In some months, its block energy will be greater than its share of critical FCRPS and some months it will be less. The monthly diurnal difference will be multiplied by the BPA load shaping rate to determine the load shaping charge. The load shaping rate is BPA's rate case estimate of the Mid-C market.

  The charge is a credit of $503,161 in CY2018, and $281,396 in CY2019. A pattern of larger credits in the even years followed by smaller credits in the odd years will continue due to the Columbia Generating Station (CGS) outage falling in the odd years. The size of the FCRPS is smaller due to the outage, but the District is still able to purchase its total RHWM or NR.
- **Long-Term Point-to-Point Transmission Cost:** Fixed at $9,101,268 in CY2018. Long-term PTP rates are expected to increase by 4% in FY2020.
- **Load Regulation Cost:** $235,122 in CY2018. The Load Regulation rate is expected to increase by 4% in FY2020.

- **Operating Reserves – Spinning:** $703,970 in CY2018. Operating Reserves - Spinning rate is expected to increase by 4% in FY2020. Spinning Reserves are 3% of total transmission schedules for generation and load.
- **Operating Reserves – Supplemental:** $582,920 in CY2020. Operating Reserves – Supplemental rate is expected to decrease by 4% in FY2020. Supplemental Reserves are 3% of total transmission schedules for generation and load.
- **Energy Imbalance/UAI:** $100,000 per year.
- **GTA Wheeling Credit, Net:** $14,400 per year.
- **Low Voltage Delivery Power Factor Charge:** $29,269 per year.
- **Short-Term Firm/Non-Firm Transmission Costs:** This captures the cost of transmission from White Creek Wind to Rock Creek Substation as well as the WECC dues and Peak Requirement dues. The cost is $212,866 in CY2018.
- **REP Refund:** The customer specific T1 refund is calculated as the District's TOCA multiplied by the T1 Customer Refund Amount ($38,268,808). The refund amounts to the District in 2018-2019 are shown in **Table 15**. Note the credit ends in FY2019. Recently PPC made the District aware that the REP refund is currently funded by the Composite Charge. The Composite Charge should be reduced by an equivalent amount after the REP refund ends. The refund amount is currently included in FY2020-2022 to account for this information and will be reset to zero after BPA releases the BP-2020 Initial Proposal, which should reflect a lower Composite Charge.

Fiscal Year	Scaled TOCA	Refund Amount	Refund	Specific PF-02	Refund Amount	Monthly Credit
2018	2.8296%	$38,269,809	$1,121,427	$1,074,609	$2,196,036	($183,003)
2019	2.8296%	$38,269,809	$1,121,427	$1,074,609	$2,196,036	($183,003)
2020	0.0000%	$0	$0	$0	$0	$0
2021	0.0000%	$0	$0	$0	$0	$0
2022	0.0000%	$0	$0	$0	$0	$0

TABLE 15 - REP REFUND AMOUNTS

- **Irrigation Mitigation Credit:** This credit is received each year from May through September. It is computed based on the energy values in Ex. D of the BPA Contract and a rate of $11.76 per MWh resulting in $3,671,933 in CY2018. **Table 16** displays the monthly credit that the District receives. The Irrigation Rate Mitigation rate is not expected to change in future years.

May	June	July	August	September
($625,168)	($885,614)	($1,047,572)	($739,662)	($377,040)

TABLE 16 - IRRIGATION MITIGATION CREDIT AMOUNTS

- **Net Cost of Conservation:**

Year	BPA EEI Allocation	Cost of Conservation	Net Cost of Conservation
2018	($2,929,932)	$3,067,450	$137,518
2019	($1,127,021)	$2,252,590	$1,125,569
2020	($2,929,932)	$3,159,473	$229,542
2021	($1,127,021)	$2,320,168	$1,193,147
2022	($2,929,932)	$3,254,258	$324,326

TABLE 17 - ANNUAL CONSERVATION COST (CREDIT), NET

- **BPA Prepay Credit:** The District entered into an agreement with BPA to prepay for the future delivery of power consistent with the existing Slice/Block Power Sales Agreement, except that payment provisions would be revised to reflect the prepayment. The District made a lump-sum up-front payment of $6.8M to receive a total of $9.3M in credits through September 2028. The variance between the total paid and the credits received results in a credit of $13,348 per month for the remainder of the term.

OTHER COSTS

- **Benton PUD Internal Costs:** This is $541,513 in 2018, increasing to $595,549 in 2022.
- **The Energy Authority (TEA)** provides power, fuel, and risk management services to the District. The fee that TEA charges the District for these services is broken into two components:
  - Ongoing services where the level of effort is reasonably predictable. Examples of the types of services include scheduling, tagging, trading, month-end settlement, and risk management reporting and RMC meeting attendance. $128,745 per month will be charged for Scheduling and Risk Management Services in 2018. The fixed price is assumed to increase by 3% annually thereafter.
  - A fixed monthly charge for consulting services equal to $14,000 per month during 2018 or $168,000 per year with a year-end true-up to actual.
    - Under- or over-collections of consulting dollars are reflected in the subsequent year consulting services budget.
    - Consulting expenditures are for non-recurring work items, and/or work items where the level of effort is more difficult to predict. Consulting charges are billed at TEA's hourly billing rates multiplied by actual hours worked. The consulting charge also includes charges for third-party vendors such as attorneys and some consulting work that is contracted through TEA in support of the District's and possibly others' power and risk management requirements. The charge includes preparation of an Integrated Resource Plan in 2018, 2020, and 2022.

NON BPA RESOURCE COSTS

- **Hedging costs:** $350,000 per year is budgeted for option premiums in 2018-2021. The amount increases to $600,000 in 2022 to account for the expiration of the Frederickson agreement. More daily call options will be needed.
- **Frederickson:** A monthly capacity payment of $350,000 is fixed for the life of the contract, while fixed and variable O&M charges escalate by approximately 3.0% per year, and volumetric charges vary based on the plant's actual dispatch.
- **White Creek Wind 1:** $1,064,505 in 2018. Costs escalate by approximately 1.6% in subsequent years.
- **LL&P Wind:** $554,946 in 2017. Costs escalate by 2% per year.
- **Nine Canyon Wind Phases 1 & 3:** $1,992,846 in 2017 including transmission costs, with no expected escalation through 2030.
- **Packwood:** $380,544 in 2018 and escalates about 3%/yr.

The District uses Monte Carlo analysis to set its annual budget. The Stochastic Model allows the District to review the possible range of future financial outcomes by subjecting the portfolio to a thousand randomly generated Slice generation, price and load scenarios. The District selects the 25th percentile net power cost from the Stochastic Model outputs as its annual budget in year 1 (2018), and the 50th percentile net power cost as the budget in years 2-5 (2019-2022). **Table 18** shows the summary power cost information associated with the District's budget for 2018-2022**. Section V: Monte Carlo Analysis** explains the Stochastic Model in more detail, as well as provides further results related to budgeting.

Benton PUD
Financial Model

	2018	2019	2020	2021	2022
I. FIXED COSTS					
BPA COSTS					
Tier 1					
Composite	$72,654,779	$73,381,327	$75,560,970	$76,316,580	$78,583,409
Non-Slice	($5,328,541)	($5,275,255)	($5,115,399)	($5,115,399)	($5,115,399)
Slice True-up/CRAC	$0	$0	$0	$0	$0
Load Shaping	($503,161)	($281,396)	($457,977)	($350,644)	($672,166)
Other BPA					
REP Refund	($2,196,036)	($2,096,036)	($1,796,036)	($1,696,036)	($1,396,036)
BPA Power Prepay Credit	($161,256)	($161,256)	($161,256)	($161,256)	($161,256)
Irrigation Mitigation	($3,671,933)	($3,671,933)	($3,671,933)	($3,671,933)	($3,671,933)
Conservation	($2,929,932)	($1,127,021)	($2,929,932)	($1,127,021)	($2,929,932)
Transmission					
Long-Term PTP	$9,101,268	$9,192,281	$9,465,319	$9,559,972	$9,843,931
Short-Term PTP	$212,866	$212,749	$212,694	$212,694	$212,694
Load Regulation	$235,122	$237,827	$246,407	$246,369	$247,013
Operating Reserves -- Spinning	$703,970	$730,505	$776,413	$774,137	$768,004
Operating Reserves -- Supplemental	$582,920	$604,892	$642,906	$641,022	$635,943
Energy Imbalance UAI	$100,000	$100,000	$100,000	$100,000	$100,000
GTA Delivery Charge	$14,400	$14,400	$14,400	$14,400	$14,400
Low Voltage Delivery, Power Factor Charges	$29,269	$29,269	$29,269	$29,269	$29,269
PTP Resales	($900,000)	($900,000)	($900,000)	($900,000)	($900,000)
NON BPA RESOURCE COSTS					
Frederickson	$7,577,872	$7,728,568	$7,792,335	$7,851,265	$5,281,599
White Creek	$1,619,451	$1,643,791	$1,671,480	$1,698,499	$1,726,213
Nine Canyon	$1,997,640	$2,002,578	$2,002,578	$2,002,578	$2,002,578
Packwood	$380,544	$391,960	$403,719	$415,830	$428,305
OTHER POWER COSTS					
Internal Costs and WECC fees	$541,513	$554,429	$567,733	$581,435	$595,549
TEA Scheduling & Risk Management	$1,544,937	$1,589,665	$1,635,735	$1,683,188	$1,732,063
TEA Consulting	$168,000	$118,000	$168,000	$118,000	$168,000
Cost of Conservation	$3,067,450	$2,252,590	$3,159,473	$2,320,168	$3,254,258
Option Premium	$350,000	$350,000	$350,000	$350,000	$600,000
REC PPAs	$432,390	$760,900	$1,437,400	$1,454,890	$1,473,370
II. VARIABLE COSTS					
RESOURCE VARIABLE COSTS					
Frederickson					
Volumetric Charges	$677,727	$867,215	$1,413,699	$1,431,287	$1,077,109
Spot Gas	$729,333	$1,418,216	$4,896,460	$4,797,630	$3,371,095
Forward Gas Purchases	$1,759,040	$1,460,776	$0	$0	$0
Forward Gas Sales	$0	$0	$0	$0	$0
Forward Power Purchases	$0	$0	$0	$0	$0
Forward Power Sales	($2,764,800)	($2,400,608)	$0	$0	$0
Spot Power HLH	($545,400)	($1,454,760)	($4,732,000)	($4,871,280)	($3,615,960)
Spot Power LLH	($540,924)	($707,480)	($3,037,855)	($3,053,703)	($2,170,420)
BALANCING MARKET					
HLH Sales	($4,785,777)	($4,905,444)	($5,938,530)	($6,151,468)	($6,809,332)
HLH Purchases	$4,440,716	$4,004,931	$4,466,020	$4,689,887	$4,833,589
LLH Sales	($3,339,366)	($3,850,597)	($4,445,142)	($4,652,809)	($5,291,500)
LLH Purchases	$1,965,471	$1,852,585	$2,008,436	$2,075,440	$2,322,136
REC Sales	$0	$0	$0	$0	$0
FORWARD MARKET					
Sales HLH	($699,160)	($684,000)	$0	$0	$0
Sales LLH	($332,561)	($440,853)	$0	$0	$0
Purchases HLH	$340,480	$348,040	$0	$0	$0
Purchases LLH	$0	$0	$0	$0	$0
Option Value HLH	$0	$0	$0	$0	$0
Option Value LLH	$0	$0	$0	$0	$0
NET POWER COST	**$82,528,313**	**$83,890,857**	**$85,835,386**	**$87,612,991**	**$86,566,593**

TABLE 18 - FIVE YEAR BUDGET PROPOSAL

2017 VS. 2018 BUDGET VARIANCE

The 2018 net power supply budget increased approximately 2.1% relative to 2017. **Table 19** summarizes the major year over year changes. **Table 20** shows the change in the cost per MWh from BPA. **Table 21** compares the detailed 2018 power supply budget to the 2017 budget.

	2017 Budget	2018 Budget	% Change
BPA Purchased Power	$59,218	$60,794	2%
Other Purchased Power	$23,051	$22,271	-3%
Net Conservation	$667	$138	-79%
Purchased Transmission and Ancillaries	$12,650	$12,334	-2%
Gross Power Supply	$96,015	$95,536	0%
Less: Sales for Resale	-$15,219	-$13,008	-15%
Net Power Supply	$80,796	$82,528	2%

TABLE 19 - POWER SUPPLY BUDGET VARIANCE SUMMARY ($ THOUSANDS)

	2017 Budget	2018 Budget	% Change
BPA Power Cost	$59,217,611	$60,793,853	3%
BPA Transmission Cost	$10,958,765	$10,979,815	0%
MWh from BPA	1,920,612	1,897,476	-1%
BPA Power Cost per MWh	$30.83	$32.04	4%
Transmission Cost per MWh	$5.71	$5.79	1%

TABLE 20 - COST PER MWH FROM BPA

As seen in **Table 21**, sales for resale are down 15% over 2017. About $4.8M of sales and offsetting purchases were added in 2018 to account for the amount of additional transactions that result from within month sales/purchases and other market activity.

Benton PUD Financial Model	2017 Budget	2018 Budget	$ Change	% Change
I. FIXED COSTS				
BPA COSTS				
Tier 1				
Composite	$71,440,365	$72,654,779	$1,214,414	1.7%
Non-Slice	($5,778,410)	($5,328,541)	$449,869	-7.8%
Slice True-up/CRAC	$0	$0	$0	NO CHANGE
Load Shaping	($429,793)	($503,161)	($73,368)	17.1%
Other BPA				
REP Refund	($2,178,240)	($2,196,036)	($17,796)	0.8%
BPA Power Prepay Credit	($161,256)	($161,256)	$0	0.0%
Irrigation Mitigation	($3,675,055)	($3,671,933)	$3,122	-0.1%
Conservation	($1,651,259)	($2,929,932)	($1,278,673)	77.4%
Transmission				
Long-Term PTP	$9,101,268	$9,101,268	$0	0.0%
Short-Term PTP	$212,996	$212,866	($130)	-0.1%
Load Regulation	$222,149	$235,122	$12,973	5.8%
Operating Reserves -- Spinning	$674,750	$703,970	$29,220	4.3%
Operating Reserves -- Supplemental	$603,933	$582,920	($21,013)	-3.5%
Energy Imbalance UAI	$100,000	$100,000	$0	0.0%
GTA Delivery Charge	$14,400	$14,400	$0	0.0%
Low Voltage Delivery, Power Factor Charges	$29,269	$29,269	$0	0.0%
PTP Resales	($686,424)	($900,000)	($213,576)	31.1%
NON BPA RESOURCE COSTS				
Frederickson	$7,728,310	$7,577,872	($150,438)	-1.9%
White Creek	$1,576,866	$1,619,451	$42,585	2.7%
Nine Canyon	$1,992,846	$1,997,640	$4,794	0.2%
Packwood	$364,000	$380,544	$16,544	4.5%
OTHER POWER COSTS				
Internal Costs and WECC fees	$524,404	$541,513	$17,109	3.3%
TEA Scheduling & Risk Management	$1,479,012	$1,544,937	$65,925	4.5%
TEA Consulting	$118,000	$168,000	$50,000	42.4%
Cost of Conservation	$2,317,913	$3,067,450	$749,537	32.3%
Option Premium	$600,000	$350,000	($250,000)	-41.7%
REC PPAs	$417,210	$432,390	$15,180	3.6%
II. VARIABLE COSTS				
RESOURCE VARIABLE COSTS				
Frederickson				
Volumetric Charges	$533,291	$677,727	$144,436	27.1%
Spot Gas	($2,183,509)	$729,333	$2,912,842	-133.4%
Forward Gas Purchases	$5,251,522	$1,759,040	($3,492,482)	-66.5%
Forward Gas Sales	($1,145,310)	$0	$1,145,310	-100.0%
Forward Power Purchases	$1,301,252	$0	($1,301,252)	-100.0%
Forward Power Sales	($7,453,277)	($2,764,800)	$4,688,477	-62.9%
Spot Power HLH	$2,085,232	($545,400)	($2,630,632)	-126.2%
Spot Power LLH	$788,091	($540,924)	($1,329,015)	-168.6%
BALANCING MARKET				
HLH Sales	($5,207,916)	($4,785,777)	$422,139	-8.1%
HLH Purchases	$4,535,550	$4,440,716	($94,834)	-2.1%
LLH Sales	($3,613,361)	($3,339,366)	$273,996	-7.6%
LLH Purchases	$2,243,858	$1,965,471	($278,387)	-12.4%
REC Sales	$0	$0	$0	NO CHANGE
FORWARD MARKET				
Sales HLH	($473,328)	($699,160)	($225,832)	47.7%
Sales LLH	($657,783)	($332,561)	$325,222	-49.4%
Purchases HLH	$393,312	$340,480	($52,832)	-13.4%
Purchases LLH	$0	$0	$0	NO CHANGE
Option Value HLH	($344,330)	$0	$344,330	-100.0%
Option Value LLH	($214,283)	$0	$214,283	-100.0%
NET POWER COST	**$80,796,265**	**$82,528,313**	$1,732,047	2.1%

TABLE 21 - 2016 VS. 2017 BUDGET VARIANCE DETAIL

Budget Item		Notes
1.	Composite Charge	1.7% increase in 2018 costs from 2017 due rate change in BPA's BP-18 rates.
2.	Non-Slice Charge	7.8% increase in 2018 credit from 2017 due rate change in BPA's BP-18 rates.
3.	Load Shaping Charge	$73,368 increase in 2018 credit vs 2017 credit due rate change in BPA's rates.
4.	Conservation Credit	Conservation Credit increased by $1,278,673 from 2017
5.	Long-Term PTP	0.2% increase 2018 costs over 2017 due rate change in BPA's BP-18 rates.
6.	Cost of Conservation	Cost of Conservation up $479,537 from 2017 budget – Net Cost of Conservation is estimated to be $137,518 in 2018, increase of $529,136.
7.	Frederickson	Frederickson operation is expected to contribute $685,024 toward fixed charges from operations. O&M costs are projected to increase by 3% in July 18.
8.	Balancing Market	The Slice generation assumption for 2018 in the 2018 budget relative to 2017 Budget is lower.
9.	Forward Market	The District has approximately 27% of their net slice length hedged with forward contracts for calendar year 2018.

Year	2017 (aMW)	2018 (aMW)
2017 Budget	116	123
2018 Budget	115	121
Delta	(1)	(2)

2018 PURCHASED MWHS BY MONTH

	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
Purchased MWhs												
BPA												
Slice HLH	60,643	55,056	57,896	46,270	60,601	61,552	46,046	42,904	39,831	46,038	45,431	49,281
Slice LLH	39,959	34,385	33,952	29,375	40,784	38,504	32,133	23,723	27,348	25,749	29,009	34,651
Block HLH	43,931	33,672	33,742	34,721	43,931	53,133	60,001	55,988	34,284	34,410	34,901	39,704
Block LLH	34,638	25,254	24,291	27,777	34,638	38,828	51,601	40,436	29,999	24,852	28,008	34,145
Total BPA Purchases	**179,169**	**148,367**	**149,881**	**138,142**	**179,953**	**192,017**	**189,781**	**163,051**	**131,462**	**131,048**	**137,348**	**157,780**
Other Power												
Frederickson HLH	-	-	-	-	-	-	20,000	21,600	19,200	21,600	-	-
Frederickson LLH	-	-	-	-	-	-	17,200	15,600	16,800	15,600	-	-
White Creek Wind HLH	1,248	1,152	1,296	1,200	1,248	1,248	1,200	1,296	1,152	1,296	1,200	1,200
White Creek Wind LLH	1,248	1,152	1,296	1,200	1,248	1,248	1,200	1,296	1,152	1,296	1,200	1,200
Nine Canyon Wind HLH	1,179	1,017	1,329	1,082	1,132	1,097	984	1,025	904	1,131	1,133	1,137
Nine Canyon Wind LLH	1,179	1,017	1,329	1,082	1,132	1,097	984	1,025	904	1,131	1,133	1,137
Packwood HLH	598	473	537	579	1,008	1,076	872	469	529	28	741	638
Packwood LLH	472	355	386	463	795	787	750	339	463	20	594	549
Balancing Market HLH	-	-	-	-	-	6,580	25,179	12,678	3,728	-	-	-
Balancing Market LLH	-	-	-	-	-	-	-	3,102	-	-	-	-
Total Other Power Purchases	**5,924**	**5,166**	**6,172**	**5,606**	**6,564**	**13,132**	**68,367**	**58,430**	**44,833**	**42,101**	**6,001**	**5,861**
TOTAL PURCHASES	**185,093**	**153,533**	**156,053**	**143,748**	**186,517**	**205,149**	**258,148**	**221,481**	**176,294**	**173,149**	**143,349**	**163,641**
Less												
Sales for Resale												
Balancing Market HLH	13,053	14,183	12,227	2,324	9,128	-	-	-	-	7,953	11,217	997
Balancing Market LLH	11,540	10,102	10,409	9,814	10,895	1,837	-	-	6,726	6,494	8,275	9,019
Swaps HLH - Slice	8,320	7,680	8,640	-	-	-	(4,000)	(4,320)	(3,840)	-	-	-
Swaps LLH - Slice	4,920	4,320	4,665	-	-	-	-	-	-	-	-	-
Swaps HLH - Thermal	-	-	-	-	-	-	20,000	21,600	19,200	-	-	-
Swaps LLH - Thermal	-	-	-	-	-	-	13,760	12,480	13,440	-	-	-
Options HLH (delta volume)	-	-	-	-	-	-	-	-	-	-	-	-
Options LLH (delta volume)	-	-	-	-	-	-	-	-	-	-	-	-
Total Sales for Resale	**37,833**	**36,285**	**35,940**	**12,138**	**20,022**	**1,837**	**29,760**	**29,760**	**35,526**	**14,448**	**19,492**	**10,016**
Losses/Imbalance												
Losses HLH	1,647	1,541	1,587	997	1,416	1,234	1,313	1,279	1,171	1,512	1,157	1,031
Losses LLH	1,139	984	994	803	1,053	830	987	785	1,029	961	770	895
Total Losses	**2,786**	**2,525**	**2,580**	**1,800**	**2,469**	**2,064**	**2,300**	**2,064**	**2,200**	**2,473**	**1,927**	**1,927**
TOTAL SALES/LOSSES	**40,619**	**38,809**	**38,521**	**13,938**	**22,491**	**3,901**	**32,060**	**31,824**	**37,726**	**16,920**	**21,419**	**11,943**
NET PURCHASES	**144,474**	**114,724**	**117,533**	**129,810**	**164,025**	**201,248**	**226,088**	**189,657**	**138,568**	**156,229**	**121,930**	**151,699**
WA $/MWh Slice Sales for Resale	January	February	March	April	May	June	July	August	September	October	November	December
HLH	$ 28.51	$ 27.19	$ 24.05	$ 17.60	$ 17.60	$ -	$ -	$ -	$ -	$ 25.25	$ 24.65	$ 30.15
LLH	$ 23.80	$ 21.87	$ 19.49	$ 11.70	$ 8.75	$ 7.50	$ -	$ -	$ 22.90	$ 21.05	$ 20.95	$ 23.55
ALL	$ 26.43	$ 24.91	$ 22.14	$ 14.98	$ 13.70	$ 7.50	$ -	$ -	$ 22.90	$ 23.49	$ 23.00	$ 27.10

TABLE 22 – 2018 PURCHASED MWHS BY MONTH

SECTION V: MONTE CARLO ANALYSIS

STOCHASTIC MODEL OVERVIEW/ASSUMPTIONS

The District faces a number of unknown variables that have a significant impact on its bottom line. Some variables, such as customer demand for energy, can be reasonably forecasted based on historical trends. Other variables (such as energy and natural gas prices, as well as hydro generation) cannot be accurately forecasted. This is fundamental to the concept of risk management; if it were possible to consistently forecast prices and the weather, there would be little to no risk for the District to manage.

Uncertainty about these key variables translates into uncertainty about the District's financial well-being. The District aims to manage its power supply portfolio so that the cost of supplying power (net power cost) is as low as possible. However, variability in supply, demand and price can result in dramatic changes in net power cost and net margins from year to year. Extreme conditions could threaten the financial viability of the PUD. The District, therefore, sets a conservative budget, maintains financial reserves and actively hedges its portfolio to guard against negative outcomes.

The purpose of the Stochastic Model is to define the distribution of possible outcomes. Specifically, the model generates the distribution of annual power cost by simulating thousands of scenarios of Slice generation, load, and power and gas prices. Once this has been accomplished, the modeled results can be used in a variety of ways. For example, the results can be used to quantify the likelihood of meeting budget at a given time, or to identify the variables that the District faces the greatest exposure to and perform sensitivity analysis. Furthermore, by highlighting possible unforeseen risks, the District is able to identify and test hedging strategies using the Stochastic Model. After hedges have been put in place their effectiveness can be tracked, by comparing the current portfolio's net power cost distribution with an unhedged portfolio's net power cost distribution.

STOCHASTIC MODEL RESULTS – NET POWER COST: 2018-2022

Table 23 shows the District's annual net power cost for 2018-2022 at different probabilities of occurrence. **Figure 21** show the distribution of net power cost for 2018-2022, with the budget in each year plotted for reference.

Percentile	2018	2019	2020	2021	2022
5%	$84,834,062	$87,825,239	$90,467,779	$92,461,386	$91,557,156
10%	$83,943,947	$86,984,994	$89,555,119	$91,691,394	$90,542,094
15%	$83,286,633	$86,382,671	$88,967,279	$90,948,422	$89,814,948
20%	$82,854,371	$86,019,757	$88,426,932	$90,423,327	$89,387,757
25%	$82,528,313	$85,639,424	$87,953,650	$90,036,591	$88,823,165
30%	$82,111,266	$85,231,756	$87,543,827	$89,440,986	$88,344,058
35%	$81,794,350	$84,877,317	$87,145,729	$88,903,958	$87,912,587
40%	$81,420,413	$84,525,786	$86,777,707	$88,475,517	$87,487,495
45%	$81,064,427	$84,241,024	$86,370,413	$87,986,222	$87,025,076
50%	$80,767,547	$83,890,857	$85,835,386	$87,612,991	$86,566,593
55%	$80,448,872	$83,598,230	$85,338,723	$87,072,191	$86,025,294
60%	$80,216,359	$83,318,487	$84,952,767	$86,491,403	$85,583,201
65%	$79,886,675	$83,024,806	$84,550,456	$85,983,483	$84,924,392
70%	$79,458,811	$82,600,430	$84,058,131	$85,435,176	$84,339,820
75%	$79,056,725	$82,177,728	$83,599,255	$84,852,306	$83,591,520
80%	$78,579,720	$81,611,844	$82,933,579	$83,900,572	$82,690,306
85%	$78,118,750	$80,974,643	$82,179,337	$82,915,225	$81,441,656
90%	$77,523,626	$80,033,980	$81,340,711	$81,697,013	$79,418,621
95%	$76,622,796	$78,366,432	$79,707,392	$79,298,580	$76,537,229

TABLE 23 - ANNUAL NET POWER COST PERCENTILES

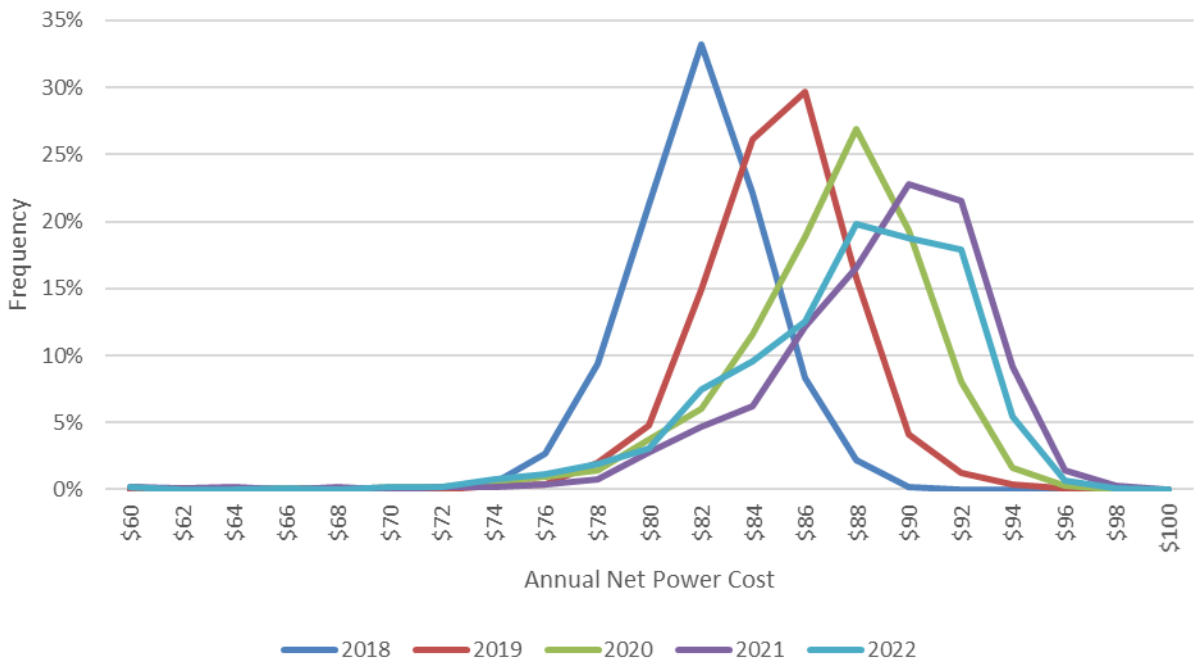


FIGURE 21 – NET POWER COST DISTRIBUTION

STOCHASTIC OUTPUTS

The District is exposed to a number of unknown variables that ultimately have a significant impact on its bottom line. The Stochastic Model generates the range of outcomes, thereby making it possible to drill down on poor financial outcomes in order to determine what scenarios are most detrimental to the District. This section examines the stochastic outputs from the Stochastic Model that were used in the budgeting and financial reserves sections above. **Figure 22** shows the various components of the Stochastic Model and how each flows through to produce the financial metrics important to the District.

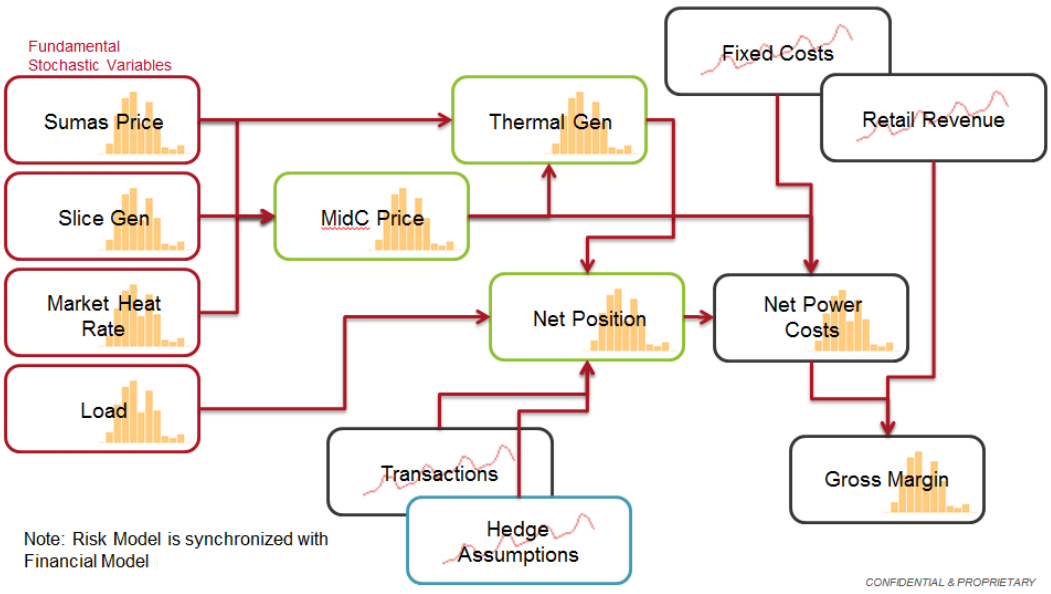


FIGURE 22 - RISK MODEL COMPONENTS FLOW-CHART

The Load Model is based on the District's load forecast. Monthly load volatility is derived by analyzing historical loads and is used to parameterize the model. The Load Model also accounts for interactions between load and other variables in the Stochastic Model. For example, if there is found to be a correlation between price and the District's load, the model will be parameterized to capture that relationship. The load scenarios generated by the model are used in conjunction with the Slice generation scenarios to arrive at the District's net position in each iteration. **Figure 23** shows the 10th and 90th percentile (i.e., 90% and 10% likelihood of greater loads) HLH load outputs relative to the HLH load forecast used to develop the 2018 budget. **Figure 24** shows the 10th and 90th percentile LLH load outputs relative to the LLH load forecast used to develop the 2018 budget.

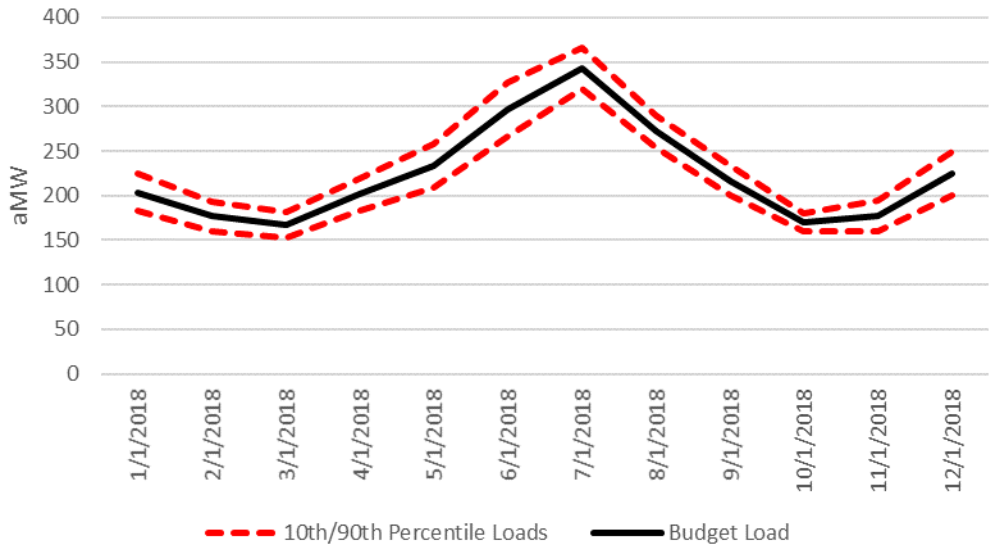


FIGURE 23 - STOCHASTIC MODEL OUTPUT: 2018 HLH LOADS

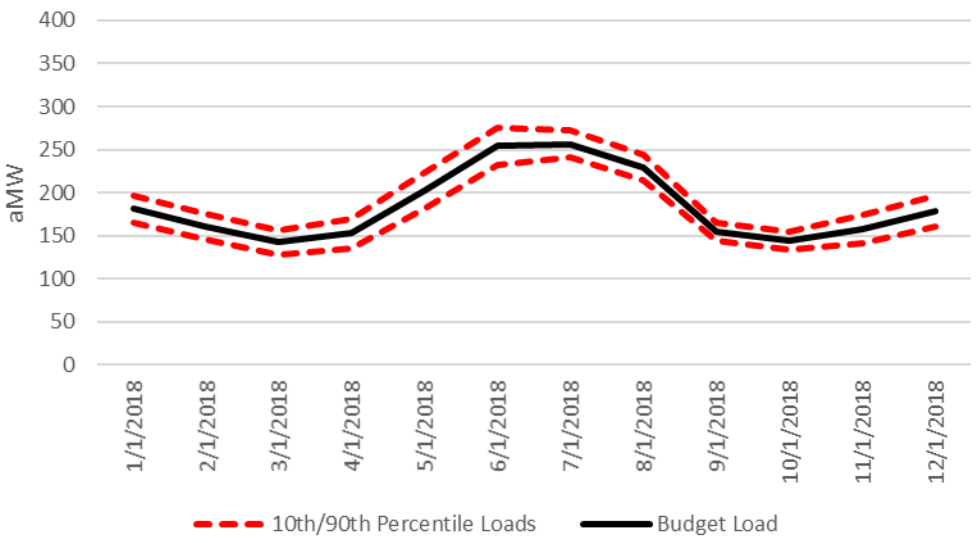


FIGURE 24 - STOCHASTIC MODEL OUTPUT: 2018 LLH LOADS

SLICE

One of the major components of the Stochastic Model is the Slice Model. Each run of the Model generates a new Slice generation scenario. Slice scenarios are parameterized based on 70 years of historical Slice generation to ensure the modeled outputs behave realistically. The Slice Model breaks down generation into five primary components:

1. Variable hydro generation:
    a. Big federal projects (4,000-16,000 MW)
    b. Smaller hydro independents (150-900 MW)
2. CGS (1,100 MW)
3. Miscellaneous generation (60-100 MW)
4. System obligations (0-1,000 MW)
5. HLH/LLH allocations based on observed historical shaping capabilities

Stochastic model slice outputs are shown in **Figure 25** below along with the District's budget Slice assumption.

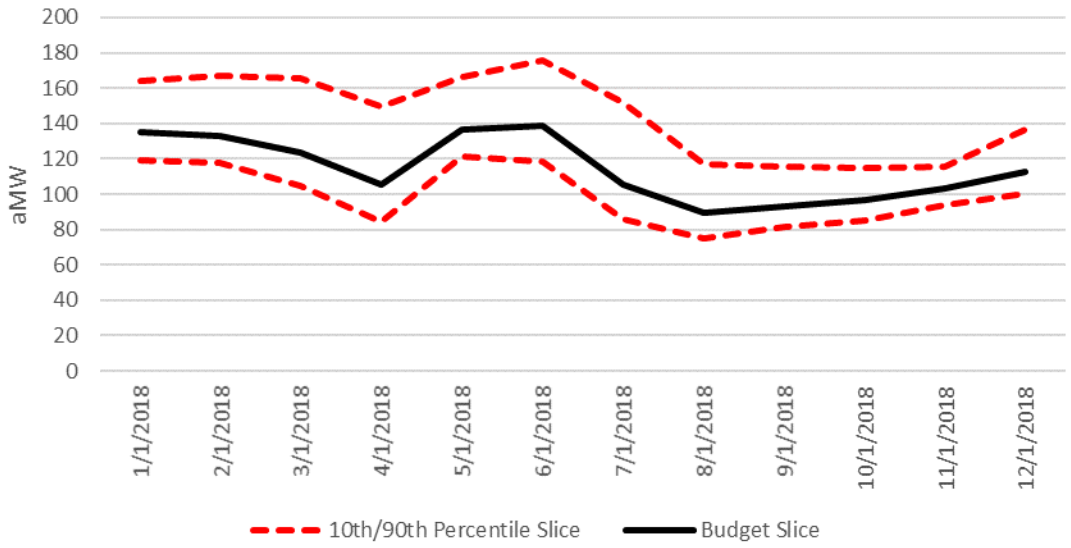


FIGURE 25 - STOCHASTIC MODEL OUTPUT: 2018 SLICE GENERATION

GAS PRICES

Natural gas plants are the marginal source of generation in the Northwest; therefore, gas prices are a key driver of power price in the region. The Gas Price Model results in a distribution around forward prices based on historical volatility. Gas prices from the model are used with heat rates to arrive at simulated power prices – this process is expanded upon in the next section. **Figure 26** shows the average gas price distribution from the Stochastic Model relative to the gas price assumed in the 2018 budget.

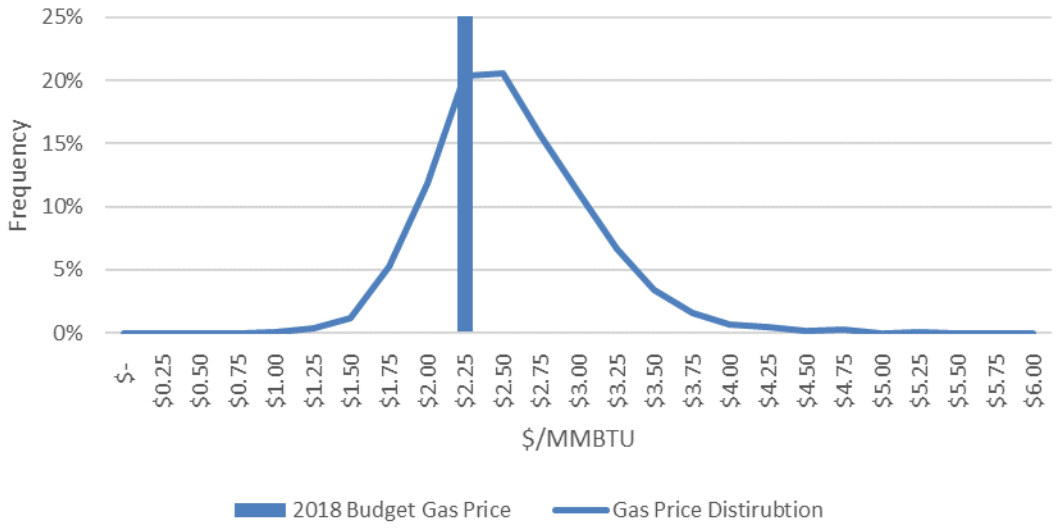


FIGURE 26 - STOCHASTIC MODEL OUTPUT: 2018 GAS PRICE DISTRIBUTION

Heat Rate is a measure of a power plant's efficiency in converting fuel to electricity, expressed as the number of British thermal units (Btu) required to generate a kilowatt hour (kWh) of electricity. In the stochastic model gas prices are generated and parameterized based on historical volatility. Market heat rates are then derived using Aurora XMP power forecasting software, by correlating market heat rates with Slice generation and WECC transmission constraints. This accounts for the fact that the effect of high gas prices can be partially offset by robust hydro generation and vice versa. Market heat rates generated by Aurora are fed into the Model and applied to simulated gas prices to arrive at simulated market power prices. **Figure 27** and **Figure 28** show the average HLH and LLH heat rate distribution from the stochastic model relative to the 2018 HLH and LLH heat rate budget assumption.

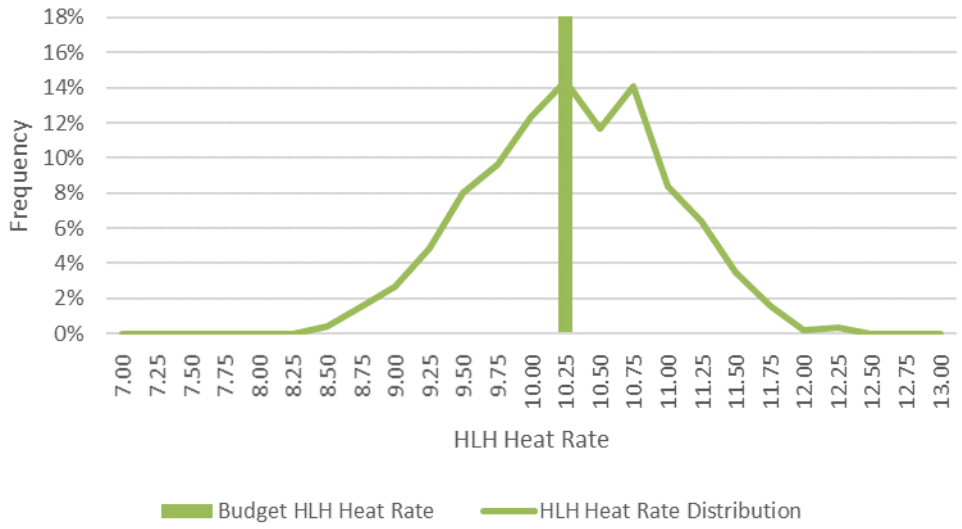


FIGURE 27 - STOCHASTIC MODEL OUTPUT: 2018 HLH HEAT RATE DISTRIBUTION

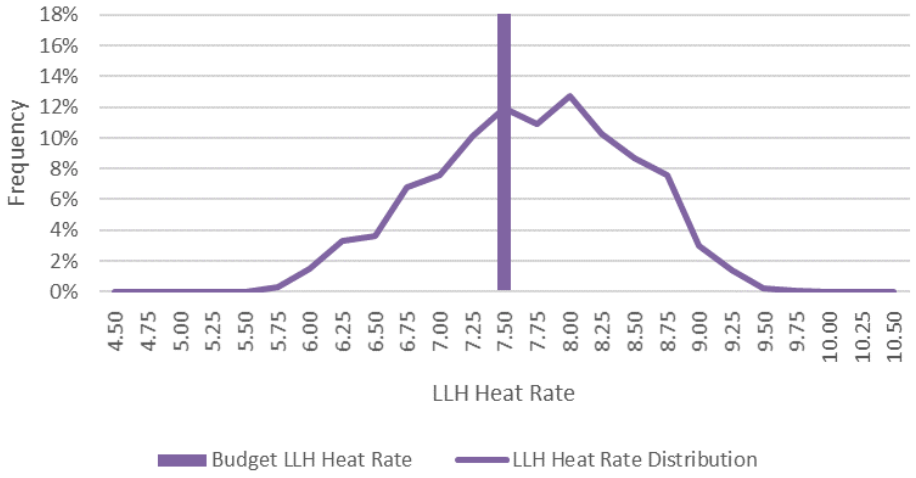


FIGURE 28 - STOCHASTIC MODEL OUTPUT: 2018 LLH HEAT RATE DISTRIBUTION

PRICE

Power prices are a function of gas price and market heat rate in the Stochastic Model. The Price Model has been parameterized so that prices behave realistically relative to gas price and Slice generation outputs in each iteration. Simulated power prices of each iteration are used to calculate the cash flows from buying and selling, deficit and surplus power. **Figure 29** and **Figure 30** show the average HLH and LLH power price distribution from the stochastic model relative to the 2018 HLH and LLH budget price assumptions.

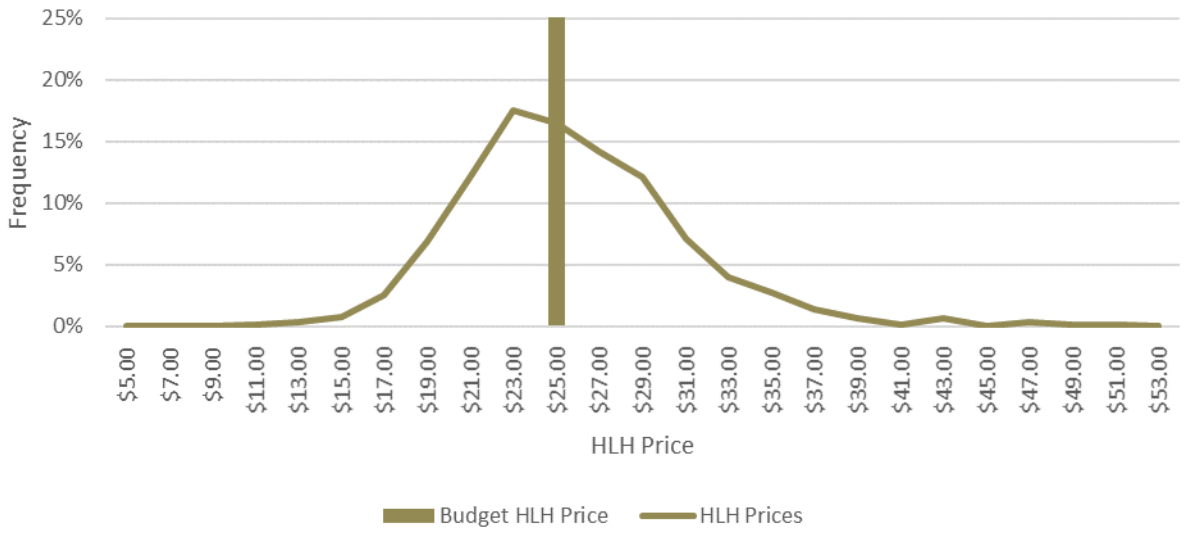


FIGURE 29 - STOCHASTIC MODEL OUTPUT: 2018 HLH POWER PRICE DISTRIBUTION

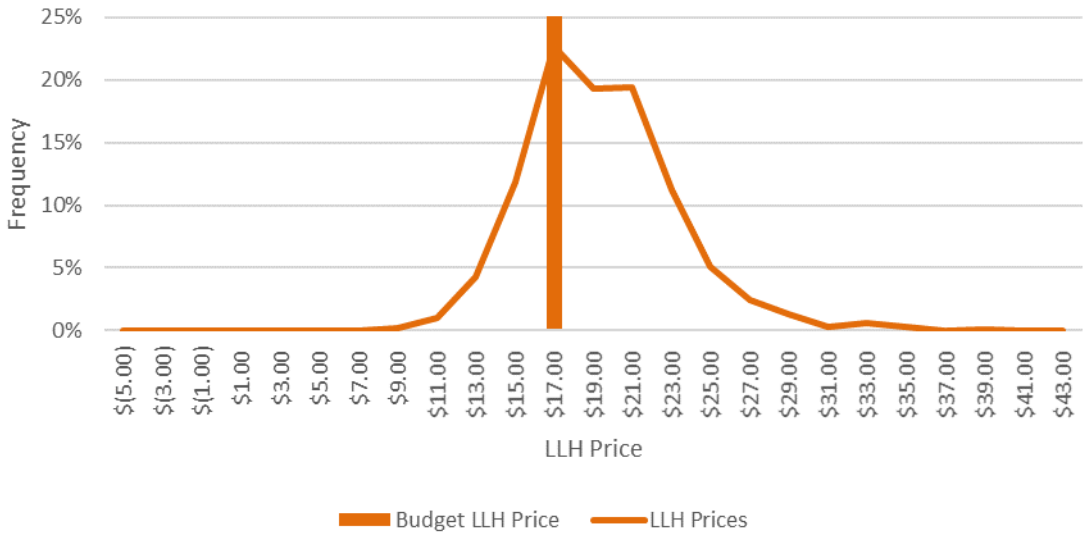


FIGURE 30 - STOCHASTIC MODEL OUTPUT: 2018 LLH POWER PRICE DISTRIBUTION