

# **REPORT ON ELECTRIC COST OF SERVICE AND RATE DESIGN**

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**Prepared for  
THE CITY OF EUDORA, KANSAS**

**Prepared by  
SAWVEL AND ASSOCIATES, INC.**

**July 21, 2017**



**REPORT ON  
ELECTRIC COST OF SERVICE AND RATE DESIGN  
CITY OF EUDORA, KANSAS**

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## INTRODUCTION

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Sawvel and Associates, Inc. (Sawvel) prepared this Cost of Service and Rate Study (Study) for the City of Eudora, Kansas (City) to reflect recent costs to serve the City’s electric customers. The City owns and operates a municipal electric system consisting of distribution and interconnection facilities to meet the electric service requirements of the approximately 2,500 customers it serves. The City currently purchases capacity and energy from the Kansas City Power & Light Company, (KCP&L) and the Western Area Power Administration (WAPA). The KCP&L agreement is a 10 year agreement with stated demand and energy rates for each year of the agreement. WAPA rates are set periodically and were most recently changed in January of 2017. This information was used to develop the revenue requirements used in this Study.

The City has typically adjusted electric revenues and rates annually by applying an “across the board” percent increase to each of the charges. As a general guideline, rates and revenue requirements should be reviewed every five years to determine if adjustments are needed. The Operational Charge is for the purpose of ensuring recovery of purchase power costs. This charge should be reviewed at least twice per year and modified when necessary. The City has recently adjusted the Operational Charge by a percentage that is consistent with other rate changes. The Operational charge will be set to zero in the new electric rates and the Operational Charge will be calculated to recover Power Supply related costs as defined in the City’s Operational Charge Ordinance.

The City indicated that it is interested in updating its electric rates using a cost of service and rate study. Sawvel understands that the City is interested in developing an electric policy for customer-owned renewable distributed energy resources including solar. The City expressed an interest in designing its customer-owned generation policy using cost of service principles.

### **| PURPOSE**

The purpose of the Study is to:

1. Project revenue requirements of the electric system for the years 2017 through 2021.
2. Develop a cost of service analysis that fairly and equitably allocates the cost of owning, operating and maintaining the electric system to each customer rate class to compare to revenue from existing rate schedules.

3. Review rates and/or rate structures to determine if existing rate schedules should be modified or augmented with new schedules including a customer-owned generation policy.
4. Provide the City with a report with recommended changes to rates.

## **APPROACH**

The approach to the Study involved the following steps:

1. Collect, review and analyze the City's billing, financial, technical and operating data.
2. Project the City's revenues by rate class and revenue requirements.
3. Prepare and analyze cost of service results for the test year and compare the results to the revenues from each of the customer classes under current rates.
4. Design and recommend rates that are consistent with the City's guidelines and objectives.

Projected revenues from current rates were compared to projected revenue requirements. A cost of service model using 2018 test year revenue requirements was prepared. The projected revenue by rate class for the current rates was compared to the cost of service rates for test year 2018 for each rate class. Projected operating results using proposed rates were reviewed.

Sawvel completed the following tasks:

### ***Task 1 – Collect Data and Information***

Customer, billing and financial information were requested.

### ***Task 2 – Project Revenue and Revenue Requirements***

Revenue requirements are costs associated with the operation, maintenance, capital improvements, transfers and/or deposits of electric utility monies to other funds and debt service less non-operating revenues. Revenue requirements were projected for the study period 2017 through 2021. Revenue requirements include appropriate margins and target fund balances.

Revenue requirements include the following cost categories:

- Power Supply
- Transmission
- Distribution

- Customer Accounting
- Customer Service
- Operation and Maintenance
- Administrative and General Expenses
- Funds to Support Annual Capital Expenditures
- General Fund and Other Fund Transfers
- Debt Service Requirements
- Operating Margin
- Electric Fund Balance Guidelines

We reviewed projected revenue requirements with City staff before finalizing test year revenue requirements for the cost of service analysis.

### ***Task 3 – Prepare Cost of Service Analysis***

After the City approved projected revenue requirements, a cost of service analysis was prepared. The cost of service analysis assesses the level of revenue recovery required from each customer rate class. Cost of service is not the only factor to be considered when developing new rates. However, cost of service rate levels provide an important measure of revenue that may be needed to ensure equitable recovery of costs from each rate class.

The cost of service analysis was prepared using traditional cost of service methods for municipal utility systems. Cost of service subtasks include the following:

- **Functionalization** - This separates the rate base and expenses into functions such as production, transmission, distribution and customer related. Functionalization is important because it provides data needed to identify investment and costs to be applied to each class of service.
- **Classification of Costs** - As a basis for the allocation to individual rate classes, we will classify test year costs as: 1) demand; 2) energy; 3) customer and 4) direct costs.
- **Development of Allocation Factors** - Based on the characteristics of the City rate classes, allocation factors based on energy, peak demand, non-coincident demand and number of customers will be developed for each cost component. The allocation factors will be used to allocate test year costs to each rate class.
- **Calculation of Allocated Cost of Service** - Using the allocation factors developed

above, the allocated cost of serving each rate class will be calculated. The resulting cost allocations will be used to develop electric rates in Task 4.

The cost of service analysis was prepared for each of the following electric rate classes:

1. Residential
2. Residential Outside
3. Commercial Single Phase
4. Commercial Three Phase (Less than 10,000 kWh)
5. Commercial Three Phase (10,000 kWh to 200,000 kWh)
6. Industrial
7. Security Lighting

The cost of service rates for each rate class were compared to revenue from each rate class using existing rates.

#### ***Task 4 - Development of Electric Rates***

Rates were prepared for each customer rate class. The Operational Charge rider was updated to reflect 2018 power supply costs. Rate Tariffs were prepared and provided to City staff separately from this report.

#### ***Task 5 – Development of Customer-Owned Generation Policy***

Sawvel coordinated with City management and with legal counsel to prepare a parallel generation tariff for renewable customer-owned generation. Sawvel assisted with preparing an interconnection standard, interconnection agreement and interconnection application. These documents are consistent with Kansas law. These documents were provided to City staff separately from this report.

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## **DATA COLLECTION AND ANALYSIS**

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The City and Sawvel representatives met to discuss data requirements for the Study. In summary, data requirements were defined as follows:

- Customer billing data including demand and energy requirements and billed amounts by customer class.
- Expected residential, commercial and industrial growth.
- Power supply invoices from KCP&L, WAPA and KMEA to the City for 2015, 2016 and 2017.
- Financial information such as utility budgets and audited financial statements.
- Projected 2017 through 2021 capital improvements.

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## SALES AND LOAD FORECAST

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The City provided historical energy sales for residential, commercial and industrial service customer classes. After reviewing historical sales, the following approach and assumptions were used in projecting energy sales and preparing a load forecast.

### **Load Forecast**

Table 1 shows projected energy sales for each customer rate class. Table 2 shows historical and projected annual system energy requirements, system peak demands, and load factors for the electric system. Unaccounted for energy and losses were estimated to be approximately 5% of total energy requirements based on actual 2016 losses. System peak demand was projected using a system load factor of 44.6%. Zero load growth was projected for 2018 to 2021.

**Table 1**  
**Projected Energy Sales by Rate Class**  
**City of Eudora, Kansas**

Rate Class	2017	2018	2019	2020	2021
(1) Residential	22,925,060	22,925,060	22,925,060	22,925,060	22,925,060
(2) Commercial	1,962,804	1,962,804	1,962,804	1,962,804	1,962,804
(3) Commercial Three Phase (<10k)	3,388,722	3,388,722	3,388,722	3,388,722	3,388,722
(5) Residential Outside	40,051	40,051	40,051	40,051	40,051
(7) Commercial (Over 10k<200k)	5,524,013	5,524,013	5,524,013	5,524,013	5,524,013
(13) Industrial (200k+)	8,391,368	7,453,252	7,453,252	7,453,252	7,453,252
<b>Total</b>	<b>42,232,018</b>	<b>41,293,902</b>	<b>41,293,902</b>	<b>41,293,902</b>	<b>41,293,902</b>



**Table 2**  
**Historical and Projected**  
**Peak Demand and Energy Requirements**  
**Eudora, Kansas**

<b>Year</b>	<b>Peak Demand (MW)</b>	<b>Growth Rate (%)</b>	<b>Energy Requirement (MWh)</b>	<b>Growth Rate (%)</b>	<b>Annual Load Factor (%)</b>
2009	11,800	(3.4)	41,390,400	-	40.0
2010	12,640	0.6	47,025,600	13.6	42.5
2011	13,103	2.1	46,392,215	(1.3)	40.4
2012	12,418	(5.2)	46,137,925	(0.5)	42.4
2013	12,000	(3.4)	46,283,032	0.3	44.0
2014	12,307	2.6	49,137,465	6.2	45.6
2015	12,400	0.8	49,179,482	0.1	45.3
2016	12,307	(0.8)	49,909,441	1.5	46.3
<b>Historical</b>					
<b>Projected</b>					
2017	12,000	(2.5)	47,822,079	(4.2)	45.5
2018	12,000	-	46,834,588	(2.1)	44.6
2019	12,000	-	46,834,588	-	44.6
2020	12,000	-	46,834,588	-	44.6
2021	12,000	-	46,834,588	-	44.6

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## PROJECTED REVENUE REQUIREMENTS

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Revenue requirements are costs associated with the operation, maintenance, capital improvements, transfers and/or deposits of electric utility monies to other funds and debt service less non-operating revenues. Projected revenue requirements for 2017 through 2021 were used to assess the adequacy of proposed electric rates.

Revenue requirements were projected from historical operating expenses and discussions with the City. Projected operating expenses for 2018, unless otherwise noted, were provided to Sawvel by City management. Projected power supply costs were estimated by Sawvel based on KCP&L contract power supply rates and 2018 WAPA rates. Table 3 shows projected revenue and expenses using existing rates. Table 4 shows that 2018 Test Year revenue requirements were projected at approximately \$4,889,500 including non-operating revenue and capital expenditures. The following paragraphs describe the revenue and expenses shown in Table 3 used to develop the 2018 Test Year revenue requirements.

### **OPERATING EXPENSES**

Sawvel categorized the City's expenses for purposes of the cost of service analysis. Consequently, some of the expense line items from the City's budget have been consolidated for use in the cost of service model.

#### ***Power Supply***

Sawvel prepared a power supply model that used KCP&L power supply rates from 2017 through 2021 and WAPA 2017 power supply rates. The power supply model calculated annual power supply costs for the study period 2017 through 2021. Power Supply costs were estimated at approximately \$3,410,000 in 2017 increasing to approximately \$3,836,500 in 2021.

#### ***Personnel***

Personnel expenses included labor, materials and supplies, and operation and maintenance expenses of the distribution system. Labor and materials were estimated at approximately \$744,500 in 2018.

### **OTHER INCOME/REVENUE**

Other income and revenue is projected at \$120,700 with zero escalation from 2018 to 2021.

### **CAPITAL IMPROVEMENTS**

Capital improvements were projected at \$200,000 annually as provided to Sawvel by City management.

## **MINIMUM FUND BALANCE GUIDELINES**

The City maintains cash reserves in its electric fund as part of prudent utility operating practice. As of year-end 2016, the electric fund balance was approximately \$2.1 million. A Minimum Fund Balance Guideline was used in designing rates to evaluate the changes on the City electric fund balance. The Minimum Fund Balance Guideline is 21% of operating expenses, debt service and capital improvements.

## **PROJECTED REVENUE AND EXPENSES AT EXISTING RATES**

Revenue from existing rates is insufficient to generate a positive margin (revenue minus expenses) and meet fund balance guidelines through 2021. The existing electric fund balance is projected to decrease during the planning period.

**Table 3**  
**Historical and Projected Operating Statement**  
**Existing Rates**  
**City of Eudora, Kansas**

Description	Actual	Projected				
	2016	2017	2018	2019	2020	2021
<b>OPERATING REVENUE</b>						
(1) Residential		2,632,793	2,632,793	2,632,793	2,632,793	2,632,793
(2) Commercial		218,224	218,224	218,224	218,224	218,224
(3) Demand		343,201	343,201	343,201	343,201	343,201
(5) Residential Outside		5,329	5,329	5,329	5,329	5,329
(7) Demand (Over 10k<200k)		559,700	559,700	559,700	559,700	559,700
(13) Demand (200k+)		588,800	556,508	624,681	646,545	662,708
Water/Sewer		0	0	0	0	0
Security Lighting		3,480	3,480	3,480	3,480	3,480
Power Cost Adjustment <sup>(1)</sup>		453,917	700,256	808,977	918,427	1,028,559
Power Cost Adjustment (\$/kWh)		0.01075	0.01696	0.01959	0.02224	0.02491
<b>Total Revenue from Sales</b>	<b>4,799,124</b>	<b>4,805,443</b>	<b>5,019,491</b>	<b>5,196,384</b>	<b>5,327,698</b>	<b>5,453,993</b>
<b>Other Income/Revenue</b>						
Licenses and Permits	5,715	4,000	5,700	5,700	5,700	5,700
Door Hanger Fees	24,416	11,500	20,000	20,000	20,000	20,000
Reconnect Fees	2,887	4,000	2,500	2,500	2,500	2,500
Customer Penalty Receipts	76,776	70,000	70,000	70,000	70,000	70,000
New Resident Fee	13,000	12,000	12,000	12,000	12,000	12,000
Interest Earnings	7,901	2,000	8,000	8,000	8,000	8,000
Returned Check Fees	2,760	3,000	2,500	2,500	2,500	2,500
Other - Miscellaneous	1,694	500	0	0	0	0
<b>Total Other Income/Revenue</b>	<b>135,150</b>	<b>107,000</b>	<b>120,700</b>	<b>120,700</b>	<b>120,700</b>	<b>120,700</b>
<b>OPERATING EXPENSES</b>						
<b>Personnel <sup>(2)</sup></b>						
Wages and Salaries <sup>(3)</sup>	407,970	486,824	528,250	546,739	565,875	585,680
Overtime Wages	2,500	8,000	5,000	5,175	5,356	5,544
Social Security	30,766	37,854	40,799	42,227	43,705	45,235
KPERS	31,890	35,613	56,883	58,874	60,934	63,067
Health Insurance	56,458	66,487	80,138	92,159	105,983	121,880
Unemployment	865	1,039	1,333	1,380	1,428	1,478
Travel & Training (KMU training 2625)	17,573	17,978	18,000	18,360	18,727	19,102
Workmans Comp Premium	13,614	20,077	14,044	14,536	15,044	15,571
<b>Total Personnel</b>	<b>561,635</b>	<b>673,872</b>	<b>744,448</b>	<b>779,449</b>	<b>817,053</b>	<b>857,557</b>
<b>Contractual</b>						
Purchased Power (KCPL/KMEA)	3,358,727	3,409,753	3,508,242	3,616,962	3,726,412	3,836,544
Utilities <sup>(4)</sup>	19,941	14,474	24,000	24,720	25,462	26,225
Contract Services <sup>(5)</sup>	3,366	7,995	7,250	7,468	7,692	7,922
Professional Services <sup>(6)</sup>	48,133	37,325	61,300	63,139	65,033	66,984
Dues & Subscriptions <sup>(7)</sup>	11,724	11,210	11,300	11,526	11,757	11,992
Tree Trimming	42,600	40,000	50,000	51,500	53,045	54,636
Liability Insurance Premiums	17,494	17,886	18,200	18,746	19,308	19,888
<b>Total Contractual</b>	<b>3,501,985</b>	<b>3,538,643</b>	<b>3,680,292</b>	<b>3,794,061</b>	<b>3,908,709</b>	<b>4,024,192</b>
<b>Commodities</b>						
Uniforms	10,668	2,550	5,000	5,100	5,202	5,306
Office Supplies	2,634	1,020	2,000	2,040	2,081	2,122
Other Supplies & Equipment <sup>(8)</sup>	28,073	26,500	26,500	27,030	27,571	28,122
Electric Line Supplies <sup>(9)</sup>	37,346	30,000	51,000	52,020	53,060	54,122
Vehicle & Equip Parts/Maint <sup>(10)</sup>	14,342	25,500	17,500	18,025	18,566	19,123
Vehicle Gas & Oil	8,929	15,300	15,000	15,450	15,914	16,391
Shop Supplies	5,473	2,500	6,000	6,120	6,242	6,367
Facilities Maintenance	3,701	7,070	4,000	4,080	4,162	4,245
<b>Total Commodities</b>	<b>111,166</b>	<b>110,440</b>	<b>127,000</b>	<b>129,865</b>	<b>132,797</b>	<b>135,798</b>
<b>TOTAL OPERATING EXPENSES</b>	<b>4,174,787</b>	<b>4,322,955</b>	<b>4,551,739</b>	<b>4,703,375</b>	<b>4,858,559</b>	<b>5,017,547</b>
<b>NET OPERATING INCOME</b>	<b>759,486</b>	<b>589,488</b>	<b>588,452</b>	<b>613,709</b>	<b>589,839</b>	<b>557,147</b>

**Table 3**  
**Historical and Projected Operating Statement**  
**Existing Rates**  
**City of Eudora, Kansas**

Description	Actual	Projected				
	2016	2017	2018	2019	2020	2021
<b>Debt Service</b>						
Capital Leases - Principal (PW41 2015 F	31,555	32,500	32,500	-	-	-
Computer Lease	-	2,040	-	-	-	-
Electric Debt (LED Lighting and Hvac 3	33,186	33,186	33,186	33,186	33,186	33,186
Meters (PW52 \$930,000)	-	70,366	71,675	71,675	71,675	71,675
Software Loan (AD08 Financial)	23,305	23,305	23,305	23,305	-	-
<b>Total Debt Service</b>	<b>88,047</b>	<b>161,397</b>	<b>160,666</b>	<b>128,166</b>	<b>104,861</b>	<b>104,861</b>
<b>Capital Improvements</b>	<b>36,137</b>	<b>217,000</b>	<b>200,000</b>	<b>200,000</b>	<b>200,000</b>	<b>200,000</b>
<b>Total Capital Improvements</b>	<b>36,137</b>	<b>217,000</b>	<b>200,000</b>	<b>200,000</b>	<b>200,000</b>	<b>200,000</b>
<b>Balance Available for Other Purposes</b>	<b>635,303</b>	<b>211,091</b>	<b>227,786</b>	<b>285,543</b>	<b>284,978</b>	<b>252,286</b>
Annual kWh Sales	43,292,464	42,232,018	41,293,902	41,293,902	41,293,902	41,293,902
Revenue per kWh (\$/kWh)	0.11085	0.11379	0.12156	0.12584	0.12902	0.13208
% Change	7.9	2.6	6.8	3.5	2.5	2.4
<b>Electric Fund Balance</b>						
Beginning of Year	2,151,136	2,132,398	1,661,005	1,206,306	891,849	576,828
Deposit from Current Year Revenue		211,091	227,786	285,543	284,978	252,286
Transfer to General Fund	(626,962)	(682,484)	(682,484)	(600,000)	(600,000)	(600,000)
Investments	0	0	0	0	0	0
End of Year	2,132,398	1,661,005	1,206,306	891,849	576,828	229,114
<b>Fund Balance Guideline</b>						
21 % of Operating Expenses <sup>(11)</sup>	902,784	987,284	1,031,605	1,056,624	1,084,318	1,117,706

<sup>(1)</sup> PCA Calculated using Power Supply Cost in base rate of \$0.068/kWh-sold

<sup>(2)</sup> Overtime, Social Security, KPERS, Unemployment and Workman's Compensation are calculated as a ratio of Wage and Salary in 2017 and carried through 2021 (e.g.2017 KPERS (\$37,854) divided by 2017 Wage and Salary (\$486,824) = 0.077).

<sup>(3)</sup> Includes Wages and Salaries and Part Time Salaries.

<sup>(4)</sup> Includes Natural Gas, Cellular Phone, Data Services and Other Utilities.

<sup>(5)</sup> Includes Medical Services, Building/Grounds Maintenance Services, Electric System Maintenance and Repair and other Contract Services.

<sup>(6)</sup> Includes Credit card transaction fees, legal services, financial services, Engineering services, printing and copying services, mowing services, protective equipment testing, other professional services and equipment rental.

<sup>(7)</sup> Includes Advertising.

<sup>(8)</sup> Includes IT Supplies and Equipment.

<sup>(9)</sup> 2017 Includes Electric System Supplies. Electric Line Supplies Adjusted from \$122,400 to \$30,000 to avoid double counting capital

<sup>(10)</sup> Includes Vehicle & Equipment parts and maintenance and maintenance services.

<sup>(11)</sup> Includes Operating Expenses, Debt Service and Capital Improvements.

**Table 4**  
**2018 Test Year Revenue Requirement**  
**(\$)**  
**Eudora, KS**

Description	Test Year 2018
<b>OPERATING EXPENSES</b>	
<b>Power Supply</b>	
Labor	-
Purchased Power	3,508,242
Total Power Supply	3,508,242
<b>Distribution System</b>	
Labor	480,047
Employee Benefits	148,249
FICA Expense	29,767
Substation Maintenance	-
Transformers	-
Electric Line Supplies	51,000
Metering	-
Tree Trimming	50,000
Equipment Maintenance	39,750
Shop Supplies	6,000
Other	-
Total Distribution System	804,814
<b>Customer Accounts</b>	
Margin	98,770
Uncollectible Accounts	-
Total Customer Accounts	98,770
<b>Administrative &amp; General Office</b>	
Labor	53,203
Office Supplies & Expenses	26,000
Employee Benefits	9,149
Rents	-
FICA Expense	11,032
Utility Receipts Tax	-
Travel, Dues	11,300
Electric Equipment	4,000
Office Equipment	26,500
Transfers/Loans	-
Safety & Training	18,000
Reimbursable Expenses	-
Other Expenses	79,500
Total Administrative & General	238,684
<b>TOTAL OPERATING EXPENSES</b>	<b>4,650,509</b>

**Table 4 (Continued)**  
**2018 Test Year Revenue Requirement**  
**(\$)**  
**Eudora, KS**

Description	Test Year 2018
<b>Other Income/Revenue</b>	
Licenses and Permits	5,700
Door Hanger Fees	20,000
Reconnect Fees	2,500
Customer Penalty Receipts	70,000
New Resident Fee	12,000
Interest Earnings	8,000
Returned Check Fees	2,500
Other - Miscellaneous	-
<b>Total Other Income/Revenue</b>	<b>120,700</b>
<b>Debt Service</b>	
Capital Leases - Principal (PW41 2015 F550)(11)	31,530
Electric Debt (LED Lighting and Hvac 360)	33,186
Meters (PW52 \$930,000)	71,675
Software Loan (AD08 Financial)(13)	23,305
<b>Total Debt Service</b>	<b>159,696</b>
<b>Capital Improvements</b>	
Normalized Cap. Improv. Plan	200,000
	-
Transfers to Depreciation/Electric Fund	-
<b>Total Capital Improvements</b>	<b>200,000</b>
<b>Total Revenue Requirements</b>	<b>4,889,505</b>

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## COST OF SERVICE ANALYSIS

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A cost of service study is an analytical process of assigning a proportionate share of the cost of owning, operating and maintaining an electric utility system to the customers it serves. Cost of service studies are used for the following purposes:

- To allocate costs to different categories of customers based on how each category cause costs to be incurred.
- To calculate costs of individual types of service based on the costs each service requires the utility to expend.
- To provide information to utility management to evaluate costs incurred by customer class.

The cost of service is prepared for a specific test period, usually one year. The utility's test period revenue requirements were allocated to the customer rate classes proportional to the cost of providing utility services to each of the customer rate classes. For purposes of this Study, 2018 is the test year.

The cost allocation process consists of three major parts: functionalization of costs, classification of costs, and allocation of costs among the customer groups.

- 1. Functional Analysis** - This separates the rate base and expenses into functions such as production, transmission, distribution and customer related. This functionalization is important because it provides data needed to identify investment and costs to be applied to each class of service.
- 2. Classification of Costs** - As a basis for the allocation to individual rate classes, expenses were classified for the test year. Costs were classified as: 1) demand; 2) energy; 3) customer and 4) direct.
- 3. Development of Allocation Factors** - Based on the characteristics of the City's rate classes, test allocation factors were estimated based on energy, peak demand, non-coincident demand and number of customers for each cost component. The allocation factors were used to allocate test year costs to each rate class.



**4. Calculation of Allocated Cost of Service** - The allocation factors developed above were used to allocate the cost of serving each rate class. The resulting costs allocated to each customer rate class are used as a guideline to develop electric rates. The following expenses were allocated to the customer rate classes as described below:

**Power Supply Demand** - Demand related charges for power purchased from KCP&L and WAPA.

**Power Supply Energy** - Energy related charges for power purchased from KCP&L and WAPA.

**Transmission Demand** - Charges for transmitting power across the SPP transmission system.

**Substation Demand** - Substation facilities operation and maintenance and improvement expenses.

**Primary Demand** - Operation and maintenance and improvement expenses on primary feeders and related facilities based on the demand imposed on the primary facilities.

**Primary Customer** - Operation and maintenance and improvement expenses on primary feeders and related facilities specific to a customer.

**Secondary Demand** - Operation and maintenance and improvement expenses on secondary facilities based on demand imposed on secondary facilities.

**Secondary Customer** - Operation and maintenance and improvement expenses on secondary facilities including service transformers specific to a customer on the system.

**Meters** – Operation and Maintenance expenses on customer meter.

**Services** - Includes secondary conductors and the system from the secondary system to the customer meter and service entrance.

**Billing and Accounting** - Billing, accounting, collection, and record keeping expenses.

## **| COST OF SERVICE CONCLUSIONS**

The 2018 Cost of Service analysis indicates that several rate classes should be increased or decreased to be more consistent with the cost to serve them. The following revenue adjustments were used to develop proposed rates (as compared to 2018 revenue at existing rates):

1. Residential – Increase approximately 3.3%.
2. Commercial Single Phase – Increase approximately 5.6%.
3. Commercial Three Phase (Less than 10,000 kWh) – Increase approximately 2%.
4. Commercial Three Phase (10,000 kWh to 200,000 kWh) – Increase approximately 2%.
5. Industrial – Increase approximately 3.8%.
6. Security Lighting – Increase approximately 10%.

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## RATE PLAN

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### **PURPOSE**

The purpose of this rate plan was to design rates that are reflective of the cost of service, include power supply costs, maintain existing rate structure, minimize rate changes over the study period, and maintain rate competitiveness with neighboring utilities.

### **EXISTING RATES**

Existing rates are shown in Table 5. All rate classes include a monthly customer charge and an energy charge. The Commercial and Industrial rate classes also include a demand charge. This Study is not proposing to change the existing rate structure.

### ***Power Cost Adjustment (PCA)***

Existing rates include a semi-annual forward-looking PCA using projected power supply costs. The power supply cost included in the current base rate is \$0.06800/kWh sold. As shown previously in Table 3, power supply costs are projected to increase from approximately \$3,410,000 in 2017 to approximately \$3,836,544 in 2021. The rate plan includes increasing the power cost included in base rates to \$0.08496/kWh-sold to reflect 2018 projected power supply costs. This will decrease the PCA charge (Operational charge) to zero in 2018.

### **SUMMARY OF RATE PLAN**

A rate plan was developed that adjusts rates toward the cost of serving each customer class. The PCA is projected at zero in 2018. Proposed rates are included in Appendix A. Table 5 summarizes existing and proposed rates for each rate class.

## **PROPOSED RATE DESIGN**

The following paragraphs describe the proposed rate design for each rate class.

### ***Residential (1)***

The Residential monthly customer charge increased from \$7.72/month to \$13.25/month. The energy rate decreased from \$0.1160/kWh (including the Operational Charge) to \$0.1135/kWh.

### ***Commercial (Single-Phase) (2)***

The Commercial Single-Phase monthly customer charge increased from \$7.72/month to \$20.50/month. The energy rate decreased from \$0.1160/kWh (including the Operational Charge) to \$0.1133/kWh.

### ***Commercial (Three-Phase <10k)(3)***

The Commercial Three-Phase monthly customer charge increased from \$13.79/month to \$30.00/month. The energy rate decreased slightly from \$0.0747/kWh (including the Operational Charge) to \$0.0745/kWh. The demand charge increased from \$9.61/kW-month to 10.00/kW-month.

### ***Commercial (Three Phase 10k-200k)(7)***

The Commercial Three-Phase monthly customer charge increased from \$13.79/month to \$95/month. The energy rate decreased from \$0.0747/kWh (including the Operational Charge) to \$0.0720/kWh. The demand charge increased from \$9.61/kW-month to \$10.00/kW-month.

### ***Industrial (200k+)(13)***

The monthly customer charge increased from \$33.08/month to \$250.00/month. The demand charge increased from \$9.61/kW-month to \$12.00/kW-month. The energy charge decreased from \$0.0622/kWh (including the Operational Charge) to \$0.0599/kWh.

**Table 5**  
**Comparison of Existing to Proposed Rates**  
**City of Eudora, Kansas**

Description	Existing	Proposed	Westar	KCP&L
<b>Residential</b>	2017	2018	2017	2017
Customer Charge (\$/Month)				
Inside	7.72	13.25	14.50	14.00
Outside	15.44	16.00	14.50	14.00
Energy Charge (\$/kWh)				
Inside	0.1055	0.11350	0.11491	0.11897
Outside	0.1103	0.11930	0.11491	0.11897
Operational Charge (\$/kWh) <sup>(1)</sup>	0.0105	-	-	
<b>Single Phase Commercial</b>				
Customer Charge (\$/Month)	7.72	20.50	22.73	18.36
Energy Charge (\$/kWh)	0.1055	0.11330	0.10191	0.11093
Operational Charge (\$/kWh)	0.0105	-	-	
<b>Three Phase Commercial (Less Than 10,000 kWh/Month)</b>				
Customer Charge (\$/Month)	13.79	30.00	22.73	47.99
Energy Charge (\$/kWh)	0.0642	0.07450	0.10191	0.12383
Demand Charge (\$/kW)	9.61	10.00	5.81	2.83
Operational Charge (\$/kWh)	0.0105	-	-	
<b>Three Phase Commercial (10,000 kWh - 200,000 kWh/Month)</b>				
Customer Charge (\$/Month)	13.79	95.00	100.99	104.62
Energy Charge (\$/kWh)	0.0642	0.0720	0.0365	0.0741
Demand Charge (\$/kW)	9.61	10.00	15.77	9.97
Operational Charge (\$/kWh)	0.0105	-	-	
<b>Industrial (DM 13)</b>				
Customer Charge (\$/Month)	33.08	250.00	251.70	715.54
Energy Charge (\$/kWh)	0.0517	0.05990	0.03569	0.07415
Demand Charge (\$/kW)	9.61	12.00	14.20	9.97
Operational Charge (\$/kWh)	0.0105	-	-	
<b>Security Light (\$/Month)</b>	10.00	11.00		
<b>Power Supply Cost in Base Rate (\$/kWh-Sold)</b>	0.0680	0.08496		

<sup>(1)</sup> Operational charge is initially zero in 2018. It will be calculated at least twice annually in accordance with the Power Cost Adjustment Rider.

## **PROJECTED REVENUES AND EXPENSES AT PROPOSED RATES**

Revenues from proposed rates were projected and incorporated in the projected operating results to assess the adequacy of rates. Table 6 shows projected revenues and expenses for the study period using the proposed rates.

Total operating revenues were projected to increase from approximately \$4,805,000 in 2017 to approximately \$4,890,000 in 2018. The balance available for other purposes (margin) changes from approximately \$211,000 in 2017 to approximately \$99,000 in 2018. The electric fund balance decreases from approximately \$2,100,000 in the beginning of 2017 to approximately \$1,078,000 at the end of 2018.

**Table 6**  
**Historical and Projected Operating Statement**  
**Proposed Rates**  
**City of Eudora, Kansas**

Description	Actual	Projected				
	2016	2017	2018	2019	2020	2021
<b>OPERATING REVENUE</b>						
(1) Residential		2,632,793	2,969,629	3,266,592	3,307,424	3,340,498
(2) Commercial		218,224	251,988	277,186	280,651	283,458
(3) Demand		343,201	387,336	426,070	431,395	435,709
(5) Residential Outside		5,329	5,722	6,294	6,373	6,437
(7) Demand (Over 10k<200k)		559,700	629,336	692,269	700,923	707,932
(13) Demand (200k+)		588,800	642,460	706,707	715,540	722,696
Water/Sewer		0	0	0	0	0
Security Lighting		3,480	3,828	4,211	4,263	4,306
Power Cost Adjustment <sup>(1)</sup>		453,917	(88)	108,632	218,083	328,215
Power Cost Adjustment (\$/kWh)		0.01075	(0.00000)	0.00263	0.00528	0.00795
<b>Total Revenue from Sales</b>	<b>4,799,124</b>	<b>4,805,443</b>	<b>4,890,210</b>	<b>5,487,961</b>	<b>5,664,653</b>	<b>5,829,251</b>
<b>Other Income/Revenue</b>						
Licenses and Permits	5,715	4,000	5,700	5,700	5,700	5,700
Door Hanger Fees	24,416	11,500	20,000	20,000	20,000	20,000
Reconnect Fees	2,887	4,000	2,500	2,500	2,500	2,500
Customer Penalty Receipts	76,776	70,000	70,000	70,000	70,000	70,000
New Resident Fee	13,000	12,000	12,000	12,000	12,000	12,000
Interest Earnings	7,901	2,000	8,000	8,000	8,000	8,000
Returned Check Fees	2,760	3,000	2,500	2,500	2,500	2,500
Other - Miscellaneous	1,694	500	0	0	0	0
<b>Total Other Income/Revenue</b>	<b>135,150</b>	<b>107,000</b>	<b>120,700</b>	<b>120,700</b>	<b>120,700</b>	<b>120,700</b>
<b>OPERATING EXPENSES</b>						
<b>Personnel <sup>(2)</sup></b>						
Wages and Salaries <sup>(3)</sup>	407,970	486,824	528,250	546,739	565,875	585,680
Overtime Wages	2,500	8,000	5,000	5,175	5,356	5,544
Social Security	30,766	37,854	40,799	42,227	43,705	45,235
KPERS	31,890	35,613	56,883	58,874	60,934	63,067
Health Insurance	56,458	66,487	80,138	92,159	105,983	121,880
Unemployment	865	1,039	1,333	1,380	1,428	1,478
Travel & Training (KMU training 2625)	17,573	17,978	18,000	18,360	18,727	19,102
Workmans Comp Premium	13,614	20,077	14,044	14,536	15,044	15,571
<b>Total Personnel</b>	<b>561,635</b>	<b>673,872</b>	<b>744,448</b>	<b>779,449</b>	<b>817,053</b>	<b>857,557</b>
<b>Contractual</b>						
Purchased Power (KCPL/KMEA)	3,358,727	3,409,753	3,508,242	3,616,962	3,726,412	3,836,544
Utilities <sup>(4)</sup>	19,941	14,474	24,000	24,720	25,462	26,225
Contract Services <sup>(5)</sup>	3,366	7,995	7,250	7,468	7,692	7,922
Professional Services <sup>(6)</sup>	48,133	37,325	61,300	63,139	65,033	66,984
Dues & Subscriptions <sup>(7)</sup>	11,724	11,210	11,300	11,526	11,757	11,992
Tree Trimming	42,600	40,000	50,000	51,500	53,045	54,636
Liability Insurance Premiums	17,494	17,886	18,200	18,746	19,308	19,888
<b>Total Contractual</b>	<b>3,501,985</b>	<b>3,538,643</b>	<b>3,680,292</b>	<b>3,794,061</b>	<b>3,908,709</b>	<b>4,024,192</b>
<b>Commodities</b>						
Uniforms	10,668	2,550	5,000	5,100	5,202	5,306
Office Supplies	2,634	1,020	2,000	2,040	2,081	2,122
Other Supplies & Equipment <sup>(8)</sup>	28,073	26,500	26,500	27,030	27,571	28,122
Electric Line Supplies <sup>(9)</sup>	37,346	30,000	51,000	52,020	53,060	54,122
Vehicle & Equip Parts/Maint <sup>(10)</sup>	14,342	25,500	17,500	18,025	18,566	19,123
Vehicle Gas & Oil	8,929	15,300	15,000	15,450	15,914	16,391
Shop Supplies	5,473	2,500	6,000	6,120	6,242	6,367
Facilities Maintenance	3,701	7,070	4,000	4,080	4,162	4,245
<b>Total Commodities</b>	<b>111,166</b>	<b>110,440</b>	<b>127,000</b>	<b>129,865</b>	<b>132,797</b>	<b>135,798</b>
<b>TOTAL OPERATING EXPENSES</b>	<b>4,174,787</b>	<b>4,322,955</b>	<b>4,551,739</b>	<b>4,703,375</b>	<b>4,858,559</b>	<b>5,017,547</b>
<b>NET OPERATING INCOME</b>	<b>759,486</b>	<b>589,488</b>	<b>459,171</b>	<b>905,286</b>	<b>926,794</b>	<b>932,404</b>

**Table 6**  
**Historical and Projected Operating Statement**  
**Proposed Rates**  
**City of Eudora, Kansas**

Description	Actual	Projected				
	2016	2017	2018	2019	2020	2021
<b>Debt Service</b>						
Capital Leases - Principal (PW41 2015 F	31,555	32,500	31,530	-	-	-
Computer Lease	-	2,040	-	-	-	-
Electric Debt (LED Lighting and Hvac 3	33,186	33,186	33,186	33,186	33,186	33,186
Meters (PW52 \$930,000)	-	70,366	71,675	71,675	71,675	71,675
Software Loan (AD08 Financial)	23,305	23,305	23,305	23,305	-	-
<b>Total Debt Service</b>	<b>88,047</b>	<b>161,397</b>	<b>159,696</b>	<b>128,166</b>	<b>104,861</b>	<b>104,861</b>
<b>Capital Improvements</b>	<b>36,137</b>	<b>217,000</b>	<b>200,000</b>	<b>200,000</b>	<b>200,000</b>	<b>200,000</b>
<b>Total Capital Improvements</b>	<b>36,137</b>	<b>217,000</b>	<b>200,000</b>	<b>200,000</b>	<b>200,000</b>	<b>200,000</b>
<b>Balance Available for Other Purposes</b>	<b>635,303</b>	<b>211,091</b>	<b>99,475</b>	<b>577,120</b>	<b>621,933</b>	<b>627,543</b>
Annual kWh Sales	43,292,464	42,232,018	41,293,902	41,293,902	41,293,902	41,293,902
Revenue per kWh (\$/kWh)	0.11085	0.11379	0.11842	0.13290	0.13718	0.14116
% Change	7.9	2.6	4.1	12.2	3.2	2.9
<b>Electric Fund Balance</b>						
Beginning of Year	2,151,136	2,132,398	1,661,005	1,077,996	1,055,116	1,077,050
Deposit from Current Year Revenue		211,091	99,475	577,120	621,933	627,543
Transfer to General Fund	(626,962)	(682,484)	(682,484)	(600,000)	(600,000)	(600,000)
Investments	0	0	0	0	0	0
End of Year	2,132,398	1,661,005	1,077,996	1,055,116	1,077,050	1,104,593
<b>Fund Balance Guideline</b>						
21 % of Operating Expenses <sup>(11)</sup>	902,784	987,284	1,031,401	1,056,624	1,084,318	1,117,706

<sup>(1)</sup> PCA Calculated using Power Supply Cost in base rate of \$0.08496/kWh-sold

<sup>(2)</sup> Overtime, Social Security, KPERs, Unemployment and Workman's Compensation are calculated as a ratio of Wage and Salary in 2017 and carried through 2021 (e.g.2017 KPERs (\$37,854) divided by 2017 Wage and Salary (\$486,824) = 0.077).

<sup>(3)</sup> Includes Wages and Salaries and Part Time Salaries.

<sup>(4)</sup> Includes Natural Gas, Cellular Phone, Data Services and Other Utilities.

<sup>(5)</sup> Includes Medical Services, Building/Grounds Maintenance Services, Electric System Maintenance and Repair and other Contract Services.

<sup>(6)</sup> Includes Credit card transaction fees, legal services, financial services, Engineering services, printing and copying services, mowing services, protective equipment testing, other professional services and equipment rental.

<sup>(7)</sup> Includes Advertising.

<sup>(8)</sup> Includes IT Supplies and Equipment.

<sup>(9)</sup> 2017 Includes Electric System Supplies. Adjusted from \$122,400 to \$30,000 to avoid double counting capital improvements.

<sup>(10)</sup> Includes Vehicle & Equipment parts and maintenance and maintenance services.

<sup>(11)</sup> Includes Operating Expenses, Debt Service and Capital Improvements.