

# Council Study Session

March 20, 2017

<b>Title:</b>	Discussion of Electric Rate Design
<b>Item Type:</b>	Presentation and Request for Direction
<b>Requested by Council?</b>	Yes
<b>From:</b>	Mark Holden, director of IT and electric utility holdenm@ashland.or.us

## **Discussion Questions:**

- Does the recommended rate design maintain a safe and reliable electric distribution system for the citizens of Ashland?
- Is the recommended rate design fair and equitable?
- Does the recommended charge and rate design provide a sustainable rate system based on the Electric Cost of Service Study and Financial Projection (COS - October, 2016)?

## **Resource Requirements:**

The rate design provides the funding for the safe and reliable operations of the electric utility.

## **Suggested Next Steps:**

Staff recommends the COS based Rate Design for future charges and rates. Staff recommends the developed class specific charges and rates be used as the basis for future charges and rates. Implementation of the Rate Design will phase in the COS recommendations.

Staff is seeking guidance from Council on this point:

- Shall staff move forward with the rate design as presented/discussed and bring these rates forward for approval at a future Council business meeting?

## **Policies, Plans and Goals Supported:**

Council Goals Supported:

22.1 Prepare for the impact of climate change on the community

Administrative Goals Supported:

29. Promote conservation as a long-term strategy to protect the environment and public utility needs.

40. Ensure on-going fiscal ability to provide desired and required services at an acceptable level.

51. Develop fee/rate structure that is consistent with adopted master plans and studies.

Plans/Studies Supported:

Electric System Ten -Year Planning Study (2014)

Electric Cost of Service Study and Financial Projection (October, 2016)

### **Background and Additional Information:**

The most recent electric rate increase was on July 1, 2015. The Rate Design recommended rates are anticipated to be effective on July 1, 2017.

The COS identified the cost to serve each class of customer and provided a model to ensure these costs are recovered through equitable charge and rate structures (i.e. all classes carry their fair share). Taken together the Electric System Ten Year Planning Study, COS and the Rate Design provide direction and support for near and long term operation of the Electric Department.

At the October 31, 2016 Council Study Session council directed an electric rate design be performed based on the [Electric Cost of Service Study and Financial Projection](#) (COS – October 2016) presented at the study session. The COS is the basis for the presented Rate Design.

Rate Design implements the approved Cost of Service Model

1. Rate Adjustments: Rate adjustments are necessary for the long-term reliability and long-term health of the electric system. Rate adjustments are needed to ensure no class of customer is unintentionally burdened with costs beyond those needed to support their usage. The COS analysis of the costs and cost drivers reveals the need to change rate design to equitably recover these costs. In addition, the cost of service based rate design provides the flexibility and fairness to develop future rates dealing with innovations in electric service (e.g. efficiency, demand response, distributed energy resources) without unfairly shifting costs to unrelated classes.
2. Cost of Service: Many municipal electric utilities, electric cooperatives, and public utility districts are operating or moving toward a cost of service rate design model. Investor Owned Utilities (e.g., Pacific Corp, Portland General) operate under the cost of service rate design model.

The recommended COS based Rate Design:

- Identifies and unbundles costs
- Allots costs to appropriate rate classes
- Builds a financial model of the Utility based on cost of service
- Creates the charges and rates
- Encourages conservation efforts by decoupling required operational revenue from the effects of encouraging lower consumption

The cost of service rate design model uses the Electric Department's costs and assigns these costs to the class of customer benefiting from the costs. The cost of service rate design model provides the flexibility, accuracy, fairness, and financial stability needed to operate in an evolving integrated utility environment.

3. Cross-Subsidies: When examined on a cost basis, the current rate structure contains inequities between customer classes. The cost of service model identifies costs, identifies the classes benefiting from those costs, and assigns the cost to these rate classes. The existing classes are not fully aligned with the COS results. However, the COS analysis

shows the current rates are, on average, within 9.5% of the desired goal. Over time, the recommended Rate Design implements the COS without large swings in customer rates (please see below: Table 1: Proposed Rate Changes).

4. **Customer Charge:** Customer charges (Ashland’s current Basic Charge) are adjusted to cover the actual cost to serve each class of customer. Rate Design adjustments are meant to eliminate subsidies among classes of customers. As conservation continues to emerge as a higher priority, an industry trend is to fund conservation through a fixed monthly customer charge. Including conservation in the fixed charge provides stable funding for conservation efforts and reduces the need to adjust electric rates as the investment in conservation is adjusted up or down. The fixed rate decouples conservation funding from the variability (most often weather related) of electric consumption and could help provide stable funding for the developing Climate and Energy Action Plan (CEAP).

Staff has completed the cost of service rate design. Subject to guidance from the Council, the recommended rate design will be brought back to the Council for approval in May, 2017. Implementation of the rates, once reviewed and approved by the Council, is anticipated for July 1, 2017.

The COS and Rate Design provide the Electric Department with a methodology and road map to accomplish an equitable rate structure where customer classes contribute their fair share. In addition, the COS and Rate Design provide for the long-term safety, reliability and financial health of the electric utility.

A summary of rate adjustments (charges + rates) proposed in the Rate Design:

Table 1: Proposed Rate Changes

Rate Adjustments by FY	2018	2019	2020
Increase %	6.90	4.32	2.90
	Recommended (net - charges and rates) (from Rate Design page 3)		

Please see the attached City of Ashland Rate Design for detailed individual rate information.

Notes to Table 1: The rate increase percentage is not a broad application of the single increase percentage across all customer classes. Rather, the rate increase percentage represents the net effect of the class-specific rate design rates. Since the COS identified revenue for some classes of customers are above and others below the identified cost of service, rates change an average of 6.9% in FY2018 (range 6.9% ± 2%) and 4.32%, 2.90% in the following years.

**Attachments:**

City of Ashland Rate Design, March 14, 2017

Council Communication, “Presentation on Electric Cost of Service Study”, October 31, 2016

Electric Cost of Service Study and Financial Projection, October, 2016

# **City of Ashland**

## **Rate Design**

**3/14/2017**

**Utility Financial Solutions, LLC**  
**185 Sun Meadow Court**  
**Holland, MI USA 49424**  
**(616) 393-9722**  
**Fax (616) 393-9721**  
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Submitted Respectfully by:  
Mark Beauchamp, CPA, CMA, MBA  
President, Utility Financial Solutions



**City of Ashland**  
**Rate Design**  
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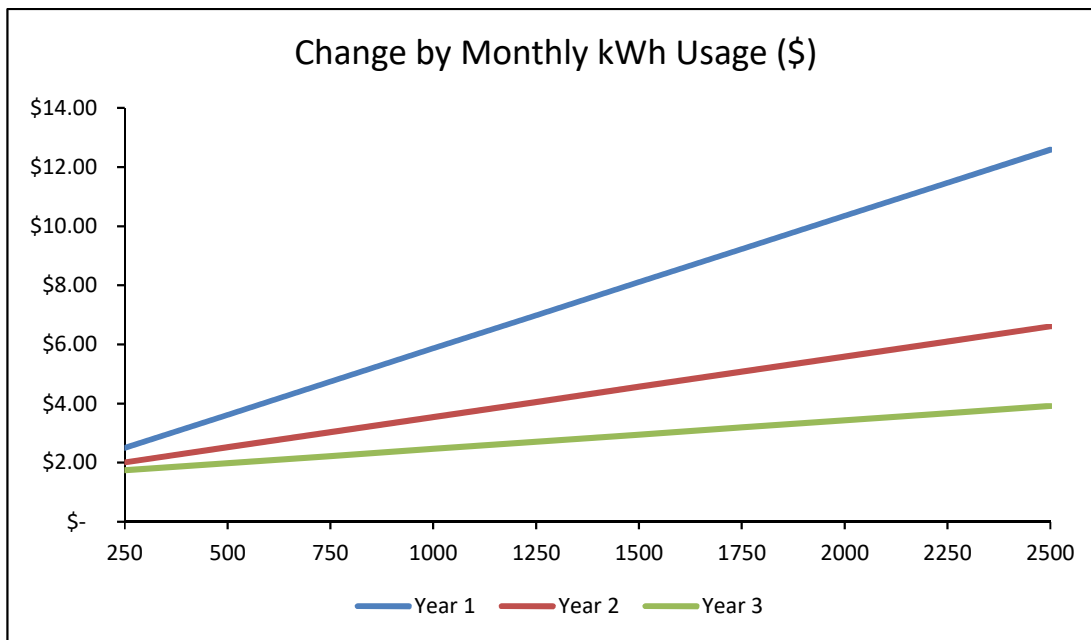
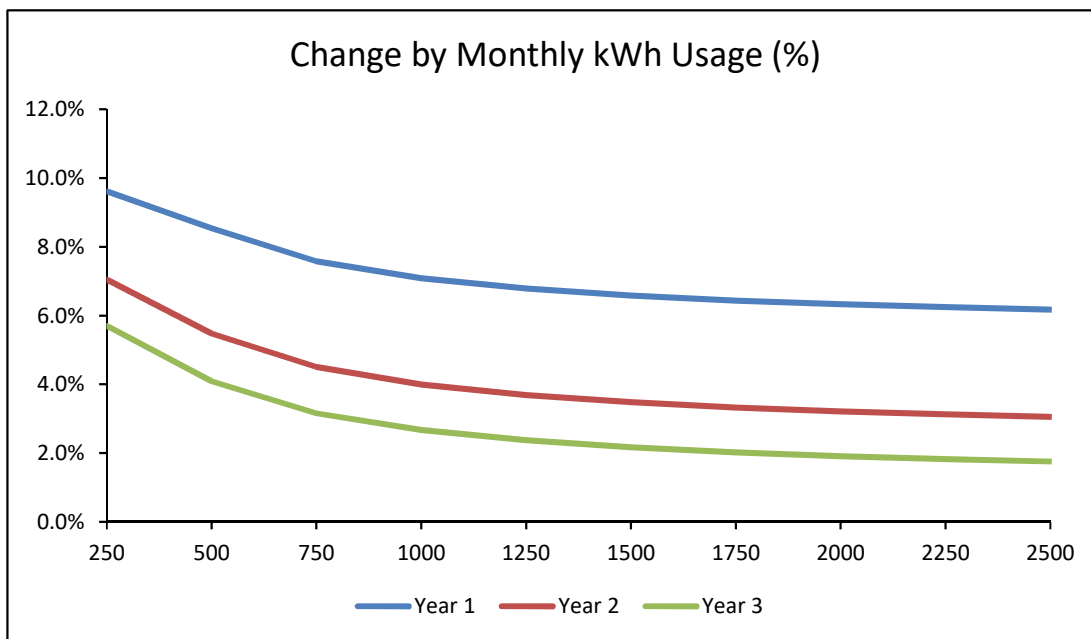
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**City of Ashland**  
**Rate Design**  
*Rate Design Summary*

Customer Class	Projected	Projected	Projected	Projected	Change Year 1 %	Change Year 2 %	Change Year 3 %
	Revenues Under Current Rates	Revenues Under Proposed Rates Year 1	Revenues Under Proposed Rates Year 2	Revenues Under Proposed Rates Year 3			
Residential Single-Phase	\$ 7,410,275	\$ 7,967,778	\$ 8,329,088	\$ 8,597,320	7.52%	4.53%	3.22%
Seasonal Residential Single	60,785	66,195	69,196	71,425	8.90%	4.53%	3.22%
Commercial Single/Telecomm	1,788,904	1,914,127	1,996,434	2,051,336	7.00%	4.30%	2.75%
Outdoor Lighting	19,703	21,061	21,848	22,489	6.90%	3.75%	2.90%
Commercial Service Three Phase	3,168,263	3,358,358	3,492,693	3,580,010	6.00%	4.00%	2.50%
Govt/Muni Single Phase	222,773	242,597	257,883	267,940	8.90%	6.30%	3.90%
Govt/Muni Three Phase	917,686	968,159	1,004,465	1,027,065	5.50%	3.75%	2.25%
Governmental Large Service	878,093	926,259	960,993	982,616	5.50%	3.75%	2.25%
<b>Totals</b>	<b>\$ 14,466,481</b>	<b>\$ 15,464,534</b>	<b>\$ 16,132,599</b>	<b>\$ 16,600,201</b>	<b>6.90%</b>	<b>4.32%</b>	<b>2.90%</b>

**City of Ashland**  
**Rate Design**  
*Residential Single-Phase*

Rates	Current	Year 1	Year 2	Year 3
<b>Monthly Facilities Charge:</b>				
All Customers	\$ 9.62	\$ 11.00	\$ 12.50	\$ 14.00
<b>Energy Charge:</b>				
Block 1 (0 - 500 kWh)	\$ 0.06563	\$ 0.07011	\$ 0.07216	\$ 0.07313
Block 2 (501 - 5,000 kWh)	\$ 0.08073	\$ 0.08521	\$ 0.08726	\$ 0.08823
Block 3 (Excess)	\$ 0.08073	\$ 0.12000	\$ 0.12500	\$ 0.12750
Revenue from Rate	\$ 7,410,275	\$ 7,967,778	\$ 8,329,088	\$ 8,597,320
Change from Previous		7.5%	4.5%	3.2%



**City of Ashland**  
**Rate Design**  
*Residential Single-Phase*

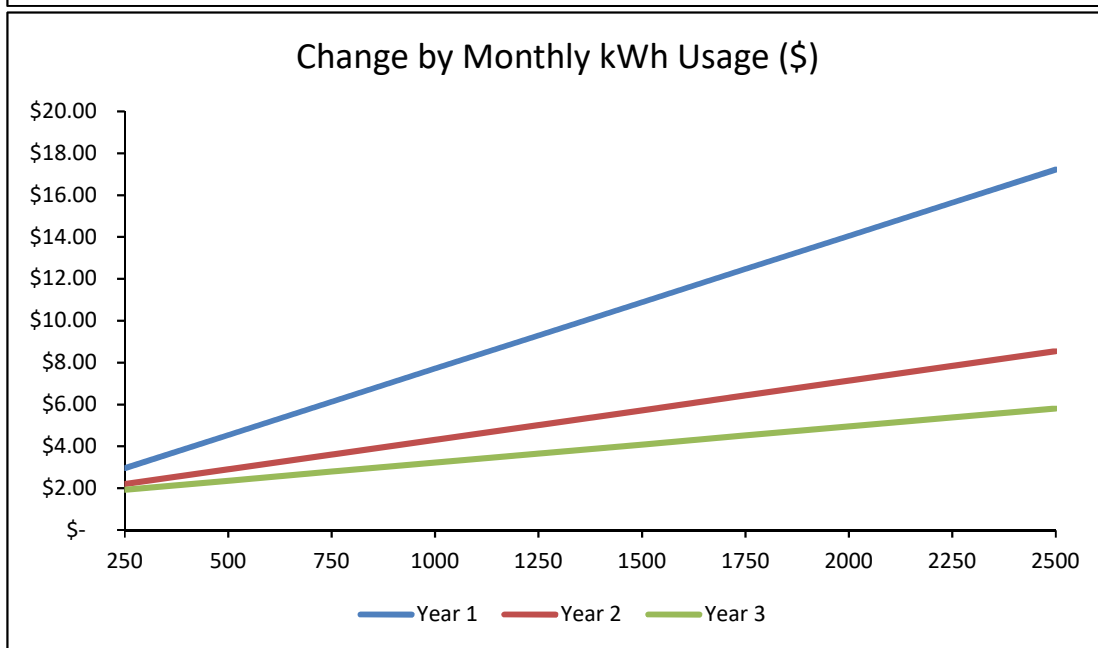
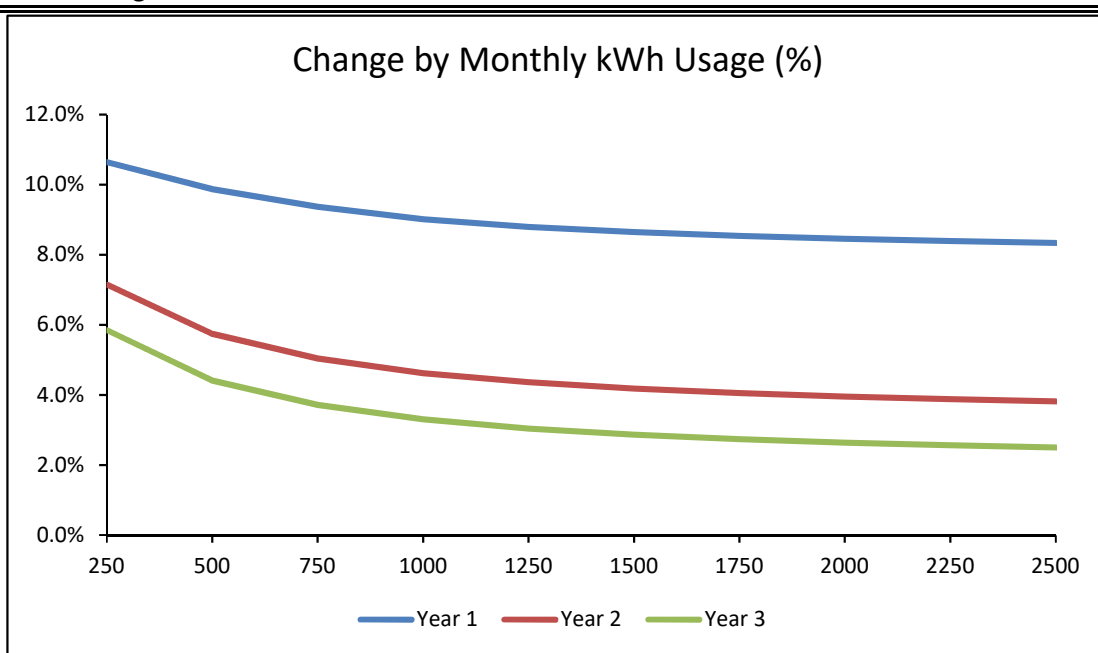
Rate Change Effect by Usage (%)				
Usage	Year 1	Year 2	Year 3	
250	9.6%	7.0%	5.7%	
500	8.5%	5.5%	4.1%	
750	7.6%	4.5%	3.2%	
1000	7.1%	4.0%	2.7%	
1250	6.8%	3.7%	2.4%	
1500	6.6%	3.5%	2.2%	
1750	6.4%	3.3%	2.0%	
2000	6.3%	3.2%	1.9%	
2250	6.2%	3.1%	1.8%	
2500	6.2%	3.1%	1.8%	

Rate Change Effect by Usage (\$)				
Usage	Year 1	Year 2	Year 3	
250	\$ 2.50	\$ 2.01	\$ 1.74	
500	\$ 3.62	\$ 2.52	\$ 1.98	
750	\$ 4.74	\$ 3.03	\$ 2.23	
1000	\$ 5.86	\$ 3.54	\$ 2.47	
1250	\$ 6.99	\$ 4.05	\$ 2.71	
1500	\$ 8.11	\$ 4.57	\$ 2.95	
1750	\$ 9.23	\$ 5.08	\$ 3.19	
2000	\$ 10.35	\$ 5.59	\$ 3.43	
2250	\$ 11.47	\$ 6.10	\$ 3.68	
2500	\$ 12.59	\$ 6.61	\$ 3.92	



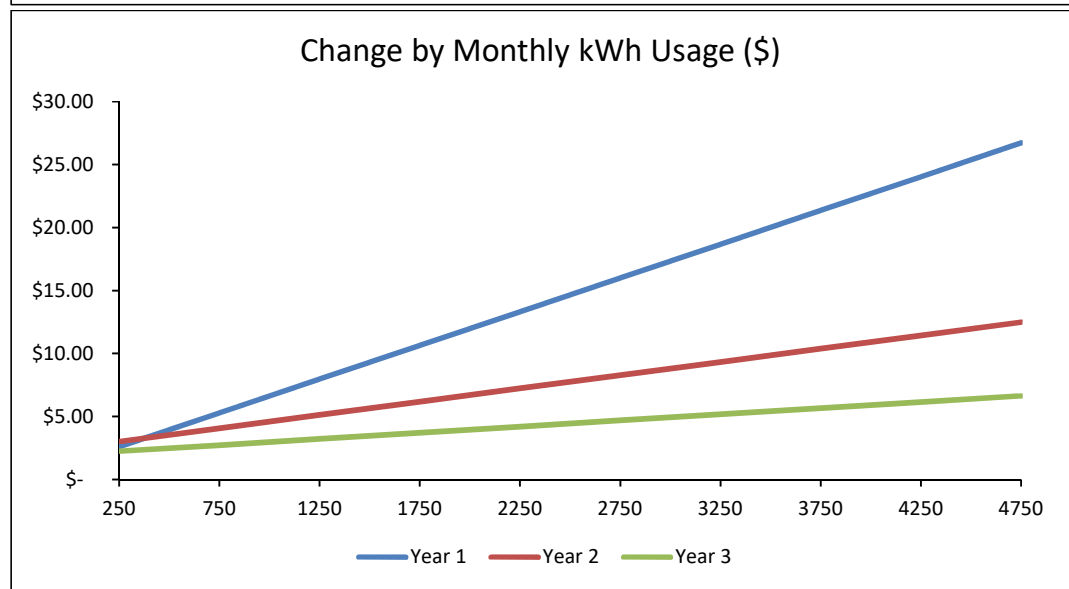
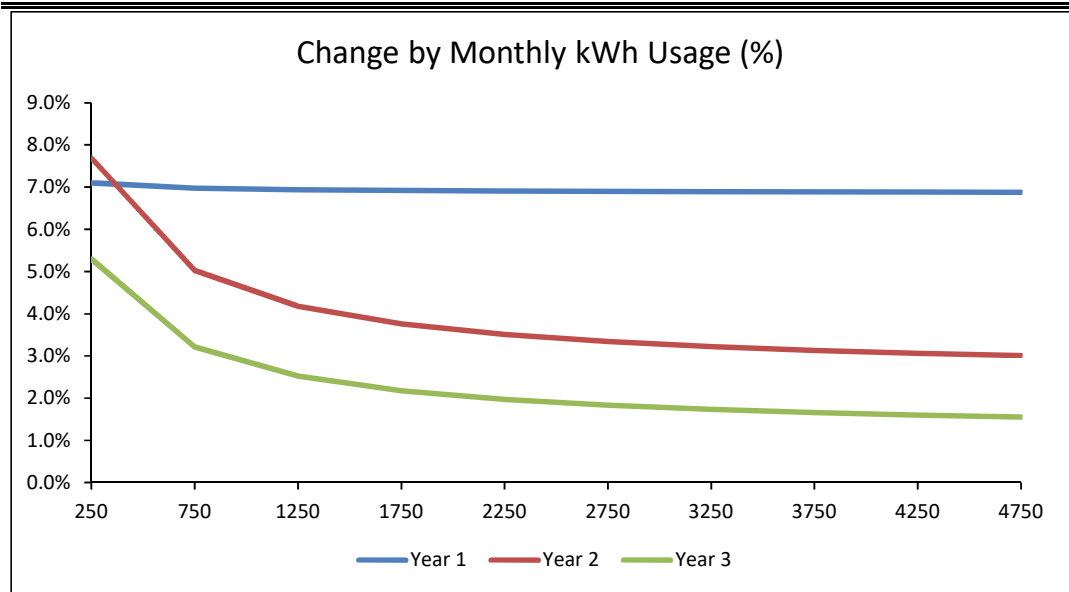
**City of Ashland**  
**Rate Design**  
*Seasonal Residential Single*

Rates	Current	Year 1	Year 2	Year 3
<b>Monthly Facilities Charge:</b>				
All Customers	\$ 9.62	\$ 11.00	\$ 12.50	\$ 14.00
<b>Energy Charge:</b>				
Block 1 (0 - 600 kWh)	\$ 0.07293	\$ 0.07927	\$ 0.08209	\$ 0.08381
Block 2 (601 - 5,000 kWh)	\$ 0.08062	\$ 0.08696	\$ 0.08978	\$ 0.09150
Block 3 (Excess)	\$ 0.08062	\$ 0.12000	\$ 0.12500	\$ 0.12750
Revenue from Rate	\$ 60,785	\$ 66,195	\$ 69,196	\$ 71,425
Change from Previous		8.9%	4.5%	3.2%



**City of Ashland**  
**Rate Design**  
*Commercial Single/Telecomm*

Rates	Current	Year 1	Year 2	Year 3
<b>Monthly Facilities Charge:</b>				
30kw or Less/Power Supply	\$ 17.23	\$ 18.50	\$ 21.00	\$ 23.00
Over 30kW	\$ 64.67	\$ 64.67	\$ 64.67	\$ 64.67
<b>Energy Charge:</b>				
Block 1 (0 - 3,000 kWh)	\$ 0.07804	\$ 0.08340	\$ 0.08550	\$ 0.08648
Block 2 (3001 - 20,000 kWh)	\$ 0.07829	\$ 0.08365	\$ 0.08575	\$ 0.08673
Block 3 (Excess)	\$ 0.07866	\$ 0.08402	\$ 0.08612	\$ 0.08710
<b>Demand Charge</b>				
Block 1 (0 - 15 kW)	\$ -	\$ -	\$ -	\$ -
Block 2 (Excess)	\$ 4.12	\$ 4.75	\$ 5.50	\$ 6.25
<b>Power Cost Adjustment:</b>				
All Energy	\$ -	\$ -	\$ -	\$ -
Revenue from Rate	\$ 1,788,904	\$ 1,914,127	\$ 1,996,434	\$ 2,051,336
Change from Previous		7.0%	4.3%	2.8%

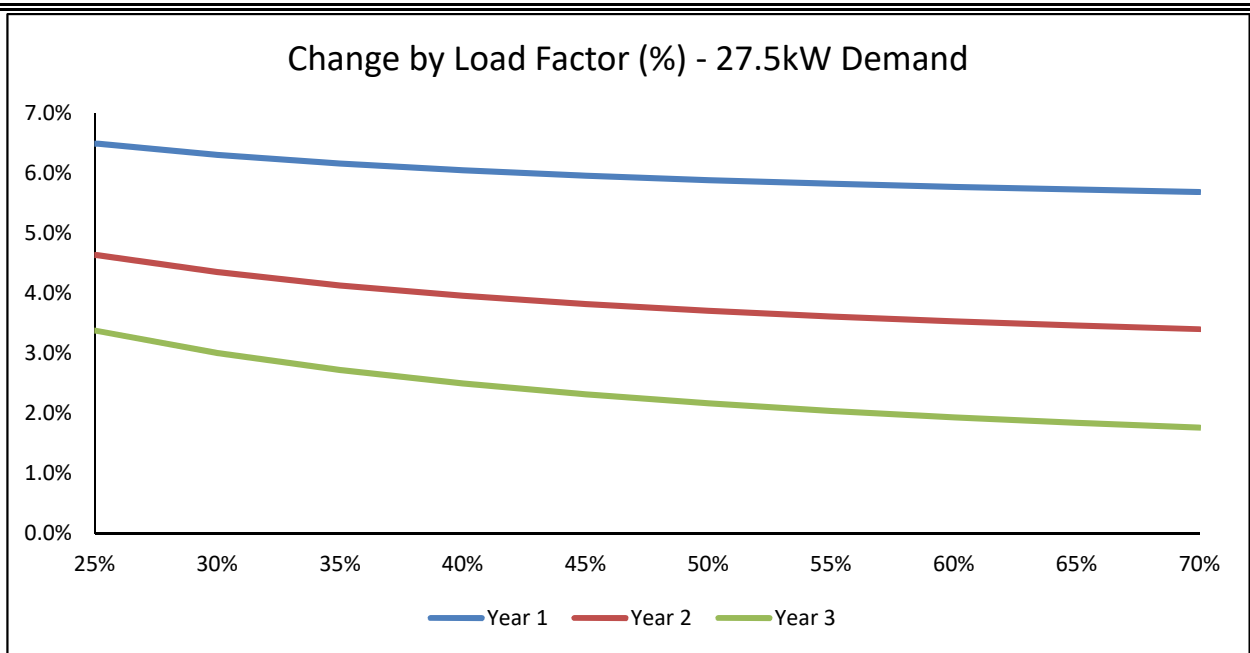


**City of Ashland**  
**Rate Design**  
*Outdoor Lighting*

Current Rates	Current	Year 1	Year 2	Year 3
<b>Monthly Light Charge:</b>				
<b>Lamp</b>				
HPS 5800 Non Res	\$ 21.69	\$ 23.15	\$ 23.80	\$ 24.50
HPS 22000 Non Res	\$ 31.31	\$ 33.40	\$ 34.65	\$ 35.65
HPS 50000 Non Res	\$ 50.08	\$ 53.55	\$ 55.55	\$ 57.15
HPS 5800 Res	\$ 16.68	\$ 17.85	\$ 18.60	\$ 19.15
HPS 22000 Res	\$ 24.09	\$ 25.70	\$ 26.50	\$ 27.25
HPS 50000 Res	\$ 38.53	\$ 41.20	\$ 42.75	\$ 44.00
Wood Pole	\$ 1.89	\$ 2.00	\$ 2.10	\$ 2.15
Revenues from Current Rates	\$ 19,703	\$ 21,061	\$ 21,848	\$ 22,489
Change from Previous		6.89%	3.74%	2.93%

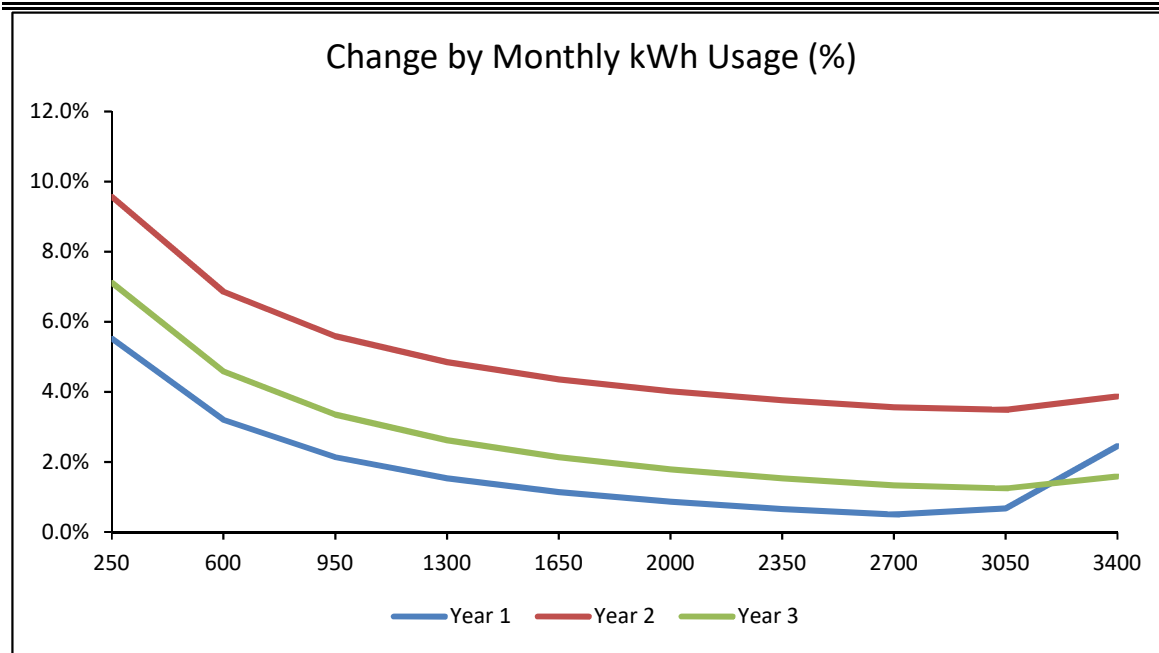
**City of Ashland**  
**Rate Design**  
*Commercial Service Three Phase*

Rates	Current	Year 1	Year 2	Year 3
<b>Monthly Facilities Charge:</b>				
30kw or Less	\$ 34.47	\$ 37.00	\$ 40.00	\$ 45.00
Over 30kW	\$ 112.10	\$ 112.10	\$ 112.10	\$ 112.10
<b>Energy Charge:</b>				
Block 1 (0 - 3,000 kWh)	\$ 0.07145	\$ 0.07514	\$ 0.07706	\$ 0.07754
Block 2 (3001 - 17,000 kWh)	\$ 0.07193	\$ 0.07562	\$ 0.07754	\$ 0.07802
Block 3 (Excess)	\$ 0.07212	\$ 0.07581	\$ 0.07773	\$ 0.07821
<b>Demand Charge</b>				
Block 1 (0 - 15 kW)	\$ -	\$ -	\$ -	\$ -
Block 2 (Excess)	\$ 4.12	\$ 4.75	\$ 5.50	\$ 6.25
<b>Power Cost Adjustment:</b>				
All Energy	\$ -	\$ -	\$ -	\$ -
Revenue from Rate	\$ 3,168,263	\$ 3,358,358	\$ 3,492,693	\$ 3,580,010
Change from Previous		6.0%	4.0%	2.5%



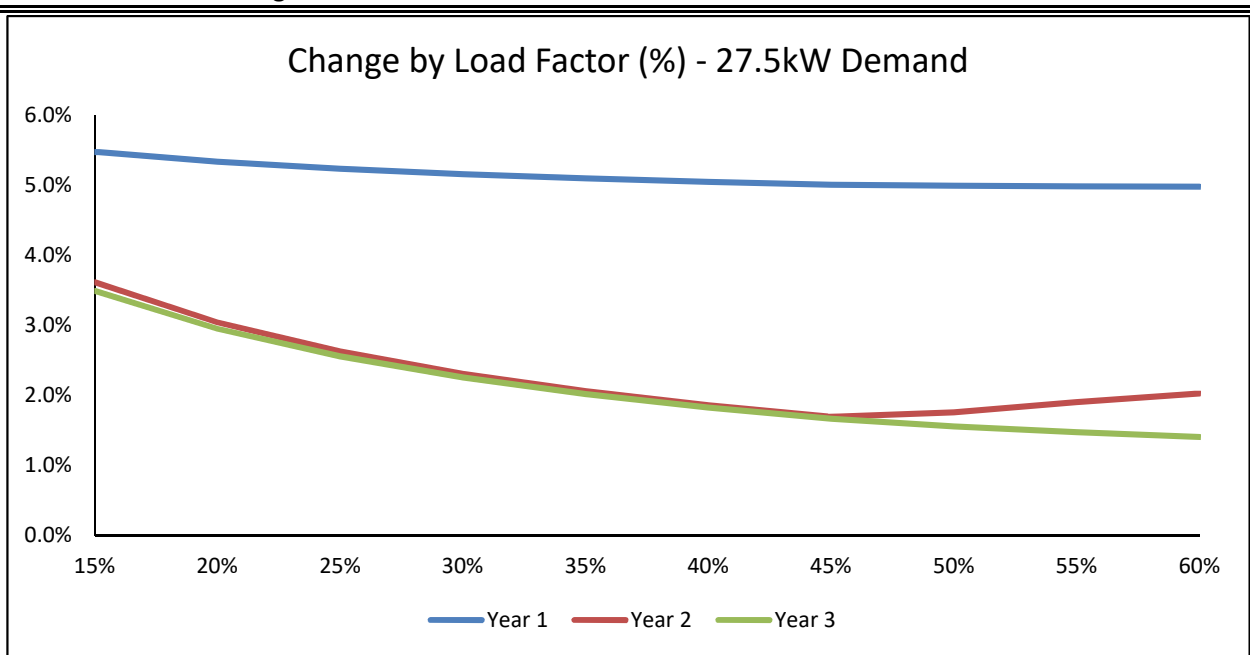
**City of Ashland**  
**Rate Design**  
*Govt/Muni Single Phase*

Rates	Current	Year 1	Year 2	Year 3
<b>Monthly Facilities Charge:</b>				
30kw or Less/Power Supply	\$ 17.23	\$ 18.50	\$ 21.00	\$ 23.00
Over 30kW	\$ 64.67	\$ 64.67	\$ 64.67	\$ 64.67
<b>Energy Charge:</b>				
Block 1 (0 - 3,000 kWh)	\$ 0.09437	\$ 0.09371	\$ 0.09562	\$ 0.09538
Block 2 (3001 - 20,000 kWh)	\$ 0.07077	\$ 0.08871	\$ 0.09562	\$ 0.10038
Block 3 (Excess)	\$ 0.06632	\$ 0.08871	\$ 0.09562	\$ 0.10038
<b>Demand Charge</b>				
Block 1 (0 - 15 kW)	\$ -	\$ -	\$ -	\$ -
Block 2 (Excess)	\$ 4.19	\$ 4.75	\$ 5.50	\$ 6.25
Revenue from Rate	\$ 222,773	\$ 242,597	\$ 257,883	\$ 267,940
Change from Previous		8.9%	6.3%	3.9%



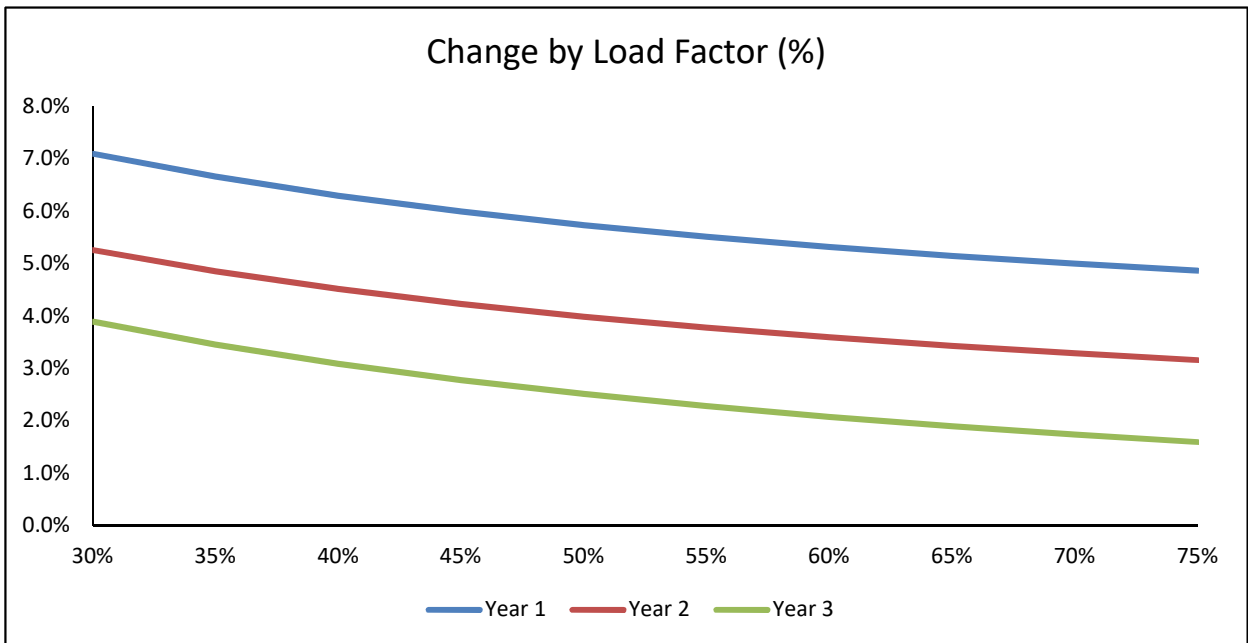
**City of Ashland**  
**Rate Design**  
*Govt/Muni Three Phase*

Rates	Current	Year 1	Year 2	Year 3
<b>Monthly Facilities Charge:</b>				
30kw or Less	\$ 34.47	\$ 37.00	\$ 40.00	\$ 45.00
Over 30kW	\$ 112.10	\$ 112.10	\$ 112.10	\$ 112.10
<b>Energy Charge:</b>				
Block 1 (0 - 3,000 kWh)	\$ 0.10082	\$ 0.10433	\$ 0.10433	\$ 0.10433
Block 2 (3001 - 20,000 kWh)	\$ 0.07645	\$ 0.07996	\$ 0.07996	\$ 0.07996
Block 3 (Excess)	\$ 0.07166	\$ 0.07517	\$ 0.07803	\$ 0.07837
<b>Demand Charge</b>				
Block 1 (0 - 15 kW)	\$ -	\$ -	\$ -	\$ -
Block 2 (Excess)	\$ 4.19	\$ 4.75	\$ 5.50	\$ 6.25
<b>Power Cost Adjustment:</b>				
All Energy	\$ -	\$ -	\$ -	\$ -
Revenue from Rate	\$ 917,686	\$ 968,159	\$ 1,004,465	\$ 1,027,065
Change from Previous		5.50%	3.75%	2.25%



**City of Ashland**  
**Rate Design**  
*Governmental Large Service*

Rates	Current	Year 1	Year 2	Year 3
Monthly Facilities Charge:				
Monthly Charge	\$ 2,639.36	\$ 2,639.36	\$ 2,639.36	\$ 2,639.36
Energy Charge:				
All Energy	\$ 0.05766	\$ 0.05912	\$ 0.05963	\$ 0.05902
Demand Charge				
All Demand	\$ 4.92	\$ 6.00	\$ 7.00	\$ 8.00
Power Cost Adjustment:				
All Energy	\$ -	\$ -	\$ -	\$ -
Revenue from Rate	\$ 878,093	\$ 926,259	\$ 960,993	\$ 982,616
Change from Previous		5.49%	3.75%	2.25%



# Council Communication

## October 31, 2016 Study Session

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### Presentation on Electric Cost of Service Study

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**FROM:**

Mark Holden, director of IT and electric utility, [mark.holden@ashland.or.us](mailto:mark.holden@ashland.or.us)

**SUMMARY**

This is a Study Session to receive and review the results of the Electric Cost of Service and Financial Projection (COS) for the City's Electric Department. This communication provides background for the presentation.

A cost of service study evaluates how a utility's costs are allocated across different customer classes to determine whether those costs are accurately reflected in rates. The COS recommends a series of rate changes over a five-year period. Staff is requesting guidance to move forward with a rate design using the cost of service model developed in the COS and, subject to future rate review and approval by the Council, implementation of the rates developed as a result of the COS based rate design process.

**COUNCIL GOALS SUPPORTED:**

22. Prepare for the impact of climate change on the community

**BACKGROUND AND POLICY IMPLICATIONS:**

In compliance with Council direction of May 5, 2015 a COS was performed prior to requesting future rate changes. The COS focuses on the long term financial viability and stability of the Electric Utility. The COS provides guidance to the Electric Department in evaluating and recommending charges and rates.

The COS identifies the cost to serve each class of customer and provides a model to ensure these costs are recovered through equitable charge and rate structures (i.e. all classes carry their fair share). Taken together with the Department's Ten Year Capital Plan, the COS provides support for near and long term operation of the Electric Department.

The City last performed a cost of service study in Fall 2013. The city, through the RFP process, contracted with Utility Financial Solutions, LLC, to perform the current COS. The COS began in July, 2016 and was completed in October, 2016.

**Summary of Results**

- Charge and rate adjustments are needed to reach and maintain long term financial stability
- The cost of service model is recommended as the basis for charge and rate decisions
  - Unbundles (decouples) cost structures - unbundling costs is a process of identify costs which do not change ("fixed costs") and are not directly related to the consumption (variable) of electricity. The COS assigns unbundled costs to the appropriate customer





- class fixed charge (Ashland's Basic Fee). Unbundling can ensure the long term safe and reliable operation of the distribution system/utility independent of the variable quantity (or source) of electricity sold.
- Equitably assign costs – identifies and assigns the cost to serve customer classes and assigns costs appropriately
  - Encourages Conservation
    - By uncoupling the Utility's fixed costs from consumptive (usage) rates the Utility need not raise consumptive rates to continue to recover fixed charges as actual consumption flattens/declines (conservation). In addition, the conserving customer will see the direct and motivational benefit of lower consumptive bill charges resulting from the customer's conservation efforts.
  - Cross-subsidies exist in the current rate structures. Some classes are above the identified cost of service; some classes are below the identified cost of service. The COS ensures each class is paying their share.
  - The Customer Charge (Ashland's Basic Charge) is proposed to be based on the cost of service for each class of customer. Conservation charges (fixed) are unbundled from usage/consumption and combined with the Customer Charge.

## Discussion of Results

1. Rate Adjustments: Rate adjustments are necessary for the long term reliability and long term health of the electric system. Rate adjustments are needed to ensure no class of customer is unintentionally burdened with costs beyond those needed to support their usage. A detailed analysis of the costs and cost drivers reveals the need to adjust rates to equitably recover these costs. In addition, the cost of service model provides the flexibility and fairness to develop rates when dealing with innovations in electric service (e.g. efficiency, demand response, distributed energy resources) without unfairly shifting costs to unrelated classes or future generations.
2. Cost of Service: Many municipal electric utilities, electric cooperatives, and Public Utility Districts are operating or moving toward a cost of service model. Investor Owned Utilities (e.g., Pacific Corp, Portland General) operate under the cost of service model.

The cost of service model:

- Identifies and unbundles costs
- Identifies rate classes
- Distributes costs to appropriate rate class
- Builds a financial model of the Utility based on cost of service
- Provides a basis for developing charges and rates
- Encourages conservation efforts by decoupling required operational revenue from the effects of encouraging lower consumption

The cost of service model developed in the COS analyzes the Electric Department's costs and assigns these costs to the class of customer benefiting from the costs. The cost of service model provides the flexibility, accuracy, fairness, and financial stability needed to operate in an evolving integrated utility environment.



3. Cross-Subsidies: When examined on a cost basis, the current rate structure contains inequities between classes. The cost of service model identifies costs, identifies the classes benefiting from those costs, and assigns the cost to these rate classes. The existing classes are not fully aligned with the COS results. However, the COS analysis shows the current rates are, on average, within 9.5% of the desired goal. Over time, the rates can be brought in line with the cost of service model without large swings in customer rates (please see below: Table 1: Proposed Rate Changes).
  
4. Customer Charge: Customer charges (Ashland’s current Basic Charge) are adjusted to cover the actual cost to serve each class of customer. Adjustments are meant to eliminate subsidies among classes of customers.  
 As conservation continues to emerge as a higher priority for many utilities, an industry trend is to fund conservation through a fixed monthly customer charge. A fixed conservation charge provides stable funding for conservation efforts and reduces the need to adjust electric rates as the investment in conservation is adjusted up or down. The fixed rate decouples conservation funding from the variability (most often weather related) of electric consumption and could provide stable funding for the forthcoming Climate and Energy Action Plan (CEAP).

Staff has completed the cost of service portion of the COS. Subject to Council guidance, a rate design and implementation schedule will be completed by late December, 2016. Implementation of the cost of service based rates, once reviewed and approved by the Council, is anticipated for July 1, 2017.

**FISCAL IMPLICATIONS:**

The COS provides the Electric Department with a methodology and road map to accomplish an equitable rate structure where customer classes contribute their fair share and provides for the long term safety, reliability and financial health of the electric system.

A summary of rate adjustments recommended in the COS are:

Table 1: Proposed Rate Changes

Rate Adjustments by FY	2018	2019	2020	2021	2022
Increase %	6.90	2.75	2.75	2.75	2.75
	Recommended (COS page 7, Table 6 and page 18, Table 15)				

Notes to Table 1: The rate increase percentage is not a broad application of the single increase percentage across all customer classes. Rather, the rate increase percentage represents the net effect of the class-specific cost of service rates. Since COS revenue for some classes of customers are above and others below the identified cost of service, rates will change an average of 6.9% in FY2018 (range 6.9% ± 2%) and 2.75% in the following years.



**STAFF RECOMMENDATION AND REQUESTED ACTION:**

Staff recommends the COS as the basis for future charges and rates. Staff recommends the development of interim, class specific charges and rates to gradually implement (phase in) the COS recommendations.

Staff is seeking guidance from Council on these points:

- Should staff move forward and design charges and rates using the results of the COS (cost of service model)?
- Should subsidies in the Government and Municipal customer classes be maintained/increased/decreased/expanded?
- Shall staff plan for a phased implementation of the rates developed as a result of the COS (one, two, or three-year phase in)?

**SUGGESTED MOTION:**

N/A

**ATTACHMENTS:**

Summary Report, CITY OF ASHLAND ELECTRIC DEPARTMENT, “Electric Cost of Service Study and Financial Projection”, October 2016



**Summary** Report

# **CITY OF ASHLAND ELECTRIC DEPARTMENT**

**Electric Cost of Service Study and Financial Projection**

October 2016



**Specializing in Cost of Service,  
Rate Design, and Financial Analysis**

Rate Design and Financial Analysis

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October 2016

Mark Holden  
Director of Electric Utility, Telecom and IT  
City of Ashland Electric Department  
90 N. Mountain Ave  
Ashland OR

Dear Mr Holden;

We are pleased to present the Summary Report for the electric cost of service study and financial projection for the City of Ashland Electric Department (Ashland). This report was prepared to provide Ashland with a comprehensive examination of its existing rate structure by an outside party.

The specific purposes of this rate study are:

- Determine electric utility's revenue requirements for fiscal year 2018
- Identify cross-subsidies that may exist between rate classes
- Recommend rate adjustments needed to meet targeted revenue requirements
- Identify the appropriate monthly customer charge for each customer class

This report includes results of the electric cost of service study and financial projection and recommendations on future rate designs.

This report is intended for information and use by the utility and management for the purposes stated above and is not intended to be used by anyone except the specified parties.

Sincerely,

A handwritten signature in black ink, appearing to read "Mark Beauchamp", is written over a horizontal line.

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## 1. Introduction

This report was prepared to provide the City of Ashland Electric Department (Ashland) with an electric cost of service study and financial projection and a comprehensive examination of its existing rate structure by an outside party. The specific purposes of the study are identified below:

- 1) **Determine electric utility's revenue requirements for fiscal year 2018.** Ashland's revenue requirements were projected for the period from 2018 – 2022 and included adjustments for the following:
  - a. Projected power costs
  - b. Capital improvement plan projected over next five years
- 2) **Identify cross-subsidies that may exist between rate classes.** Cross-subsidies exist when certain customer classes subsidize the electric costs of other customers. The rate study identifies if cross-subsidies exist and practical ways to reduce the subsidies. The cost of service study was completed using 2018 projected revenues and expenses. The financial projections are for the period from 2018 – 2022.
- 3) **Recommend rate adjustments needed to meet targeted revenue requirements.** The primary purpose of this study is to identify appropriate revenue requirements and the rate adjustments needed to meet targeted revenue requirements. The report includes a long-term rate track for Ashland to help ensure the financial stability of the utility in future years.
- 4) **Unbundled electric rates.** The cost of providing electricity to customers consists of a number of components, including power generation, distribution, customer services, transmission, and transfers to the general fund. Electric unbundling identifies the cost of each component to aid the utility understanding of its cost structure.
- 5) **Identify the appropriate monthly customer charge for each customer class.** The monthly customer charge consists of fixed costs to service customers that do not vary based on the amount of electricity used.

## 2. Cost of Service Summary

### Utility Rate Process

Ashland retained Utility Financial Solutions to review utility rates and cost of service and make recommendations on the appropriate course of action. This report includes results of the electric cost of service and unbundling study and recommendations on future rate designs.

### Utility Revenue Requirements

To determine revenue requirements, the revenues and expenses for Fiscal Years 2014, 2015 and 2016, 2017 budget were analyzed, with adjustments made to reflect projected operating characteristics. ***The projected financial statements are for cost of service purposes only.***

Table 1 is the projected financial statement for the Electric Department from 2018-2022. The 2018 rate of return calculation established an operating income target of \$514k (See Table 5).

Operating income for 2018 is projected at \$(861)k and increases to \$(1.9)M in 2022. Operating income is one target that helps to determine if rate adjustments are needed. The following pages review cash flow and other factors which can be important indicators.

**Table 1 – Financial Statements (without rate adjustments)**

Description	Projected 2018	Projected 2019	Projected 2020	Projected 2021	Projected 2022
<b>Operating Revenues:</b>					
Electric Sales					
Intergovernmental	184,500	189,113	193,840	198,686	203,653
Charges for Services	14,466,358	14,498,322	14,529,240	14,553,779	14,578,179
Other Charges for Services Revenue (not rates)	260,350	266,859	273,530	280,368	287,378
Miscellaneous	111,788	112,035	112,273	112,463	112,652
<b>Total Operating Revenues</b>	<b>\$ 15,022,996</b>	<b>\$ 15,066,327</b>	<b>\$ 15,108,884</b>	<b>\$ 15,145,297</b>	<b>\$ 15,181,862</b>
<b>Operating Expenses:</b>					
Purchases					
Electric - Supply	\$ 6,886,756	\$ 6,901,972	\$ 7,055,024	\$ 7,349,618	\$ 7,361,940
Electric - Transmission	957,477	957,477	976,626	1,015,691	1,015,691
<b>Total Power Supply Expense</b>	<b>\$ 7,844,232</b>	<b>\$ 7,859,449</b>	<b>\$ 8,031,651</b>	<b>\$ 8,365,309</b>	<b>\$ 8,377,631</b>
Distribution					
Electric - Distribution	\$ 3,500,018	\$ 3,587,519	\$ 3,677,207	\$ 3,769,137	\$ 3,863,365
<b>Total Distribution Expense</b>	<b>\$ 3,500,018</b>	<b>\$ 3,587,519</b>	<b>\$ 3,677,207</b>	<b>\$ 3,769,137</b>	<b>\$ 3,863,365</b>
<b>Other Operating Expenses (Revenues)</b>					
Admin - Conservation	\$ 739,153	\$ 757,631	\$ 776,572	\$ 795,987	\$ 815,886
Electric - Supply (non BPA)	97,990	100,440	102,951	105,525	108,163
Franchise Fee	1,472,671	1,476,518	1,480,277	1,483,415	1,486,556
Allocations					
Central Service - Power Supply (non BPA)	385,060	394,687	404,554	414,668	425,034
Central Service - Distribution	857,095	878,522	900,485	922,997	946,072
Use of Facilities Charge - Distribution	133,250	136,581	139,996	143,496	147,083
Technology Debt - Distribution	541,300	541,300	541,300	541,300	541,300
Depreciation Expense	313,406	325,406	349,406	373,406	397,406
<b>Total Other Operating Expenses</b>	<b>\$ 4,539,924</b>	<b>\$ 4,611,085</b>	<b>\$ 4,695,541</b>	<b>\$ 4,780,793</b>	<b>\$ 4,867,500</b>
<b>Total Operating Expenses</b>	<b>\$ 15,884,175</b>	<b>\$ 16,058,053</b>	<b>\$ 16,404,398</b>	<b>\$ 16,915,239</b>	<b>\$ 17,108,497</b>
<b>Operating Income</b>	<b>\$ (861,179)</b>	<b>\$ (991,725)</b>	<b>\$ (1,295,515)</b>	<b>\$ (1,769,941)</b>	<b>\$ (1,926,635)</b>

## Projected Cash Flow

Table 2 is the projected cash flow for 2018-2022, including projections of capital improvements as provided by Ashland. Changes in the capital improvement plan can greatly affect the cash balance and recommended minimum cash reserve target. The cash balance for 2018 is projected at \$163k and \$(6.85)M in 2022. The recommended minimum cash reserve level for 2018 is \$3M and \$3.25M for 2022.

**Table 2 – Projected Cash Flows (without rate adjustments)**

Description	Projected 2018	Projected 2019	Projected 2020	Projected 2021	Projected 2022
<b>Projected Cash Flows</b>					
Net Income	\$ (855,886)	\$ (991,861)	\$ (1,296,193)	\$ (1,770,349)	\$ (1,926,770)
Depreciation Expense/Amortization	313,406	325,406	349,406	373,406	397,406
Subtract Debt Principal	(21,714)	(21,714)	(21,714)	(21,714)	(21,714)
Cash Available from Operations	\$ (564,194)	\$ (688,170)	\$ (968,502)	\$ (1,418,657)	\$ (1,551,079)
Estimated Annual Capital Additions	576,050	600,000	600,000	600,000	600,000
Net Cash From Operations	\$ (1,140,244)	\$ (1,288,170)	\$ (1,568,502)	\$ (2,018,657)	\$ (2,151,079)
Beginning Cash Balance	\$ 1,303,054	\$ 162,810	\$ (1,125,360)	\$ (2,693,862)	\$ (4,712,519)
Ending Cash Balance	\$ 162,810	\$ (1,125,360)	\$ (2,693,862)	\$ (4,712,519)	\$ (6,863,598)
<b>Total Cash Available</b>	<b>\$ 162,810</b>	<b>\$ (1,125,360)</b>	<b>\$ (2,693,862)</b>	<b>\$ (4,712,519)</b>	<b>\$ (6,863,598)</b>
<b>Recommended Minimum</b>	<b>\$ 3,037,822</b>	<b>\$ 3,080,294</b>	<b>\$ 3,137,714</b>	<b>\$ 3,215,368</b>	<b>\$ 3,232,382</b>

## Minimum Cash Reserve

Table 3 details the minimum level of cash reserves required to help ensure timely replacement of assets and to provide financial stability of the utility. The methodology used to establish this target is based on certain assumptions related to a percentage of operating expense, historical investment, capital improvements, and debt service to be kept in cash reserves. Based on these assumptions, Ashland should maintain a minimum of \$3M in cash reserves for 2018 and \$3.25M in 2022.

**Table 3 – Minimum Cash Reserves (without rate adjustments)**

Description	Projected 2018	Projected 2019	Projected 2020	Projected 2021	Projected 2022
<b>Minimum Cash Reserve Allocation</b>					
Operation & Maintenance Less Depreciation Expense	12.3%	12.3%	12.3%	12.3%	12.3%
Purchase Power Expense	12.3%	12.3%	12.3%	12.3%	12.3%
Historical Rate Base	3%	3%	3%	3%	3%
Current Portion of Debt Service Payment	100%	100%	100%	100%	100%
Five Year Capital Improvements - Net of bond proceeds	20%	20%	20%	20%	20%
<b>Calculated Minimum Cash Level</b>					
Operation & Maintenance Less Depreciation Expense	\$ 952,587	\$ 970,668	\$ 989,179	\$ 1,008,065	\$ 1,027,413
Purchase Power Expense	964,841	966,712	987,893	1,028,933	1,030,449
Historical Rate Base	502,521	520,521	538,521	556,521	574,521
Current Portion of Debt Service Reserve	22,664	22,393	22,121	21,850	-
Five Year Capital Improvements - Net of bond proceeds	595,210	600,000	600,000	600,000	600,000
<b>Minimum Cash Reserve Levels</b>	<b>\$ 3,037,822</b>	<b>\$ 3,080,294</b>	<b>\$ 3,137,714</b>	<b>\$ 3,215,368</b>	<b>\$ 3,232,382</b>
<b>Projected Cash Reserves</b>	<b>\$ 162,810</b>	<b>\$ (1,125,360)</b>	<b>\$ (2,693,862)</b>	<b>\$ (4,712,519)</b>	<b>\$ (6,863,598)</b>

Projected cash balances fall below the recommended minimums during the projection period.

## Debt Coverage Ratio

As Ashland has no bond debt and minimal other debt this section is included for educational purposes only so readers can be informed if considering debt. Debt coverage ratio can be ignored from the point of view of a current target.

Table 4 is the projected debt coverage ratios with capital additions as provided by Ashland. The coverage required in bond ordinances is typically 1.15 – 1.20, however the minimum recommended debt coverage ratio is established at 1.35 – 1.40 for projection purposes a 0.20 premium to ordinance. Maintaining a higher debt coverage ratio is good business practice and helps to achieve the following:

- Helps to ensure adequate funds are available to meet debt service payments in years when sales are low due to temperature fluctuations.
- Obtain higher bond rating, if revenue bonds are sold in the future, to lower interest cost.

**Table 4 – Projected Debt Coverage Ratios (without rate adjustments)**

Description	Projected 2018	Projected 2019	Projected 2020	Projected 2021	Projected 2022
Fixed Cost Coverage Ratio					
Cash Available for Debt Service	\$ (541,258)	\$ (665,506)	\$ (946,109)	\$ (1,396,536)	\$ (1,529,229)
Off System Debt	-	-	-	-	-
Total Available	\$ (541,258)	\$ (665,506)	\$ (946,109)	\$ (1,396,536)	\$ (1,529,229)
Debt Service Including Off System Debt	\$ 22,936	\$ 22,664	\$ 22,393	\$ 22,121	\$ 21,850
<b>Fixed Costs Coverage Ratio</b>	<b>(23.60)</b>	<b>(29.36)</b>	<b>(42.25)</b>	<b>(63.13)</b>	<b>(69.99)</b>
<b>Minimum Fixed Costs Coverage Ratio</b>	<b>1.4</b>	<b>1.4</b>	<b>1.4</b>	<b>1.4</b>	<b>1.4</b>

Debt coverage is adequate for the projection period without changes in rates as the debt is minimal and not subject to ordinances or coverage covenants.

## Rate of Return

The optimal target for setting rates is the establishment of a target operating income to help ensure the following:

- Funding of the inflationary increase on the assets invested in the system. The inflation on the replacement of assets invested in the utility should be recouped through the Operating Income.
- Funding of depreciation expense.
- Adequate rate of return on investment to help ensure current customers are paying their fair share of the use of the infrastructure and not deferring the charge to future generations.
- Funding of interest expense on the outstanding principal on debt. Interest expense is below the operating income line and needs to be recouped through the operating income balance.

As improvements are made to the system, the optimal operating income target will increase unless annual depreciation expense is greater than yearly capital improvements. The revenue requirements for the study are set on the utility basis. Table 5 identifies the utility basis target established for 2018 is \$514k and increases to \$594k in 2022.

**Table 5 – Rate of Return Calculation**

Description	Projected 2018	Projected 2019	Projected 2020	Projected 2021	Projected 2022
<b>Target Operating Income Determinants</b>					
Net Book Value/Working Capital	\$ 7,398,546	\$ 7,673,140	\$ 7,923,734	\$ 8,150,329	\$ 8,352,923
Outstanding Principal on Debt	86,857	65,143	43,429	21,714	-
System Equity	\$ 7,311,689	\$ 7,607,997	\$ 7,880,306	\$ 8,128,614	\$ 8,352,923
<b>Target Operating Income Allocation</b>					
Interest on Debt	1.41%	1.46%	1.56%	1.87%	0.00%
System Equity	7.02%	7.01%	7.02%	7.06%	7.11%
<b>Target Operating Income</b>					
Interest on Debt	\$ 1,221	\$ 950	\$ 679	\$ 407	\$ 136
System Equity	\$ 513,175	\$ 533,305	\$ 553,421	\$ 573,539	\$ 593,671
<b>Target Operating Income</b>	<b>\$ 514,397</b>	<b>\$ 534,255</b>	<b>\$ 554,100</b>	<b>\$ 573,946</b>	<b>\$ 593,807</b>
<b>Projected Operating Income</b>	<b>\$ (861,179)</b>	<b>\$ (991,725)</b>	<b>\$ (1,295,515)</b>	<b>\$ (1,769,941)</b>	<b>\$ (1,926,635)</b>
<b>Rate of Return in %</b>	<b>7.0%</b>	<b>7.0%</b>	<b>7.0%</b>	<b>7.0%</b>	<b>7.1%</b>

## Recommended Rate Track

The study identifies increasing current revenues in 2018, and increase annually thereafter to maintain debt coverage ratios and minimum cash targets. Table 6 is a summary of the financial results detailing the recommended revenue adjustments required to meet target operating income.

**Table 6 – Recommended Revenue Adjustments**

Fiscal Year	Projected Rate Adjustments	Projected Expenses	Projected Revenues	Adjusted Operating Income	Target Operating Income	Projected Cash Balances	Recommended Minimum Cash
2018	6.90%	\$ 15,983,993	\$ 16,021,174	\$ 37,181	\$ 514,397	\$ 1,061,170	\$ 3,050,128
2019	2.75%	16,200,713	16,496,007	295,294	534,255	1,064,512	3,097,882
2020	2.75%	16,591,249	16,983,654	392,404	554,100	1,189,252	3,160,751
2021	2.75%	17,147,575	17,478,199	330,623	573,946	1,277,106	3,244,012
2022	2.75%	17,387,713	17,986,935	599,222	593,807	1,658,269	3,266,806

## Cost of Service Summary Results

A cost of service study was completed to determine the cost of providing service to each class of customers and to assist in design of electric rates for customers. A cost of service study consists of the following general steps:

- 1) Determine utility revenue requirement for test year 2018
- 2) Classify utility expenses into common cost pools
- 3) Allocate costs to customer classes based on the classes' contribution to utility expenses
- 4) Compare revenues received from each class to the cost of service

The cost of service summary is included as Table 7 which compares the projected cost to serve each class with the revenue received from each class. The "% change" column is the revenue adjustment necessary

to meet projected cost of service requirements. The cost of service summary uses the current rates including any adjustment factors.

**Table 7 – Cost of Service Summary**

Customer Class	Cost of Service	Projected Revenues	% Change
Residential Single-Phase	\$ 8,343,058	\$ 7,410,275	12.6%
Seasonal Residential Single	75,378	60,785	24.0%
Telecommunications	73,981	68,342	8.3%
Outdoor Lighting	19,156	19,703	-2.8%
Commercial Service Single Phase	1,907,280	1,720,561	10.9%
Commercial Service Three Phase	3,333,918	3,168,263	5.2%
Governmental Service Single Phase	132,089	100,297	31.7%
Governmental Service Three Phase	475,225	438,354	8.4%
Municipal Service Single Phase	151,481	122,475	23.7%
Municipal Service Three Phase	440,310	479,332	-8.1%
Governmental Large Service	890,057	877,970	1.4%
<b>Total</b>	<b>\$ 15,841,934</b>	<b>\$ 14,466,358</b>	<b>9.5%</b>

## Cost of Service Results

Table 8 shows the average cost of service per kWh and compares the cost to the average revenue per kWh for each customer class.

**Table 8 – Average Cost per kWh vs. Average Revenue per kWh**

Customer Class	Cost of Service \$/kWh	Projected Revenues \$/kWh
Residential Single-Phase	\$ 0.0965	\$ 0.0857
Seasonal Residential Single	0.1066	0.0859
Telecommunications	0.1185	0.1095
Outdoor Lighting	0.0960	0.0988
Commercial Service Single Phase	0.1060	0.0957
Commercial Service Three Phase	0.0897	0.0852
Governmental Service Single Phase	0.1345	0.1021
Governmental Service Three Phase	0.1052	0.0971
Municipal Service Single Phase	0.1361	0.1100
Municipal Service Three Phase	0.0795	0.0865
Governmental Large Service	0.0762	0.0752

Cost differences result from usage patterns of customers and how each class of customer used facilities based on load data provided by Ashland.

## Distribution Costs

Separation of distribution costs help identify distribution charges for each customer class and the fixed monthly customer charge. Distribution charge includes the following costs:

- Operation and maintenance of distribution & transmission system
- Contributions to general fund
- Customer service
- Customer accounting
- Meter reading
- Billing
- Meter operation & maintenance
- Administrative expenses

The distribution charges consist of two components:

- Monthly customer charge to recover the costs of meter reading, billing, customer service, and a portion of maintenance and operations of the distribution system.
- Distribution rate based on billing parameter, (kW or kWh) to recover the cost to operate and maintain the distribution system. Table 9 identifies the cost-based distribution rates for customer classes.

**Table 9 – Distribution Costs by Customer Class (COS)**

Customer Class	Monthly Customer		Billing Basis
	Charge	Distribution Rate	
Residential Single-Phase	\$ 14.09	\$ 0.0296	kWh
Seasonal Residential Single	16.50	0.0418	kWh
Telecommunications	19.45	0.0330	kWh
Commercial Service Single Phase	43.46	11.45	kW
Commercial Service Three Phase	103.90	10.35	kW
Governmental Service Single Phase	51.68	10.16	kW
Governmental Service Three Phase	155.98	11.19	kW
Municipal Service Single Phase	58.97	12.75	kW
Municipal Service Three Phase	127.75	10.64	kW
Governmental Large Service	1,635.79	11.17	kW

## Power Supply Costs

Table 10 identifies the average cost of providing power supply to customers of Ashland.

**Table 10 – Power Supply Costs by Customer Class**

Customer Class	Demand	Billing Basis	Energy	Billing Basis
Residential Single-Phase	\$ 0.0077	kWh	\$ 0.0392	kWh
Seasonal Residential Single	0.0100	kWh	0.0391	kWh
Telecommunications	0.0109	kWh	0.0394	kWh
Commercial Service Single Phase	2.80	KW	0.0393	kWh
Commercial Service Three Phase	2.51	KW	0.0394	kWh
Governmental Service Single Phase	3.14	KW	0.0394	kWh
Governmental Service Three Phase	3.39	KW	0.0394	kWh
Municipal Service Single Phase	3.29	KW	0.0392	kWh
Municipal Service Three Phase	3.38	KW	0.0394	kWh
Governmental Large Service	2.79	KW	0.0385	kWh

## Combined Cost Summary

Table 11 identifies the cost of service rates for each customer class. Charging these rates would directly match the cost of providing service to customers identified in this study.

**Table 11 – Total Costs by Customer Class**

Customer Class	Current Average Customer Charge	COS Monthly Charge	COS Conservation Charge	COS Customer Charge
Residential Single-Phase	\$ 9.62	\$ 14.09	\$ 3.21	\$ 10.87
Seasonal Residential Single	9.62	16.50	5.60	10.89
Telecommunications	17.23	19.45	3.49	15.96
Commercial Service Single Phase	20.29	43.46	7.81	35.65
Commercial Service Three Phase	49.95	103.90	36.07	67.83
Governmental Service Single Phase	17.23	51.68	18.00	33.68
Governmental Service Three Phase	101.01	155.98	87.73	68.25
Municipal Service Single Phase	18.79	58.97	8.37	50.60
Municipal Service Three Phase	54.72	127.75	59.73	68.02
Governmental Large Service	2,639.36	1,635.79	1,413.90	221.89



### 3. Functionalization of Costs

Delivery of electricity consists of many components that bring electricity from the power supply facilities to the communities and eventually into customer facilities. The facilities consist of four major components: transmission, distribution, customer-related services, and administration. Following are general descriptions of each of these facilities and the sub-breakdowns within each category.

#### Transmission

The transmission system is comprised of four types of subsystems that operate together:

- 1) Backbone and inter-tie transmission facilities are the network of high voltage facilities through which a utility's major production sources are integrated.
- 2) Generation set-up facilities are the substations through which power is transformed from a utility's generation voltages to its various transmission voltages.
- 3) Sub-transmission plant consists of lower voltage facilities to transfer electric energy from convenient points on a utility's backbone system to its distribution system.
- 4) Radial transmission facilities are those that are not networked with other transmission lines but are used to serve specific loads directly.

Operation of the transmission system also consists of providing certain services that ensure a stable supply of power. These services are typically referred to as ancillary services. The Federal Energy Regulatory Commission (FERC) has defined six ancillary service charges for the use of transmission facilities. For Ashland, these charges will be passed-through charges by the control area operator. Ancillary services consist of the following:

- **Mandatory Ancillary Service Charges:**
  - Reactive Supply and Voltage Control Regulation and Frequency Response Service
  - Energy Imbalance Charges
  - Operating Reserves Spinning
  - Operating Reserves Supplemental
  - Reactive Power Supply

#### Terminology of Cost of Service

**FUNCTIONALIZATION** – Cost data arranged by functional category (e.g. power supply, transmission, distribution)

**CLASSIFICATION** – Assignment of functionalized costs to cost components (e.g. demand, energy and customer related).

**ALLOCATION** – Allocating classified costs to each class of service based on each class's contribution to that specific cost component.

**DEMAND COSTS** – Costs that vary with the maximum or peak usage. Measured in kilowatts (kW)

**ENERGY COSTS** – Costs that vary over an extended period of time. Measured in kilowatt-hours (kWh)

**CUSTOMER COSTS** – Costs that vary with the number of customers on the system, e.g. metering costs.

**DIRECT ASSIGNMENT** – Costs identified as belonging to a specific customer or group of customers.

## Power losses from use of transmission system

### Distribution

The distribution facilities connect the customer with the transmission grid to provide the customer with access to the electrical power that has been generated and transmitted. The distribution plant includes substations, primary and secondary conductors, poles, and line transformers that are jointly used and in the public right-of-way.

**Substations** typically separate the distribution plant from the transmission system. The substation power transformer “steps down” the voltage to a level that is more practical to install on and under city streets.

**Distribution circuits** are divided into primary and secondary voltages with the primary voltages usually ranging between 35 kV and 4 kV and the secondary below 4 kV.

### Distribution Customer Types

**Sub-transmission customers** are served directly from the substation feeder and bypass both the secondary and primary distribution lines. The charges for this type of customer should reflect the cost of the substation and not include the cost of primary or secondary line charges.

**Primary customers** are typically referred to as customers who have purchased, owned, and maintained their own transformers that convert the voltage to the secondary voltage level. The rates for these customers should reflect the cost of substations and the cost of primary distribution lines and not include the cost of secondary line extensions.

**Secondary customers** have the services provided by the utilities directly into their facilities. The utility provides the customer with the transformer and the connection on the customers’ facilities.

### Customer-Related Services

Certain administrative-type services are necessary to ensure customers are provided service connections and disconnections in a timely manner and the facilities are in place to read meters and bill for customer usages. These services typically consist of the following components:

- Customer Services – The cost of providing personnel to assist customers with questions and dispatch personnel to connect and disconnect meters.
- Billing and Collections – The cost of billing and collections personnel, postage, and supplies.
- Meter Reading – The cost of reading customers’ meters.
- Meter Operation and Maintenance – The cost of installing and maintaining customer meters.

### Administrative Services

These costs are sometimes referred to as overhead costs and relate to functions that cannot be directly-attributed to any service. These costs are spread to the other services through an allocator such as labor, expenses, or total rate base. These costs may consist of City administrative expenses, property insurance, and wages for higher level management of the utility.

## System Losses

As energy moves through each component of the transmission and distribution system, some of the power is lost and cannot be sold to customers. Losses vary based on time of day and season. Typically, as system usage increases or ambient temperature increases, the percentages of losses that occur also increase. These losses are recovered from distribution customers through an analysis of the peak losses that occur in the system. The average system losses and unaccounted for energy for Ashland are approximately 4.1%. (Typical municipal system losses are approximately 5.4%)

#### 4. Unbundling Process

The cost of power supply, distribution, and customer services are identified as part of the unbundling process and are the first step in determining unbundled charges to customers. The total revenue requirements of \$15.85M are separated into four categories identified in Table 12.

**Table 12 – Breakdown of Ashland Cost Structure**

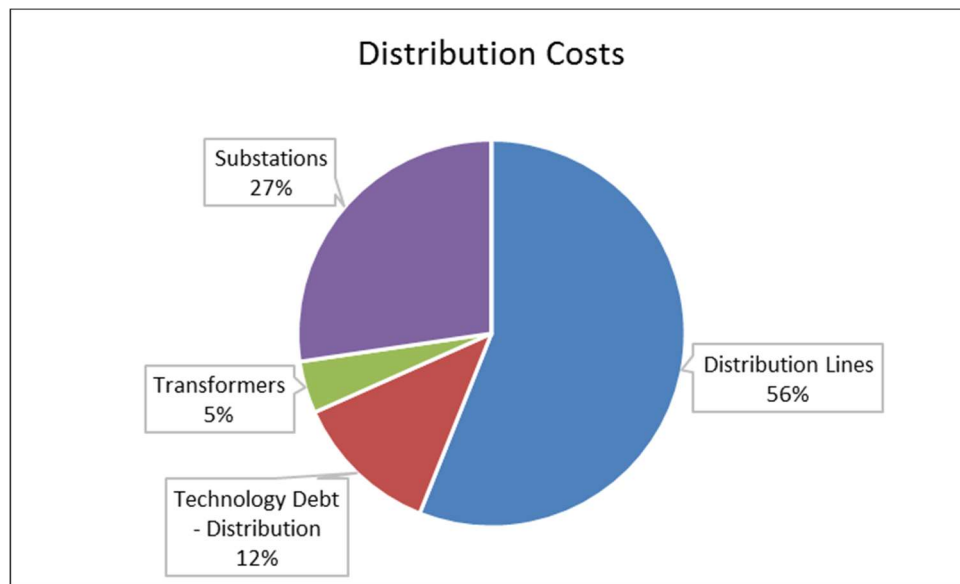
Utility Costs	
Power Supply	\$ 7,844,232
Distribution	\$ 4,406,582
Franchise Fee	\$ 1,472,671
Customer	\$ 2,118,448
	<b>\$ 15,841,934</b>

Ashland is projected to expend 49% of its total costs toward power supply. Distribution related costs are 28%; franchise fee is 10% and customer service 13%. These components are broken down into each of the subcomponents and are identified in the following sections.

#### Distribution Breakdown

Distribution rates consist of a number of different components. Total distribution-related costs of 4.4M for 2018 are broken down into the main components including substations, transformers, and distribution lines. Figure 1 shows the breakdown of distribution components identified in the study.

**Figure 1 – Breakdown of Distribution Costs**



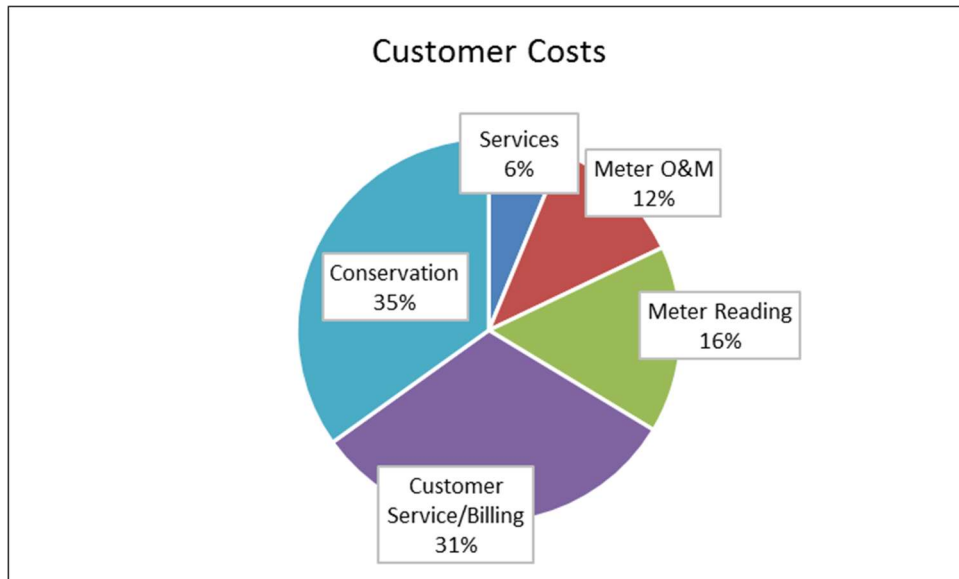
Each of these components is allocated to customer groups based on certain factors established in the study. These factors are based on the efficiency of each customer class and the time of day or the season

the electricity is used. Other factors are also considered, such as the length of line extensions to reach certain customer classes.

**Customer-Related Cost Breakdown**

Ashland total expenses for customer-related costs are \$2.12M for 2018. The cost is broken down into the components identified in Figure 2.

**Figure 2 – Breakdown of Customer Costs**



**Power Supply Cost Breakdown**

Power supply costs for 2018 were made up of purchased power expenses.

## 5. Significant Assumptions

This section outlines the procedures used to develop the cost of service and unbundling study for Ashland and the related significant assumptions.

### Forecasted Operating Expenses

Forecasted expenses were based on 2014, 2015 and 2016, 2017 budget adjusted for power supply costs and inflation. The table below is a summary of the expenses used in the analysis; the projected operating expenses include an adjustment for any city contributions.

**Table 13 – Projected Operating Expenses for 2018– 2022**

Description	Projected 2018	Projected 2019	Projected 2020	Projected 2021	Projected 2022
<b>Operating Expenses:</b>					
Purchases					
Electric - Supply	\$ 6,886,756	\$ 6,901,972	\$ 7,055,024	\$ 7,349,618	\$ 7,361,940
Electric - Transmission	957,477	957,477	976,626	1,015,691	1,015,691
<b>Total Power Supply Expense</b>	<b>\$ 7,844,232</b>	<b>\$ 7,859,449</b>	<b>\$ 8,031,651</b>	<b>\$ 8,365,309</b>	<b>\$ 8,377,631</b>
Distribution					
Electric - Distribution	\$ 3,500,018	\$ 3,587,519	\$ 3,677,207	\$ 3,769,137	\$ 3,863,365
<b>Total Distribution Expense</b>	<b>\$ 3,500,018</b>	<b>\$ 3,587,519</b>	<b>\$ 3,677,207</b>	<b>\$ 3,769,137</b>	<b>\$ 3,863,365</b>
Other Operating Expenses (Revenues)					
Admin - Conservation	\$ 739,153	\$ 757,631	\$ 776,572	\$ 795,987	\$ 815,886
Electric - Supply (non BPA)	97,990	100,440	102,951	105,525	108,163
Franchise Fee	1,472,671	1,476,518	1,480,277	1,483,415	1,486,556
Allocations					
Central Service - Power Supply (non BPA)	385,060	394,687	404,554	414,668	425,034
Central Service - Distribution	857,095	878,522	900,485	922,997	946,072
Use of Facilities Charge - Distribution	133,250	136,581	139,996	143,496	147,083
Technology Debt - Distribution	541,300	541,300	541,300	541,300	541,300
Depreciation Expense	313,406	325,406	349,406	373,406	397,406
<b>Total Other Operating Expenses</b>	<b>\$ 4,539,924</b>	<b>\$ 4,611,085</b>	<b>\$ 4,695,541</b>	<b>\$ 4,780,793</b>	<b>\$ 4,867,500</b>
<b>Total Operating Expenses</b>	<b>\$ 15,884,175</b>	<b>\$ 16,058,053</b>	<b>\$ 16,404,398</b>	<b>\$ 16,915,239</b>	<b>\$ 17,108,497</b>
<b>Operating Income</b>	<b>\$ (861,179)</b>	<b>\$ (991,725)</b>	<b>\$ (1,295,515)</b>	<b>\$ (1,769,941)</b>	<b>\$ (1,926,635)</b>

Power supply costs from 2018 – 2022 are based on Ashland’s current charges adjusted for system growth factors and inflation.

### Load Data

Load data is one of the most critical components of a cost of service study. Information from the billing statistics were used to determine the usage patterns of each customer class after reconciling revenues with financial statements to ensure a good basis for development of the study.

### Annual Projection Assumptions

The kWh sales forecast is based on FY2016 actual adjusted for 0.0625% growth. Table 14 details growth, inflation of expenses, changes in purchase power costs and interest earned on investments.

**Table 14 – Projection Annual Escalation Factors 2018– 2022**

Fiscal Year	Inflation	Growth	Purchase Power Change	Purchase Power Transmission	Investment Income
2018	2.5%	0.2%	6.0%	4.0%	0.5%
2019	2.5%	0.2%	0.0%	0.0%	0.5%
2020	2.5%	0.2%	2.0%	2.0%	0.5%
2021	2.5%	0.2%	4.0%	4.0%	0.5%
2022	2.5%	0.2%	0.0%	0.0%	0.5%

### System Loss Factors

Losses occurring from the transmission and distribution of electricity can vary from year to year depending upon weather and system loading.

### Revenue Forecast

The revenue forecast was based on FY2016 usages adjusted for growth rate assumptions.

## 6. Recommendations and Additional Information

We recommend that the utility move toward cost of service for each customer class.

The study indicates rate adjustments are needed to meet minimum cash and operating income targets. To ensure the utility meets financial targets and remains financially stable, the rate track identified in should be considered:

**Table 15 – Recommended Rate Adjustments 2018– 2022**

Fiscal Year	Projected Rate Adjustments	Projected Expenses	Projected Revenues	Adjusted Operating Income	Target Operating Income	Projected Cash Balances	Recommended Minimum Cash
2018	6.90%	\$ 15,983,993	\$ 16,021,174	\$ 37,181	\$ 514,397	\$ 1,061,170	\$ 3,050,128
2019	2.75%	16,200,713	16,496,007	295,294	534,255	1,064,512	3,097,882
2020	2.75%	16,591,249	16,983,654	392,404	554,100	1,189,252	3,160,751
2021	2.75%	17,147,575	17,478,199	330,623	573,946	1,277,106	3,244,012
2022	2.75%	17,387,713	17,986,935	599,222	593,807	1,658,269	3,266,806

The cost of service study identified some customer classes are subsidizing other customer classes. We recommend Ashland moves toward cost of service using a bandwidth of plus or minus 2%. Using the 6.9% rate adjustment, this would result in no customer class given a rate increase greater than 8.9% and the lowest increase would be 4.9%. Table 16 identifies the cost of service charges compared with the projected current revenues for each class. Classes that indicate a lower % change than the total percentage change are providing subsidy to other customer classes, conversely customer classes with a higher % change than the total percentage are receiving subsidy.

**Table 16 – Cost of Service Summary Results**

Customer Class	Cost of Service	Projected Revenues	% Change
Residential Single-Phase	\$ 8,343,058	\$ 7,410,275	12.6%
Seasonal Residential Single	75,378	60,785	24.0%
Telecommunications	73,981	68,342	8.3%
Outdoor Lighting	19,156	19,703	-2.8%
Commercial Service Single Phase	1,907,280	1,720,561	10.9%
Commercial Service Three Phase	3,333,918	3,168,263	5.2%
Governmental Service Single Phase	132,089	100,297	31.7%
Governmental Service Three Phase	475,225	438,354	8.4%
Municipal Service Single Phase	151,481	122,475	23.7%
Municipal Service Three Phase	440,310	479,332	-8.1%
Governmental Large Service	890,057	877,970	1.4%
<b>Total</b>	<b>\$ 15,841,934</b>	<b>\$ 14,466,358</b>	<b>9.5%</b>



Ashland may consider movements in the customer charges to move toward cost of service based customer charges to help ensure fixed distribution charges are collected in the customer charge. Table 17 compares the total cost of service monthly customer charges with the current charges. By charging cost of service rates for the monthly charge Ashland reduces its risk associated with power usage fluctuations due to weather etc.

**Table 17 – Customer Charge Comparison**

Customer Class	Current Average Customer Charge	COS Monthly Charge
Residential Single-Phase	\$ 9.62	\$ 14.09
Seasonal Residential Single	9.62	16.50
Telecommunications	17.23	19.45
Commercial Service Single Phase	20.29	43.46
Commercial Service Three Phase	49.95	103.90
Governmental Service Single Phase	17.23	51.68
Governmental Service Three Phase	101.01	155.98
Municipal Service Single Phase	18.79	58.97
Municipal Service Three Phase	54.72	127.75
Governmental Large Service	2,639.36	1,635.79

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## **Accountant's Compilation Report**

Governing Body  
City of Ashland Electric Department

The accompanying forecasted statements of revenues and expenses of the City of Ashland Electric Department (utility) were compiled for the year ending December 31, 2018 in accordance with guidelines established by the American Institute of Certified Public Accountants.

The purpose of this report is to assist management in forecasting revenue requirements and determining the cost to service each customer class. This report should not be used for any other purpose.

A compilation is limited to presenting, in the form of a forecast; information represented by management and does not include evaluation of support for any assumptions used in projecting revenue requirements. We have not audited the forecast and, accordingly, do not express an opinion or any other form of assurance on the statements or assumptions accompanying this report.

Differences between forecasted and actual results will occur since some assumptions may not materialize and events and circumstances may occur that were not anticipated. Some of these variations may be material. Utility Financial Solutions has no responsibility to update this report after the date of this report.

This report is intended for information and use by the governing body and management for the purposes stated above. This report is not intended to be used by anyone except the specified parties.

UTILITY FINANCIAL SOLUTIONS

Mark Beauchamp, CPA, CMA, MBA  
Holland, MI  
October 2016