



**Power System
Engineering**

2019

2019 Client Rate Survey Report

Prepared for:

Cost of Service Study Clients

Customized Report for COS Study Clients

“Technical expertise and knowing the big picture of the industry is crucial.

PSE did a really good job of providing options and giving us their views on what the industry is doing and where our rates should be positioned.”

West River Electric Association (South Dakota)

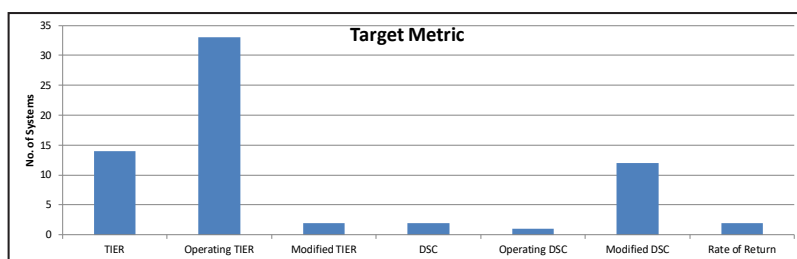


Section 1: Financial Results

1. Return Requirements

The total cost of service for an electric utility is comprised of operating expenses and a required return. The required return can be established based on a rate of return, coverage ratio or from a cash needs method. Regardless, the intent for a not-for-profit electric cooperative is to generate a return (a.k.a. margin) sufficient to 1) fund plant growth, 2) retire capital credits, 3) achieve or maintain an appropriate equity position and 4) meet lender loan covenants. The table and graph summarize the Target Metric used to determine the return requirements from PSE's studies completed from 2015 through 2019. The graph columns indicate the number of cooperatives that used each type of metric.

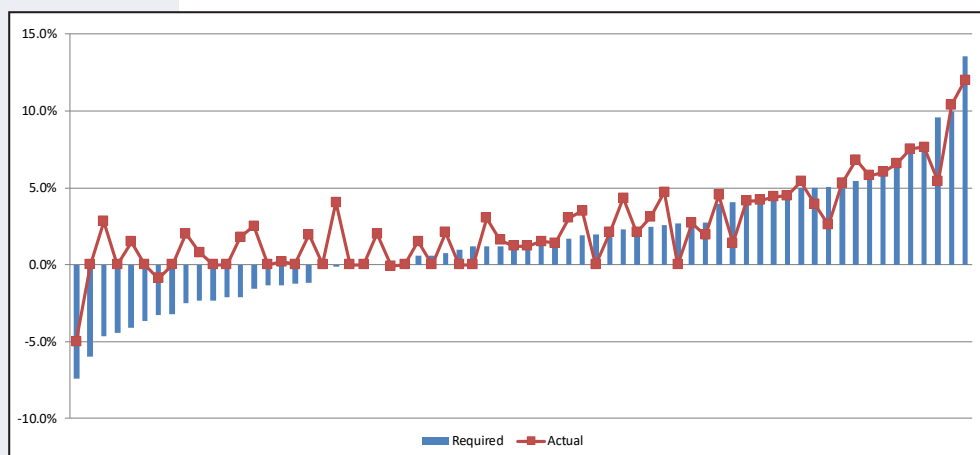
Target Metric	# of Systems	Average Value	Low Value	Median	High Value
TIER	14	2.29	1.25	2.15	3.47
Operating TIER	33	1.75	1.10	1.60	3.60
Modified TIER	2	1.35	1.30	1.35	1.40
DSC	2	2.00	2.00	2.00	2.00
Operating DSC	1	1.60	1.60	1.60	1.60
Modified DSC	12	1.72	1.35	1.59	3.16
Rate of Return	2	4.6%	3.5%	4.6%	5.8%
Rate of Return (all calculated)	65	5.2%	2.4%	5.1%	8.1%



2. Percentage Change

While we determine the rate change "required" to recover the total revenue requirement, the actual change implemented through rate design may be different. Many different factors need to be addressed in determining the actual change: 1) the timing of the change, 2) additional changes identified over the planning horizon, and 3) the impact of the required change. Several cooperatives implemented an increase greater than the immediate need in order to reduce future increases. The table and graph summarize the required change initially determined to be needed and the actual change implemented.

	Required Change Calculated per Revenue Requirement	Actual Change Implemented per Rate Design
Median Change	1.3%	2.0%
Minimum Change	-7.4%	-5.0%
Highest Change	13.6%	12.0%



"I enjoyed working with PSE. They have a great, experienced team that is willing to think outside the box."

East Central Energy (Minnesota)



Section 2: Class Cost of Service Study Results

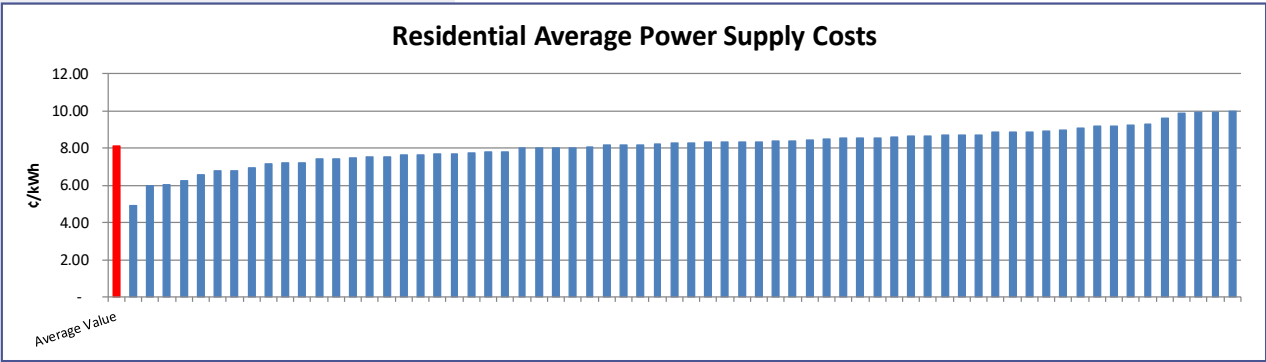
The basic objective of a Class Cost of Service (COS) analysis is to identify the cost of providing service to each rate class based upon load and service characteristics. The cooperative's plant investment and revenue requirements are separated into the functions of power supply, transmission and distribution costs. These functionalized costs are further classified as energy, capacity and customer-related costs. The following summarizes the key results of the COS studies of PSE clients.

1. Power Costs

For purposes of this report, power costs comprise capacity and energy-related costs for both power supply and transmission. The results can be substantially different between Cooperatives based on the power supplier and the load characteristics of the system and/or rate classes.

Rate Class	Survey Results		
	Average Value	Low Value	High Value
Residential/Single Phase	8.14	4.91	9.98
Small Commercial	7.94	4.91	9.79
Large Power	7.78	5.01	12.26
Total System	7.33	4.30	8.95

Values are expressed as c/kWh sold

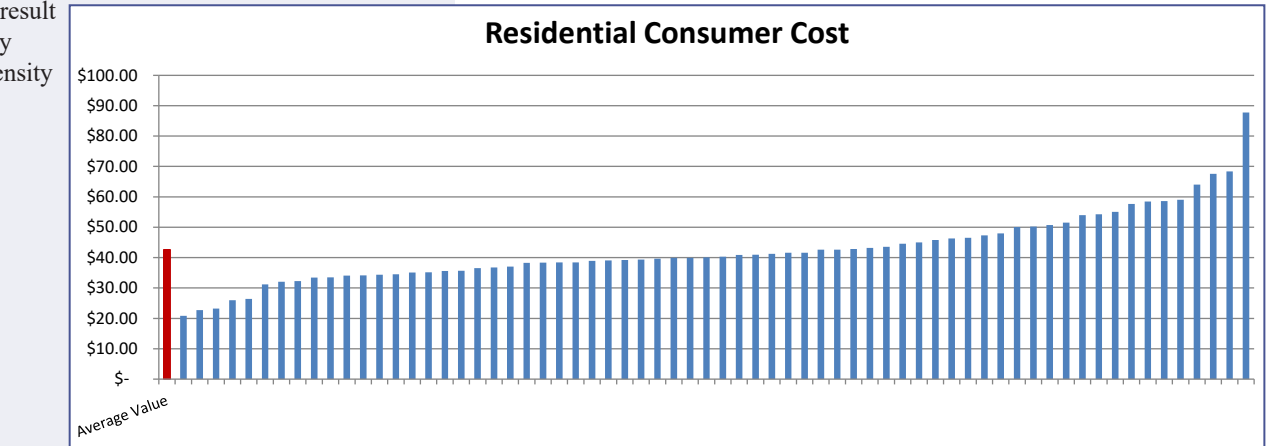


2. Distribution Consumer Costs

The consumer-related distribution costs are the result of the number and location of each customer and do not vary significantly with usage. These costs are comprised of margins, metering and consumer accounting expenses, and often a portion of primary line and transformer related expenses. As would be expected, the result is substantially affected by density and the COS methodology employed.

Rate Class	Survey Results		
	Average Value	Low Value	High Value
Residential/Single Phase	\$ 42.55	\$ 20.85	\$ 87.75
Small Commercial	\$ 65.20	\$ 23.89	\$ 132.59
Large Power	\$ 92.07	\$ -----	\$ 188.27

Values are expressed as \$/consumer/month



Numbers used in the chart above are representative of the COS results rather than rate design.

Report continued —○



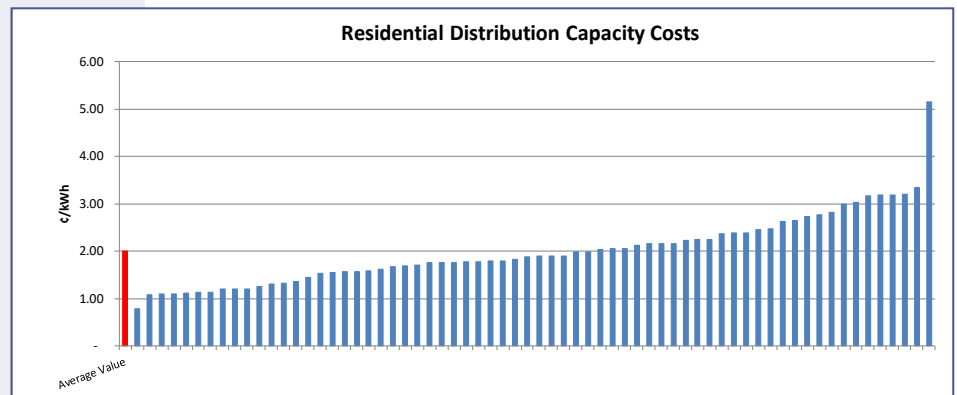
Section 2: Class Cost of Service Study Results (cont.)

3. Distribution Capacity Costs

These are the costs related to owning, operating and maintaining the facilities required to meet the power (i.e. size) requirements of the customer. While these costs may be recovered through a demand charge or an energy charge, they are largely fixed in nature.

Rate Class	Survey Results		
	Average Value	Low Value	High Value
Residential/Single Phase	2.0	0.78	5.15
Small Commercial	1.92	0.90	4.70
Large Power	1.82	-	4.25

Values are expressed as c/kWh sold



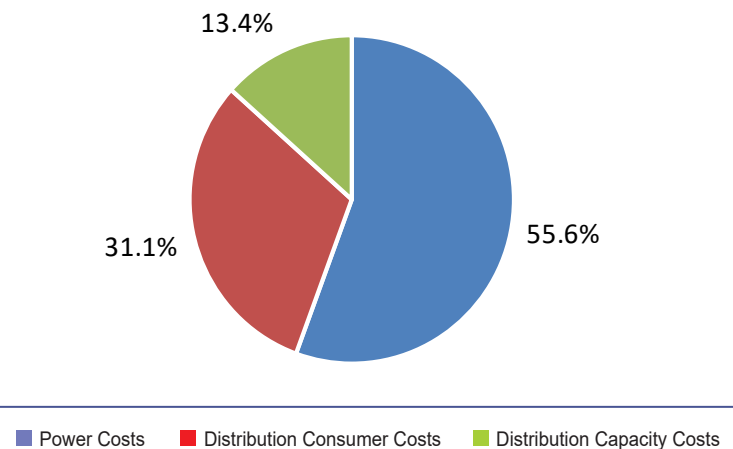
4. Unbundled Cost

Based on the studies from the last three years, the table below represents the unbundled costs for the average total system & the general rate classes. While the results can be substantially different between cooperatives, power costs (including transmission) typically represent the largest share of costs associated with the cost of providing service to the system, and each rate class.

Rate Class	Survey Average Value
Total System	
Power Costs	60.8%
Distribution Consumer Costs	24.4%
Distribution Capacity Costs	14.8%
Residential/Single Phase	
Power Costs	55.6%
Distribution Consumer Costs	31.1%
Distribution Capacity Costs	13.4%
Small Commercial	
Power Costs	62.4%
Distribution Consumer Costs	23.0%
Distribution Capacity Costs	14.6%
Large Power	
Power Costs	78.4%
Distribution Consumer Costs	3.3%
Distribution Capacity Costs	18.3%

For the purposes of the survey, power costs include transmission

Residential - Unbundled Costs (Survey Average)



"Everything MVEC asked for was handled with great professionalism; PSE staff were easy to work with and very knowledgeable in dealing with each of our inquires."

Minnesota Valley Electric Cooperative (Minnesota)

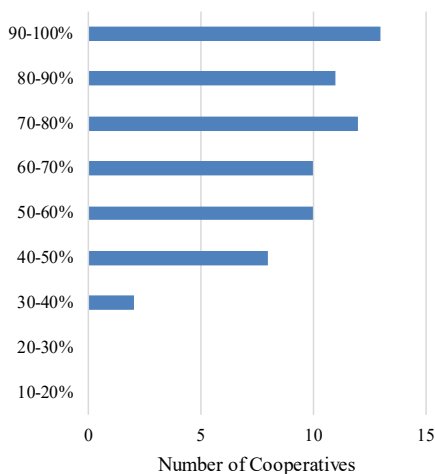


Section 3: Rate Design

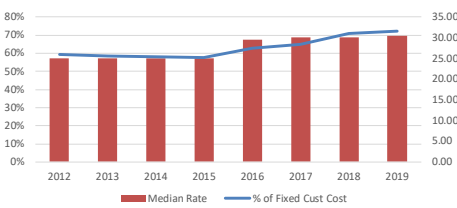
1. Customer Charge

In rate design, the Customer Charge (a.k.a. Basic Charge, Facility Charge, Service Charge, etc.) is intended to recover the utility's costs that vary based upon the number of customers versus peak demand or energy consumption. The Class Cost of Service Study (COS) is used to determine how much of the revenue requirement is appropriately determined as a consumer-related cost for each rate class. In addition to considering the COS results, the utility's actual rate design should consider other rate design objectives including the customer impact, rate continuity, promotion of efficient use of resources, customer acceptance, etc. In full consideration of all these factors, the table below provides a comparison of the Residential Class (or equivalent) Customer Charge from PSE study's for the past five years.

Residential Customer Charge as % of Fixed Customer Costs



Trend of Residential Customer Charge as % of Fixed Customer Costs



Residential Class Customer Charge Comparison

Cooperative	State	Previous Rate	New Rate	Dollar Change	Percent Change	Class COS Reference	Percent of Class COS
Utility 1	CO	\$ 18.00	\$ 20.00	\$ 2.00	11%	\$20.85	96%
Utility 2	MN	\$ 8.80	\$ 10.00	\$ 1.20	14%	\$22.70	44%
Utility 3	MN	\$ 13.50	\$ 13.50	\$ -	0%	\$23.22	58%
Utility 4	ND	\$ 19.00	\$ 25.00	\$ 6.00	32%	\$25.97	96%
Utility 5	MN	\$ 8.25	\$ 9.35	\$ 1.10	13%	\$26.41	35%
Utility 6	KY	\$ 9.35	\$ 14.00	\$ 4.65	50%	\$31.19	45%
Utility 7	WI	\$ 13.25	\$ 15.00	\$ 1.75	13%	\$32.05	47%
Utility 8	WI	\$ 36.00	\$ 36.00	\$ -	0%	\$32.23	112%
Utility 9	IA	\$ 13.50	\$ 22.00	\$ 8.50	63%	\$32.66	67%
Utility 10	MN	\$ 19.50	\$ 24.75	\$ 5.25	27%	\$33.44	74%
Utility 11	KS	\$ 8.95	\$ 25.00	\$ 16.05	179%	\$33.49	75%
Utility 12	MN	\$ 36.00	\$ 38.00	\$ 2.00	6%	\$34.04	112%
Utility 13	KY	\$ 8.97	\$ 15.20	\$ 6.23	69%	\$34.18	44%
Utility 14	WI	\$ 32.70	\$ 34.50	\$ 1.80	6%	\$34.39	100%
Utility 15	CO	\$ 29.95	\$ 34.50	\$ 4.55	15%	\$34.53	100%
Utility 16	IN	\$ 19.00	\$ 20.00	\$ 1.00	5%	\$35.17	57%
Utility 17	MN	\$ 28.75	\$ 30.25	\$ 1.50	5%	\$35.57	85%
Utility 18	WI	\$ 21.95	\$ 30.70	\$ 8.75	40%	\$35.70	86%
Utility 19	WI	\$ 24.00	\$ 28.00	\$ 4.00	17%	\$36.50	77%
Utility 20	WI	\$ 28.50	\$ 36.10	\$ 7.60	27%	\$36.73	98%
Utility 21	IN	\$ 25.00	\$ 30.00	\$ 5.00	20%	\$37.02	81%
Utility 22	IA	\$ 19.75	\$ 36.50	\$ 16.75	85%	\$38.29	95%
Utility 23	MN	\$ 42.00	\$ 42.00	\$ -	0%	\$38.36	109%
Utility 24	KS	\$ 14.40	\$ 16.40	\$ 2.00	14%	\$38.42	43%
Utility 25	WI	\$ 32.00	\$ 32.00	\$ -	0%	\$38.44	83%
Utility 26	WI	\$ 37.00	\$ 37.00	\$ -	0%	\$38.91	95%
Utility 27	KS	\$ 15.00	\$ 20.00	\$ 5.00	33%	\$39.05	51%
Utility 28	MO	\$ 29.00	\$ 29.00	\$ -	0%	\$39.19	74%
Utility 29	WI	\$ 32.00	\$ 35.00	\$ 3.00	9%	\$39.34	89%
Utility 30	WI	\$ 31.95	\$ 33.00	\$ 1.05	3%	\$39.64	83%
Utility 31	IN	\$ 25.00	\$ 25.00	\$ -	0%	\$39.97	63%
Utility 32	OH	\$ 29.50	\$ 32.75	\$ 3.25	11%	\$40.17	82%
Utility 33	IA	\$ 16.00	\$ 30.00	\$ 14.00	88%	\$40.32	74%
Utility 34	WI	\$ 32.90	\$ 36.90	\$ 4.00	12%	\$40.90	90%
Utility 35	MN	\$ 23.00	\$ 23.00	\$ -	0%	\$40.94	56%
Utility 36	KS	\$ 30.00	\$ 30.00	\$ -	0%	\$41.27	73%
Utility 37	MN	\$ 27.50	\$ 33.50	\$ 6.00	22%	\$41.58	81%
Utility 38	WI	\$ 37.00	\$ 37.00	\$ -	0%	\$41.60	89%
Utility 39	CO	\$ 15.00	\$ 15.00	\$ -	0%	\$42.15	36%
Utility 40	WI	\$ 33.46	\$ 33.46	\$ -	0%	\$42.42	79%
Utility 41	WI	\$ 34.07	\$ 34.98	\$ 0.91	3%	\$42.58	82%
Utility 42	WI	\$ 32.00	\$ 34.00	\$ 2.00	6%	\$42.59	80%
Utility 43	SD	\$ 30.00	\$ 30.00	\$ -	0%	\$43.17	69%
Utility 44	MN	\$ 41.00	\$ 44.00	\$ 3.00	7%	\$44.27	99%
Utility 45	OR	\$ 26.00	\$ 26.00	\$ -	0%	\$44.55	58%
Utility 46	CO	\$ 20.00	\$ 20.00	\$ -	0%	\$44.98	44%
Utility 47	SD	\$ 23.00	\$ 25.25	\$ 2.25	10%	\$45.79	55%
Utility 48	SD	\$ 25.00	\$ 30.00	\$ 5.00	20%	\$46.30	65%
Utility 49	SD	\$ 27.00	\$ 30.00	\$ 3.00	11%	\$46.50	65%
Utility 50	CO	\$ 29.00	\$ 29.00	\$ -	0%	\$46.64	62%
Utility 51	IA	\$ 30.00	\$ 35.00	\$ 5.00	17%	\$47.31	74%
Utility 52	WI	\$ 35.00	\$ 35.00	\$ -	0%	\$47.88	73%
Utility 53	SD	\$ 20.00	\$ 30.00	\$ 10.00	50%	\$50.23	60%
Utility 54	IN	\$ 44.00	\$ 44.00	\$ -	0%	\$50.70	87%
Utility 55	WI	\$ 33.00	\$ 33.00	\$ -	0%	\$53.63	62%
Utility 56	SD	\$ 32.00	\$ 32.00	\$ -	0%	\$54.00	59%
Utility 57	MN	\$ 20.00	\$ 22.00	\$ 2.00	10%	\$54.26	41%
Utility 58	OH	\$ 30.00	\$ 41.00	\$ 11.00	37%	\$55.03	75%
Utility 59	WV	\$ 24.95	\$ 24.95	\$ -	0%	\$56.32	44%
Utility 60	IN	\$ 33.60	\$ 33.60	\$ -	0%	\$57.69	58%
Utility 61	MN	\$ 35.00	\$ 40.00	\$ 5.00	14%	\$58.45	68%
Utility 62	SD	\$ 50.00	\$ 54.00	\$ 4.00	8%	\$59.00	92%
Utility 63	SD	\$ 50.00	\$ 50.00	\$ -	0%	\$64.00	78%
Utility 64	WY	\$ 28.00	\$ 38.00	\$ 10.00	36%	\$67.57	56%
Utility 65	SD	\$ 37.00	\$ 42.00	\$ 5.00	14%	\$68.35	61%
Utility 66	SD	\$ 48.00	\$ 55.00	\$ 7.00	15%	\$87.75	63%
Average - All		\$ 27.02	\$ 30.34	\$ 3.32	12%	\$42.55	71%
Average - Increased		\$ 24.94	\$ 30.04	\$ 5.10	20%	\$41.54	72%

Continued



PSE Rates and Financial Team

We have been completing rate design, revenue requirements, COS, contract rate, large load rate, time-of-use rate, line extension policy, merger and acquisition, long-range financial forecasting, expert testimony, and other related projects for our utility clients for over 40 years. Our staff includes former utility rate analysts, a former utility CFO, and CEO, along with MBAs and CPAs. The team holds various undergraduate and advanced degrees in mathematics, accounting, business, and economics.

We regularly attend and present at industry events concerning rate design, COS, accounting, distributed generation, emerging trends, and financial matters and have conducted training seminars for domestic and international utilities. Collectively, our rates and financial planning group has over 135 years of experience working for or consulting with utilities on rate and financial matters. Over the past five years, PSE has completed approximately 84 Rate and COS studies for electric utilities, spanning 16 states.



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