



Power System
Engineering, Inc.



2016

2016 Client Rate Survey Report

Prepared for:

Cost of Service Study Clients

Customized Report for COS Study Clients

“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 inquiries.”

Minnesota Valley Electric Cooperative (Minnesota)

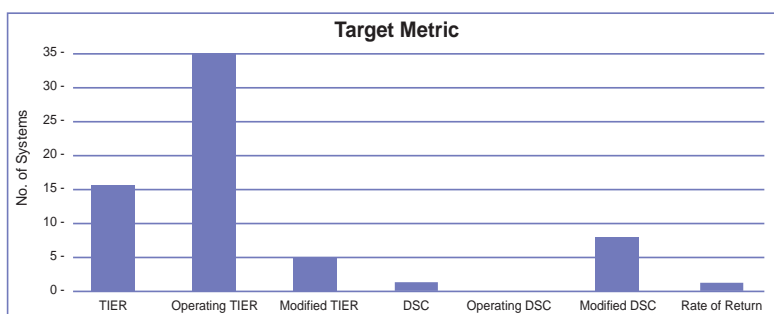
FULL-SERVICE CONSULTANTS

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 2012 through 2016.

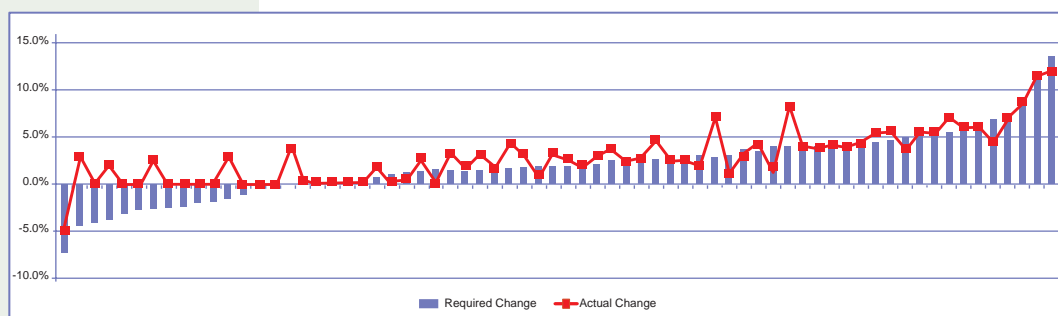
Target Metric Used to Determine Return Requirements					
Target Metric	No. of Systems	Average Value	Low Value	Median	High Value
TIER	16	2.01	1.25	2.00	2.72
Operating TIER	35	1.73	1.10	1.50	3.60
Modified TIER	5	1.52	1.30	1.57	1.74
DSC	2	2.00	2.00	2.05	2.10
Operating DSC	0	-	-	-	-
Modified DSC	8	1.58	1.40	1.53	2.00
Rate of Return	2	4.6%	3.5%	4.6%	5.7%
Rate of Return (all calculated)	56	5.5%	3.5%	5.4%	7.7%



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.

Required vs. Actual Change Comparison		
	Required Change Calculated per Revenue Requirement	Actual Change Implemented per Rate Design
Median Change	2.0%	2.7%
Minimum Change	-7.4%	-5.0%
Highest Change	13.6%	12.0%



Client Testimonial

“Everything went really well, the final product was very good. The project came in on time and under budget.”

Connexus (Minnesota)



Section 2: Class Cost of Service Study Results

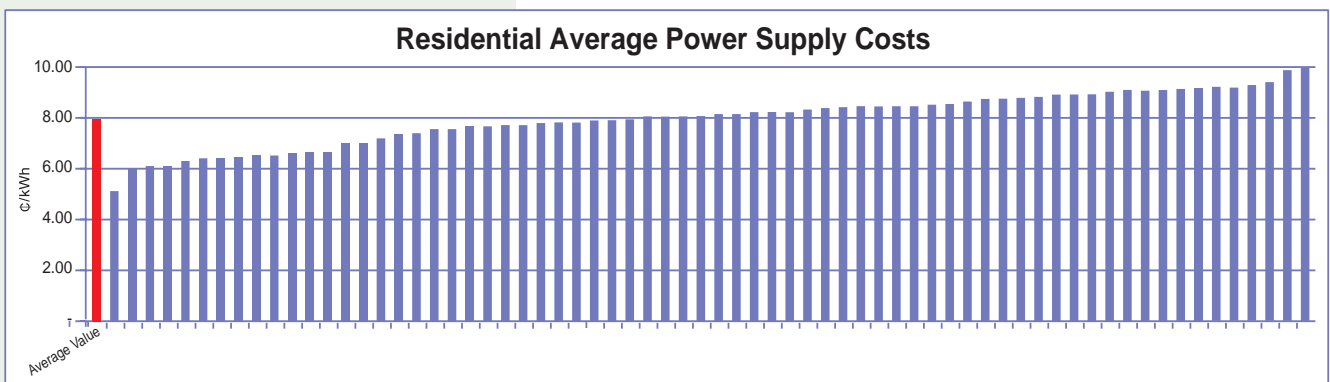
The basic objective of a Class Cost of Service (COS) analysis is to identify the cost of providing service to each rate class based upon load and service characteristics. The cooperative's plant investment and revenue requirements are separated into the functions of power supply, transmission, and distribution 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	7.92	5.12	9.93
Small Commercial	7.84	3.25	9.79
Large Power	7.84	3.77	12.49
Total System	7.13	4.57	8.92

Values are expressed as ¢/kWh sold

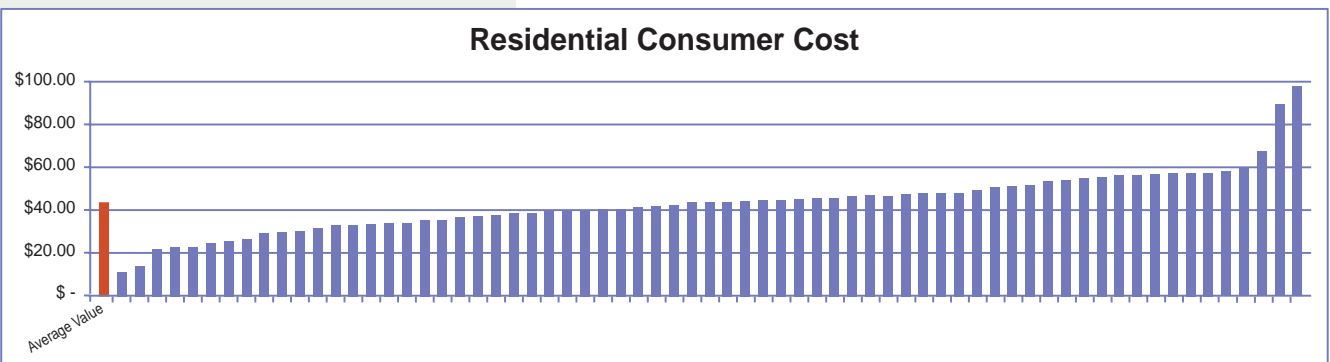


2. Distribution Consumer Costs

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	\$ 43.03	\$ 11.25	\$ 97.13
Small Commercial	\$ 71.62	\$ 18.16	\$ 225.48
Large Power	\$ 115.40	\$ 42.48	\$ 289.33

Values are expressed as \$/consumer/month



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

Report continued



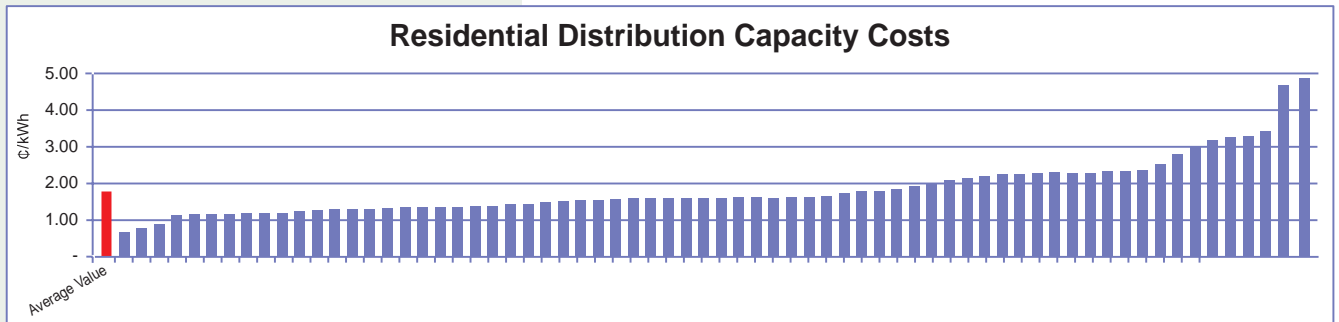
Section 2: Class Cost of Service Study Results (cont.)

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	1.82	0.78	4.87
Small Commercial	1.83	0.81	4.66
Large Power	1.77	0.64	4.25

Values are expressed as ¢/kWh sold



4. Unbundled Cost

Based on the studies from the last five years, the table represents the unbundled costs for the average total system and 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	61.1%
Distribution Consumer Costs	25.0%
Distribution Capacity Costs	13.9%
Residential/Single Phase	
Power Costs	56.6%
Distribution Consumer Costs	30.6%
Distribution Capacity Costs	12.8%
Small Commercial	
Power Costs	62.2%
Distribution Consumer Costs	23.7%
Distribution Capacity Costs	14.1%
Large Power	
Power Costs	78.3%
Distribution Consumer Costs	4.1%
Distribution Capacity Costs	17.6%

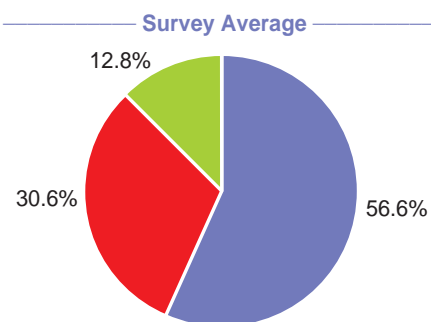
For the purposes of this survey, power costs include transmission

Client Testimonial

“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)

Residential - Unbundled Costs



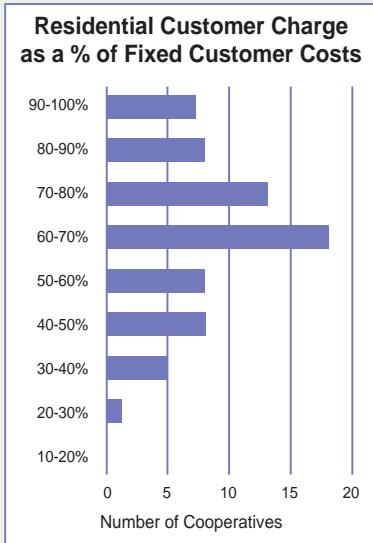
■ Power Costs ■ Distribution Consumer Costs ■ Distribution Capacity Costs

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 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 customer impact, rate continuity, promotion of efficient use of resources, customer acceptance, etc. In full consideration of all these factors, the table on the right provides a comparison of the Residential Class (or equivalent) Customer Charge from PSE studies for the past five years.



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	\$ 11.00	\$ 11.00	\$ -	0%	\$ 11.25	98%
Utility 2	IA	\$ 10.50	\$ 13.50	\$ 3.00	29%	\$ 13.63	99%
Utility 3	CO	\$ 16.00	\$ 18.00	\$ 2.00	13%	\$ 21.71	83%
Utility 4	IA	\$ 17.00	\$ 19.00	\$ 2.00	12%	\$ 22.06	86%
Utility 5	MN	\$ 8.80	\$ 10.00	\$ 1.20	14%	\$ 22.70	44%
Utility 6	MN	\$ 13.50	\$ 13.50	\$ -	0%	\$ 23.22	58%
Utility 7	ND	\$ 19.00	\$ 25.00	\$ 6.00	32%	\$ 25.97	96%
Utility 8	MN	\$ 8.25	\$ 9.35	\$ 1.10	13%	\$ 26.41	35%
Utility 9	MN	\$ 16.00	\$ 25.00	\$ 9.00	56%	\$ 29.68	84%
Utility 10	MN	\$ 11.25	\$ 19.50	\$ 8.25	73%	\$ 30.33	64%
Utility 11	IN	\$ 17.00	\$ 19.00	\$ 2.00	12%	\$ 30.33	63%
Utility 12	WI	\$ 13.25	\$ 15.00	\$ 1.75	13%	\$ 32.05	47%
Utility 13	WI	\$ 32.70	\$ 32.70	\$ -	0%	\$ 32.27	101%
Utility 14	CO	\$ 29.95	\$ 34.50	\$ 4.55	15%	\$ 34.53	100%
Utility 15	OH	\$ 25.00	\$ 25.00	\$ -	0%	\$ 35.10	71%
Utility 16	IN	\$ 19.00	\$ 20.00	\$ 1.00	5%	\$ 35.17	57%
Utility 17	WI	\$ 24.00	\$ 28.00	\$ 4.00	17%	\$ 36.50	77%
Utility 18	WI	\$ 28.00	\$ 30.00	\$ 2.00	7%	\$ 36.66	82%
Utility 19	MI	\$ 12.00	\$ 14.00	\$ 2.00	17%	\$ 36.78	38%
Utility 20	IN	\$ 25.00	\$ 30.00	\$ 5.00	20%	\$ 37.02	81%
Utility 21	MN	\$ 18.00	\$ 21.00	\$ 3.00	17%	\$ 37.10	57%
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	MO	\$ 29.00	\$ 29.00	\$ -	0%	\$ 39.19	74%
Utility 26	WI	\$ 25.25	\$ 28.29	\$ 3.04	12%	\$ 39.64	71%
Utility 27	WI	\$ 31.95	\$ 33.00	\$ 1.05	3%	\$ 39.64	83%
Utility 28	ND	\$ 28.00	\$ 28.00	\$ -	0%	\$ 39.96	70%
Utility 29	IN	\$ 25.00	\$ 25.00	\$ -	0%	\$ 39.97	63%
Utility 30	OH	\$ 18.00	\$ 18.00	\$ -	0%	\$ 40.06	45%
Utility 31	IA	\$ 16.00	\$ 30.00	\$ 14.00	88%	\$ 40.32	74%
Utility 32	MN	\$ 23.00	\$ 23.00	\$ -	0%	\$ 40.94	56%
Utility 33	SD	\$ 18.50	\$ 20.75	\$ 2.25	12%	\$ 41.16	50%
Utility 34	KS	\$ 30.00	\$ 30.00	\$ -	0%	\$ 41.27	73%
Utility 35	MN	\$ 27.50	\$ 33.50	\$ 6.00	22%	\$ 41.58	81%
Utility 36	WI	\$ 32.00	\$ 34.00	\$ 2.00	6%	\$ 42.59	80%
Utility 37	WI	\$ 30.30	\$ 35.00	\$ 4.70	16%	\$ 42.66	82%
Utility 38	CO	\$ 28.00	\$ 28.00	\$ -	0%	\$ 42.86	65%
Utility 39	SD	\$ 30.00	\$ 30.00	\$ -	0%	\$ 43.17	69%
Utility 40	MI	\$ 9.00	\$ 10.00	\$ 1.00	11%	\$ 43.42	23%
Utility 41	SC	\$ 12.00	\$ 24.00	\$ 12.00	100%	\$ 43.55	55%
Utility 42	WI	\$ 28.00	\$ 30.00	\$ 2.00	7%	\$ 44.11	68%
Utility 43	WI	\$ 32.50	\$ 35.00	\$ 2.50	8%	\$ 44.65	78%
Utility 44	CO	\$ 20.00	\$ 20.00	\$ -	0%	\$ 44.98	44%
Utility 45	SD	\$ 25.00	\$ 30.00	\$ 5.00	20%	\$ 46.30	65%
Utility 46	SD	\$ 27.00	\$ 30.00	\$ 3.00	11%	\$ 46.50	65%
Utility 47	OH	\$ 25.00	\$ 30.00	\$ 5.00	20%	\$ 47.31	63%
Utility 48	IA	\$ 30.00	\$ 35.00	\$ 5.00	17%	\$ 47.31	74%
Utility 49	WI	\$ 30.00	\$ 35.00	\$ 5.00	17%	\$ 47.98	73%
Utility 50	MN	\$ 18.25	\$ 20.00	\$ 1.75	10%	\$ 48.99	41%
Utility 51	IA	\$ 20.00	\$ 36.50	\$ 16.50	83%	\$ 50.09	73%
Utility 52	SD	\$ 20.00	\$ 30.00	\$ 10.00	50%	\$ 50.23	60%
Utility 53	WI	\$ 29.00	\$ 33.00	\$ 4.00	14%	\$ 51.51	64%
Utility 54	SD	\$ 16.00	\$ 21.00	\$ 5.00	31%	\$ 52.62	40%
Utility 55	MN	\$ 24.00	\$ 35.00	\$ 11.00	46%	\$ 53.08	66%
Utility 56	SD	\$ 32.00	\$ 37.00	\$ 5.00	16%	\$ 54.19	68%
Utility 57	MN	\$ 32.00	\$ 34.00	\$ 2.00	6%	\$ 55.84	61%
Utility 58	WI	\$ 34.00	\$ 36.00	\$ 2.00	6%	\$ 56.43	64%
Utility 59	MN	\$ 15.00	\$ 25.00	\$ 10.00	67%	\$ 57.10	44%
Utility 60	IN	\$ 33.04	\$ 44.00	\$ 10.96	33%	\$ 57.29	77%
Utility 61	IN	\$ 33.60	\$ 33.60	\$ -	0%	\$ 57.69	58%
Utility 62	WY	\$ 15.50	\$ 20.00	\$ 4.50	29%	\$ 57.78	35%
Utility 63	MN	\$ 35.00	\$ 40.00	\$ 5.00	14%	\$ 58.45	68%
Utility 64	IN	\$ 34.50	\$ 37.00	\$ 2.50	7%	\$ 58.61	63%
Utility 65	SD	\$ 40.00	\$ 40.00	\$ -	0%	\$ 59.81	67%
Utility 66	SD	\$ 25.00	\$ 29.00	\$ 4.00	16%	\$ 64.54	45%
Utility 67	SD	\$ 48.00	\$ 55.00	\$ 7.00	15%	\$ 87.75	63%
Utility 68	MN	\$ 25.00	\$ 30.00	\$ 5.00	20%	\$ 97.13	31%
Average - All		\$ 23.71	\$ 27.48	\$ 3.77	16%	\$ 43.03	64%
Average - Increased		\$ 22.76	\$ 27.69	\$ 4.93	22%	\$ 44.15	63%

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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 35 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 130 years of experience working for or consulting with utilities on rate and financial matters. Over the past five years, PSE has completed approximately 100 Rate and COS studies for electric utilities, spanning 13 states.

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