

Cost-of-Service and Rate Design Study for Rochester Public Utilities

September 2020



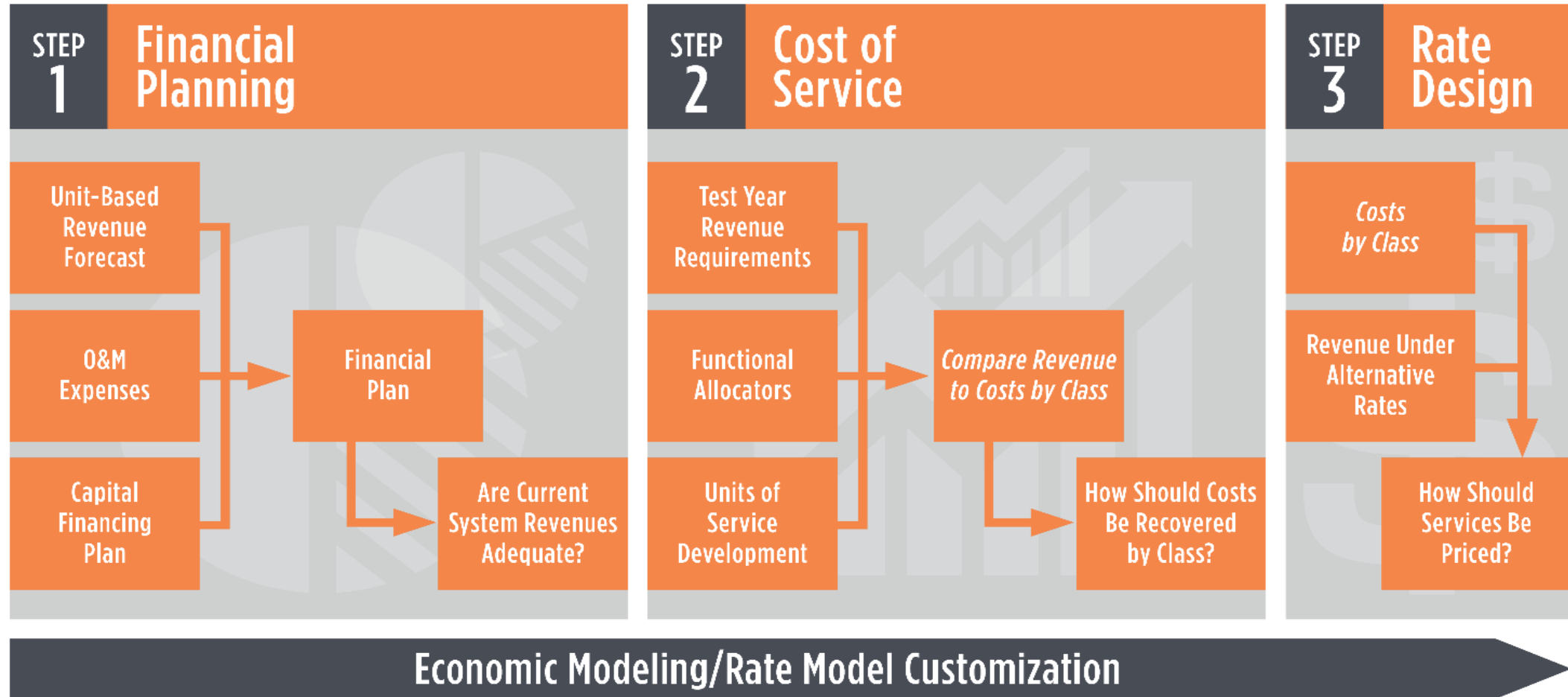
Overview

1. Objectives
2. Study Components
3. Financial Forecast
4. Cost of Service
5. Rate Design

Objectives of the Study

- Update base on 2019 Five-Year Financial Plan
- Determine Cost of Providing Service to each class
- Develop and Refine New Rate Designs
- Provide Rate Recommendations for Future Consideration

Study Components



Financial Forecast

- Reviewed Cash Flow Analysis Results
 - Updated financial forecast model sales, power cost, capital, and O&M projections
 - Minimum cash reserves, capital replacement reserves, coverage ratios, and target income are acceptable currently but starting to decline
- Reviewed Financial Plan with RPU management
 - Financial plan developed assumes pre-Covid 19 conditions
 - Operating margins and cash balances acceptable currently
 - No rate increases / decreases proposed for 2021
 - RPU will continue to monitor financial conditions in budget process

RPU Financial Strategy

Rates

- Based on cost of providing service per Board policy
- Reasonable, Compensatory and Uniform within same Class (**Home Rule Charter**)
- Match fixed charge with fixed costs and commodity charge with variable costs
- No cross subsidies between rate classes
- Regionally and nationally competitive without compromising safety or reliability

AA Bond Rating

- Target Change in Net Assets (Net Income)
- Debt Coverage Ratio
- Minimum Cash Reserves & Capital Replacement Funds
- Equity Percentage

Cost-of-Service Analysis

- Step 1: Unbundle Annual Revenue Requirement:
 - Power Supply Demand, Energy, and Generation
 - Distribution Costs (Primary, Secondary)
 - Customer Costs
- Step 2: Develop Cost Allocation Factors:
 - Demand Allocation
 - Energy Allocation
 - Distribution Allocation
 - Customer Allocation
- Step 3: Assign Revenue Requirements
 - Determined Unit Costs of Service
 - Assign Costs to Customer Classes
 - Compare Costs with Revenues
 - Determine Revenue Adjustment

Cost-of-Service Analysis

	Total System	Residential	Small General Service	Medium General Service	Large General Service	Large Industrial	Lighting	Company Use, No Charge
Cost-of-Service Summary								
Total	\$148,255,454	\$55,413,960	\$17,551,749	\$41,815,031	\$13,966,070	\$17,470,093	\$1,759,583	\$278,968
Monthly Cost Per Consumer	\$162.52	\$90.72	\$321.41	\$6,706.50	\$83,131.37	\$727,920.55	\$13.82	\$1,937.28
Average Cost per kWh	\$0.1133	\$0.1570	\$0.1246	\$0.1112	\$0.1060	\$0.1054	\$0.2490	\$0.1096
Power Supply Costs	\$107,495,474	\$33,904,503	\$12,980,690	\$33,502,133	\$11,619,428	\$14,586,120	\$675,822	\$226,778
Monthly Cost Per Consumer	\$117.84	\$55.51	\$237.70	\$5,373.24	\$69,163.26	\$607,755.00	\$5.31	\$1,574.85
Average Cost per kWh	\$0.0822	\$0.0960	\$0.0921	\$0.0891	\$0.0882	\$0.0880	\$0.0957	\$0.0891
Power Delivery Costs	\$7,220,384	\$2,172,400	\$867,154	\$2,312,110	\$802,370	\$1,007,209	\$43,480	\$15,661
Monthly Cost Per Consumer	\$7.92	\$3.56	\$15.88	\$370.83	\$4,776.01	\$41,967.06	\$0.34	\$108.76
Average Cost per kWh	\$0.0055	\$0.0062	\$0.0062	\$0.0062	\$0.0061	\$0.0061	\$0.0062	\$0.0062
Distribution Costs	\$18,253,947	\$7,332,127	\$2,568,629	\$4,910,011	\$1,515,195	\$1,872,619	\$21,858	\$33,509
Monthly Cost Per Consumer	\$20.01	\$12.00	\$47.04	\$787.49	\$9,019.02	\$78,025.81	\$0.17	\$232.70
Average Cost per kWh	\$0.0140	\$0.0208	\$0.0182	\$0.0131	\$0.0115	\$0.0113	\$0.0031	\$0.0132
Customer Costs	\$15,285,648	\$12,004,930	\$1,135,276	\$1,090,778	\$29,077	\$4,144	\$1,018,422	\$3,020
Monthly Cost Per Consumer	\$16.76	\$19.65	\$20.79	\$174.94	\$173.08	\$172.68	\$8.00	\$20.98
Average Cost per kWh	\$0.0117	\$0.0340	\$0.0081	\$0.0029	\$0.0002	\$0.0000	\$0.1441	\$0.0012
Revenue Comparison								
Revenue Requirement	\$148,255,454	\$55,413,960	\$17,551,749	\$41,815,031	\$13,966,070	\$17,470,093	\$1,759,583	\$278,968
Revenue from Current Rates	\$148,255,453	\$53,611,934	\$19,088,931	\$42,918,520	\$13,309,877	\$17,607,642	\$1,718,549	\$0
Difference	\$0	\$1,802,026	-\$1,537,182	-\$1,103,489	\$656,193	-\$137,549	\$41,033	\$278,968
Required Adjustment	0.0%	3.4%	-8.1%	-2.6%	4.9%	-0.8%	2.4%	0.0%
Rev. Requirement - \$/kWh	\$0.1133	\$0.1570	\$0.1246	\$0.1112	\$0.1060	\$0.1054	\$0.2490	\$0.1096
Rev. from Current Rates	\$0.1133	\$0.1519	\$0.1355	\$0.1142	\$0.1010	\$0.1062	\$0.2432	\$0.0000
Difference	\$0.0000	\$0.0051	(\$0.0109)	(\$0.0029)	\$0.0050	(\$0.0008)	\$0.0058	\$0.1096
Required Adjustment	0.0%	3.4%	-8.1%	-2.6%	4.9%	-0.8%	2.4%	0.0%

*Cost of Service technical analysis demonstrates that Residential and Large General Service need to increase while Small and Medium General Service should decrease

Rate Design Analysis

- No changes to existing rates for 2021
- Residential Time of Use Rates (New)
- LED Street Lighting Rates (New)
- Future rate considerations

Residential TOU Rate



RPU 2019 EV & DSM Studies identified need for Time of Use (TOU) rate for Residential Customers.



TOU rates provide an incentive to customers to shift use to off peak times and save money.

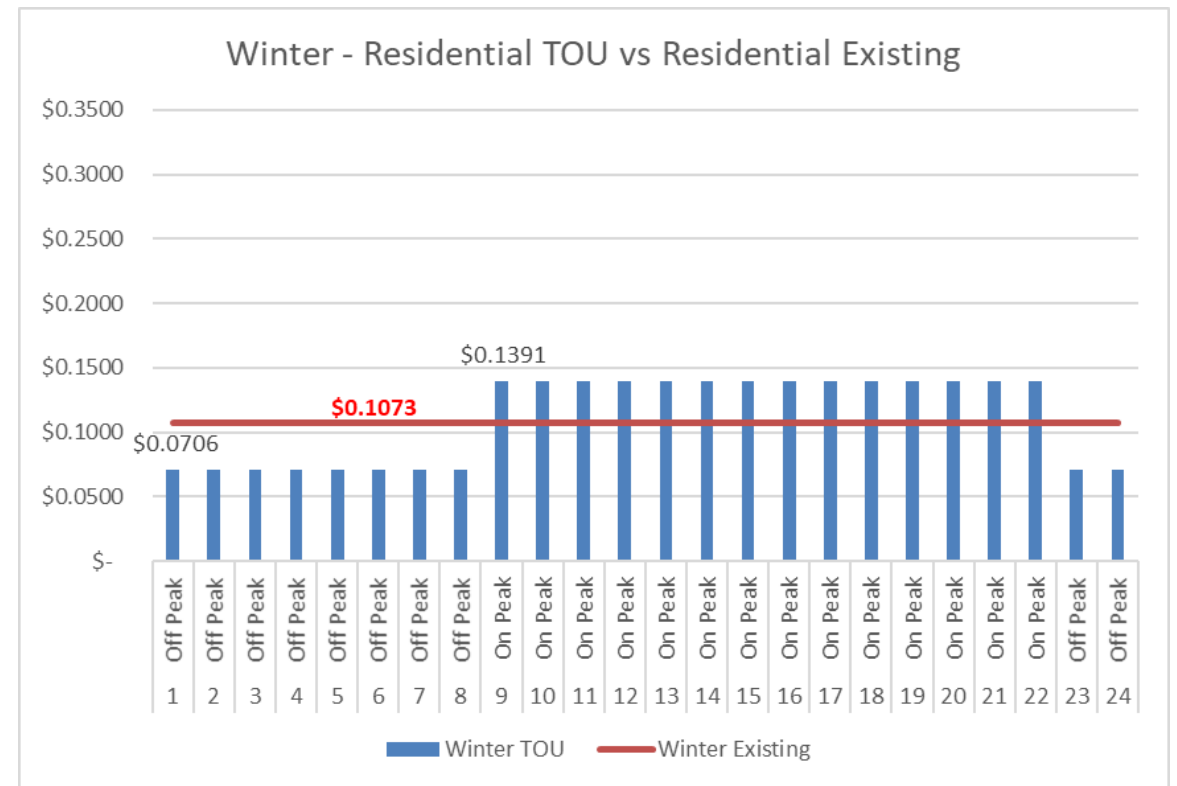
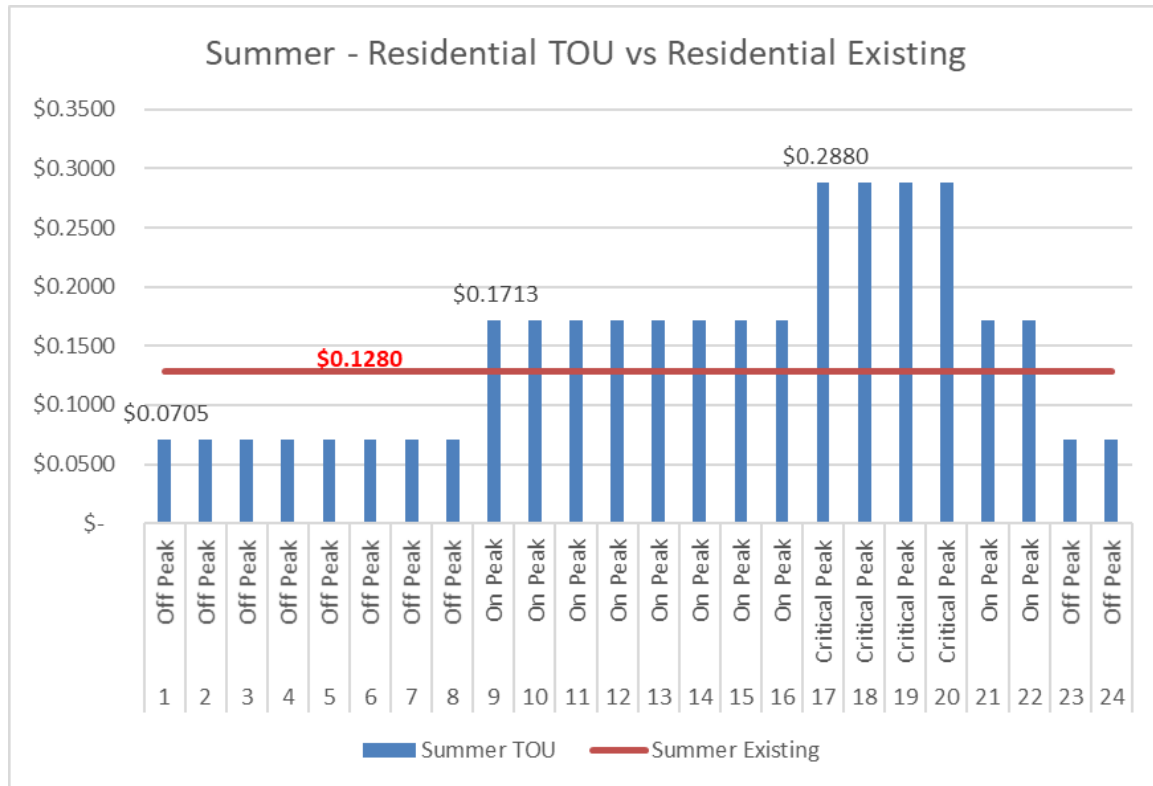


TOU rates are adopted 85% of the time by customers with EV's for off-peak charging.



This study developed cost of service based TOU rates that equitably benefit RPU, Residential customers, and EV owners.

Residential TOU Rates and Existing Rates



- Rates are bill neutral over the year based on average Residential usage profile.
- No change in behavior = no change in bill on average.

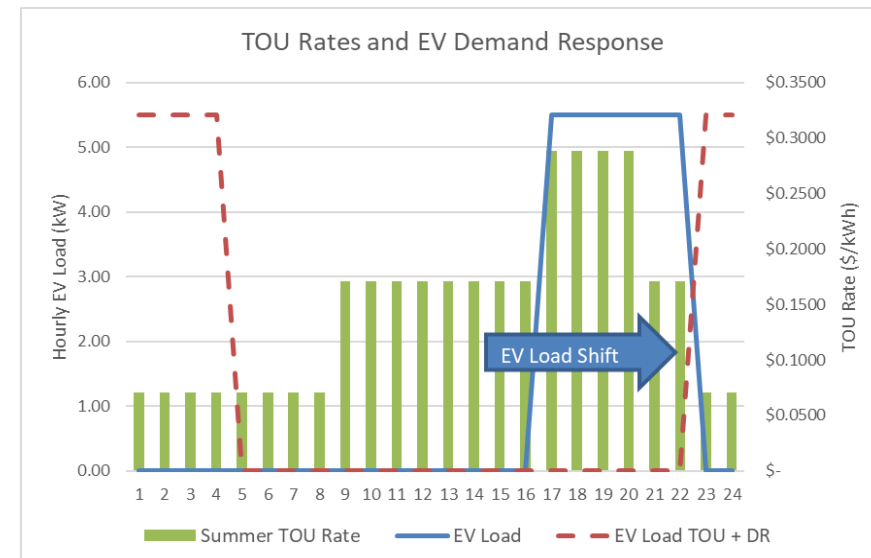
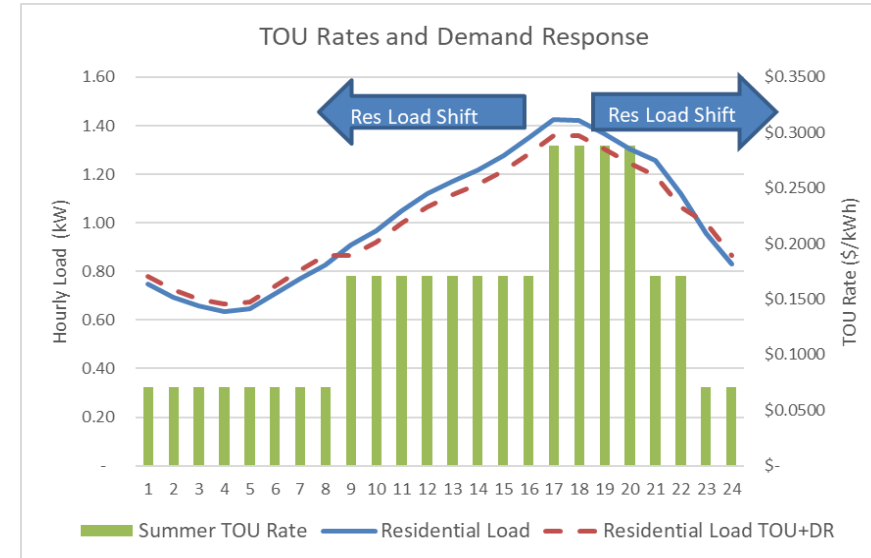
TOU Rate Demand Response & Savings

Typical RPU Residential Customer

- Price differentials drive demand response
- Critical Peak : On Peak of ~1.7 -> 4.5% shift
- On Peak : Off Peak of ~2.4 -> 7% shift
- Estimated RPU & Customer Savings = **\$14/year***
 - *Expect behavioral change
 - *Savings are based on customer behavior changes

Typical Electric Vehicle

- Low off-peak rate drives EV charging behavior
- Nearly all EV charging will shift to off-peak
- Estimated RPU & Customer Savings = **\$196/year**



Residential TOU Rate Summary

RPU TOU Pilot			
<u>Time Period</u>	<u>Time Period</u>		<u>Summer</u>
Critical Peak	4pm-8pm	\$	0.2880
On-Peak	8am-4pm; 8pm-10pm	\$	0.1713
Off-Peak	10pm- 8am	\$	0.0705
Standard	All Hours	\$	0.1280
<u>Time Period</u>	<u>Time Period</u>		<u>Winter</u>
Critical Peak	4pm-8pm	\$	0.1391
On-Peak	8am-4pm; 8pm-10pm	\$	0.1391
Off-Peak	10pm- 8am	\$	0.0706
Standard	All Hours	\$	0.1073

City Street Lighting Rates

- City is replacing (and funding) unmetered lamp replacement with LEDs
- LED streetlights will use less energy than existing HPS streetlights
- Two sets of streetlight rates required for LED streetlights
 - RPU Owned
 - City Owned

City Street Lighting Rates

- City owned fixtures recovers RPU utility system cost to serve the light.
- RPU owned fixture rates also recover cost for fixture (20 years).
- Need to transition billing systems to a lighting equipment rate and utility charge rate

Type	Fixture Ownership	Energy Rate
LED	City Owned Fixture	\$0.4165/kWh
LED	RPU Owned Fixture	<i>\$0.5572/kWh</i>

Future Rate Planning Considerations

Interruptible Credits & Standby Rates

- Working towards adjusting credit value and mechanisms

Rate Class Consolidation

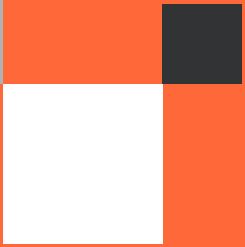
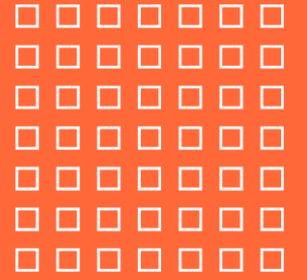
- Considering freezing and potentially merging some classes

Power Cost Adjustment

- Recover PCA monthly versus over 12 months

Demand Rates

- Consider wider use of demand rates for Residential and Small General Use



Discussion And Questions

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