Orcas Power & Light Cooperative

Cost of Service and Rate Study
August 2018

Presented by:
Mike Searcy, Managing Consultant

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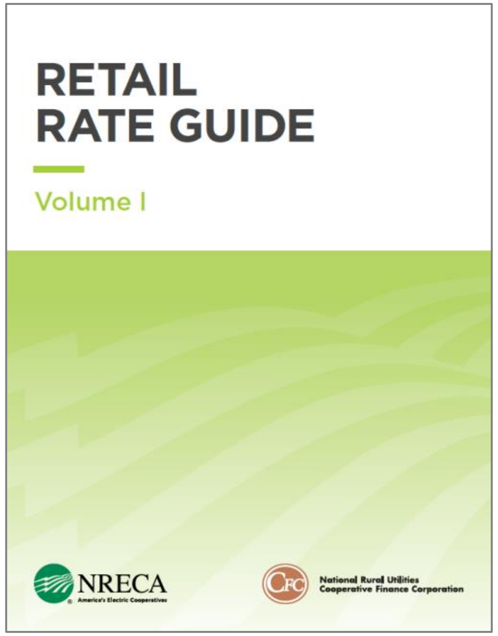
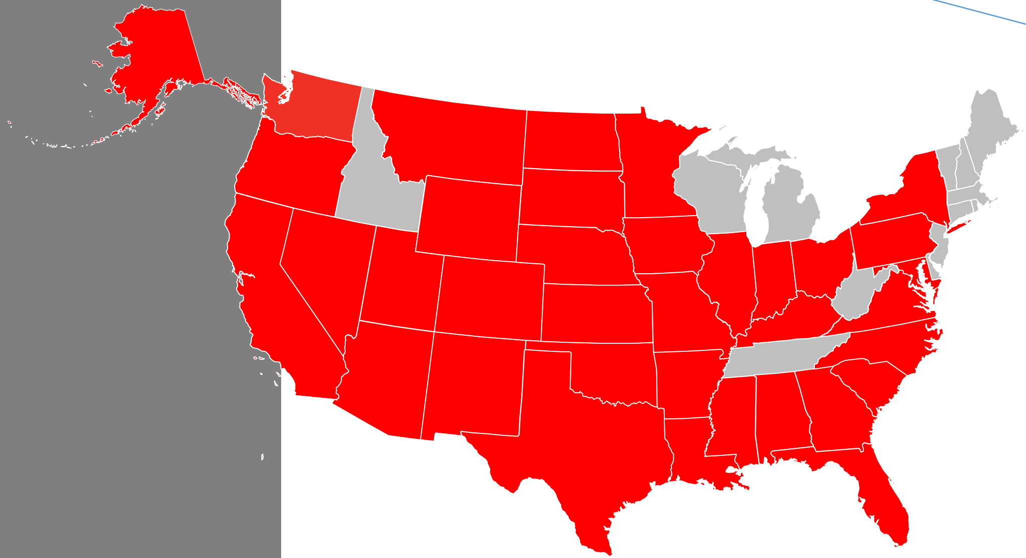
Guernsey

- Consulting, engineering & architectural firm
- Founded in 1928, Located in Oklahoma City
- 150 staff - Employee-owned firm
- Providing services to electric cooperatives since 1936
- Cost of Service Studies, Financial Forecasting, Management Consulting, Power Supply Planning, Power Engineering
- Also provide security consulting, architecture design, and environmental services

Experience

- Guernsey authored 2017 NRECA Rate Guide
- Companion Cost of Service Guide also published
- Presentations at various NRECA meetings and training sessions
- Available online





Electric Cooperative Clients

Importance of Cost of Service Study Process

- Defensible to members
- Reproducible results that track system changes
- Financially Sound - balances needs of cooperative against member impact
- Non-Discriminatory and Fair
- OPALCO's cost of service study has been prepared in accordance with regulatory standards

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Cost of Service Process

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Define system revenue requirement
Do we need a rate increase and, if so, how much?

Define class revenue requirement
How are each of the rate classes performing?

Define customer revenue requirement
How do we recover our costs through rates and from whom?

Coordinate rate design and line extension policy

Monitor and analyze system performance

Select Appropriate Test Year & Normalize

- Calendar year of 2017
  - Historical period selected where the following match…
    - Revenue — Power Cost
    - Plant investment — Financing
- Normalized or Adjusted Test Year developed
  - Primary Concerns
    - Proper matching as above
    - Cost, billing units and resulting unit rates are forward looking
    - Unit rates reflect “normal” conditions
  - Data can be supported if it is:
    - Known, Measurable, Continuing in nature

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Normalized Test Year

	Test Year 12/31/2017 (a)	Adjustments (b)	Adjusted Test Year (c)	Normalizing Adjustment (d)	Normalized Test Year (e)
Operating Revenues	$ 27,985,185	$ 2,114,199	$ 28,348,681	$ (1,750,703)	$ 30,109,490
Purchased Power	8,916,059	849,359	9,446,321	(319,097)	9,446,321
Gross Margin	$ 19,069,126	$ 1,264,840	$ 18,902,360	$ (1,431,606)	$ 20,663,169
O&M	$ 5,595,178	$ 754,478	$ 6,349,656	$ 0	$ 6,349,656
Accounting & Customer Service	1,524,376	220,597	1,744,314	(659)	1,744,314
Administrative & General	2,846,899	501,773	3,348,672	0	3,348,672
Depreciation	3,699,958	1,111,807	4,811,765	0	4,811,765
Tax	1,261,409	87,065	1,288,402	(60,072)	1,288,402
Total	$ 14,927,820	$ 2,675,720	$ 17,542,809	$ (60,731)	$ 17,542,809
Return	$ 4,141,306	$ (1,410,880)	$ 1,359,551	$ (1,370,875)	$ 3,120,360
Interest L-T Debt	$ 1,061,579	$ 496,101	$ 1,827,426	$ 0	$ 1,827,426
Other	5,000	0	(264,746)	0	(264,746)
Total	$ 1,066,579	$ 496,101	$ 1,562,680	$ 0	$ 1,562,680
Operating Margin	$ 3,074,727	$ (1,906,981)	$ (203,129)	$ (1,370,875)	$ 1,557,680
Interest Income & Other Margins	$ 246,975	$ 104,434	$ 351,409	$ 0	$ 351,409
G&T and Other Capital Credits	77,586	2,758	80,344	0	80,344
Total	$ 324,561	$ 107,192	$ 431,753	$ 0	$ 431,753
Net Margins	$ 3,399,288	$ (1,799,789)	$ 228,624	$ (1,370,875)	$ 1,989,433
Operating TIER	3.90		1.75		0.87
Net TIER	4.20		2.03		1.15
DSC	3.78		2.66		2.21
Rate of Return	4.43%		2.92%		1.45%

Establishing Revenue Requirement

- Increase required to meet financial objectives
  - Financial Ratios
  - Cash-General Funds
  - Capital Requirements
  - Significant Changes in Operations
  - Equity
  - Capital Credit Retirement
  - Other Possible Considerations
- Cash needed to…
  - Cover operating cash expenses
  - Finance plant additions with desired equity
  - Capital credit retirements
  - Changes in general fund reserves
  - Cash need to meet TIER/DSC requirements
- Existing cash minus cash requirement = rate change

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Revenue Requirement

Cash Requirement

Plant Additions (3 year average)	$	7,591,002
Desired Percent Cash Financed		49.20%
Cash Requirement for Plant	$	3,734,773
Capital Credit Retirements	$	1,523,615
Principal Payments		1,432,808
Cash to Attain Desired Level		0
Cash Requirement for Capital Credits & Debt	$	2,956,423
Total Cash Requirement	$	6,691,196
Operating Margins (Adjusted)	$	(203,129)
Plus: Depreciation & Other Non-Cash Expenses		4,811,765
Other Income/Capital Credits Cash		321,643
Net Cash from Operations	$	4,930,279
Annual Additional Cash Required	$	1,760,917
Proposed Rate Change: 6.21%	$	1,760,809
Equity Excluding Est G&T Patronage Capital	$	38,090,364
Retirement Amount		1,523,615
Retirement Cycle - Years		25.00

As modeled by the COSS:

- Equity growing
- Capital credits retired
- Maintain cash/gen funds
- Rate change of 6% over adjusted test year in COSS

	Test Year 12/31/2017 (a)	Adjustments (b)	Adjusted Test Year (c)	Normalizing Adjustment (d)	Normalized Test Year (e)	Rate Change (f)	Normalized Test Year w/ Rate Change (g)
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Total	$ 14,927,820	$ 2,675,720	$ 17,542,809	$ (60,731)	$ 17,542,809	$ 0	$ 17,542,809
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Operating TIER	3.90		1.75		0.87		2.00
Net TIER	4.20		2.03		1.15		2.28
DSC	3.78		2.66		2.21		2.80
Rate of Return	4.43%		2.92%		1.45%		3.33%
Percent Change							**6.21%**

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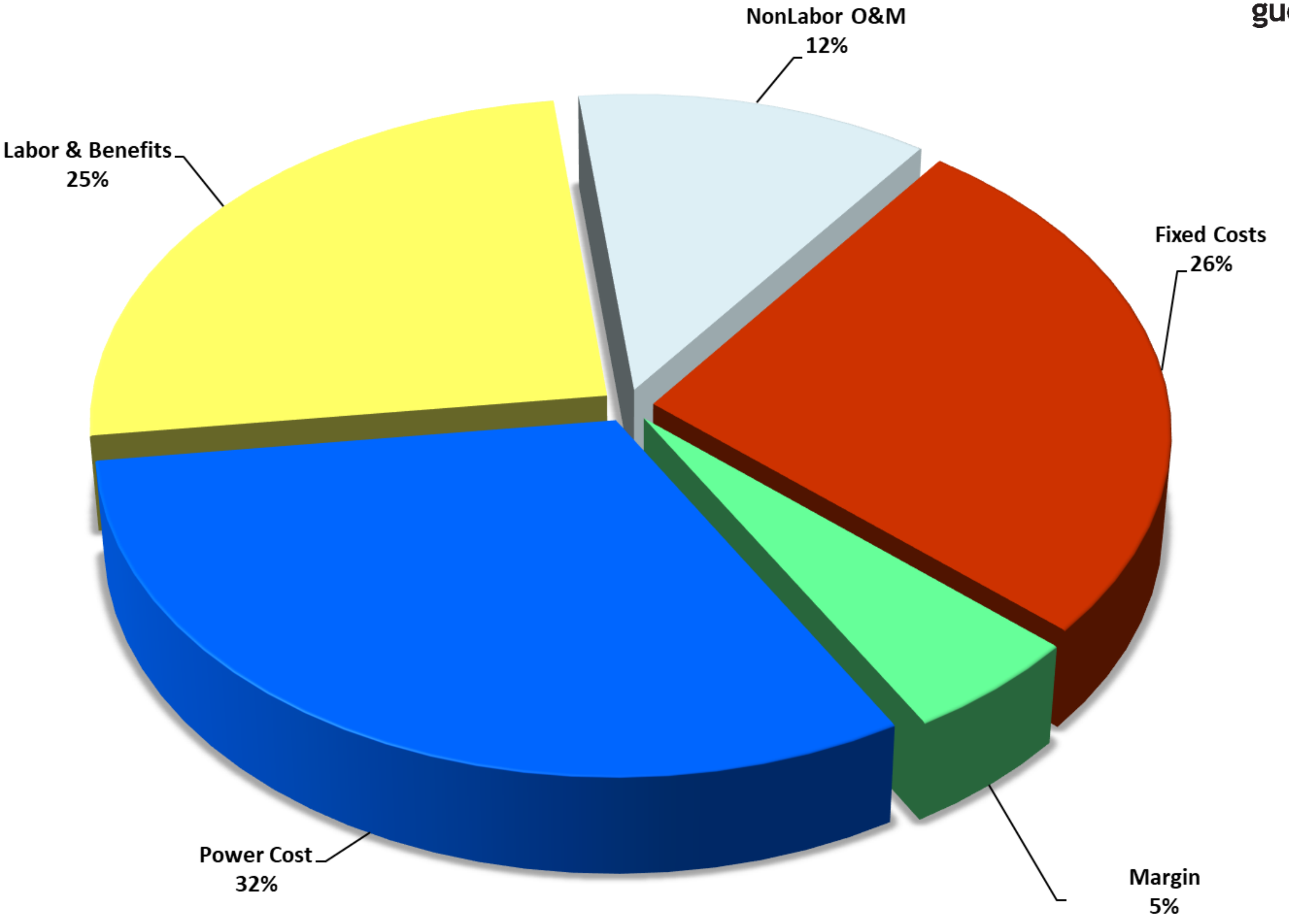
Revenue Components w/ Rate Change



Class Revenue Requirement
The Cost of Service Study

Development of Class Revenue Requirement

- Separate customers into rate classes
- Functionalize costs
- Classify costs
- Develop allocation factors
- Allocate plant investment to each rate class
  - Expenses follow the plant allocation
- Identify the return (margin) provided under existing rates
- Identify the required revenue change (increase or decrease) for each class

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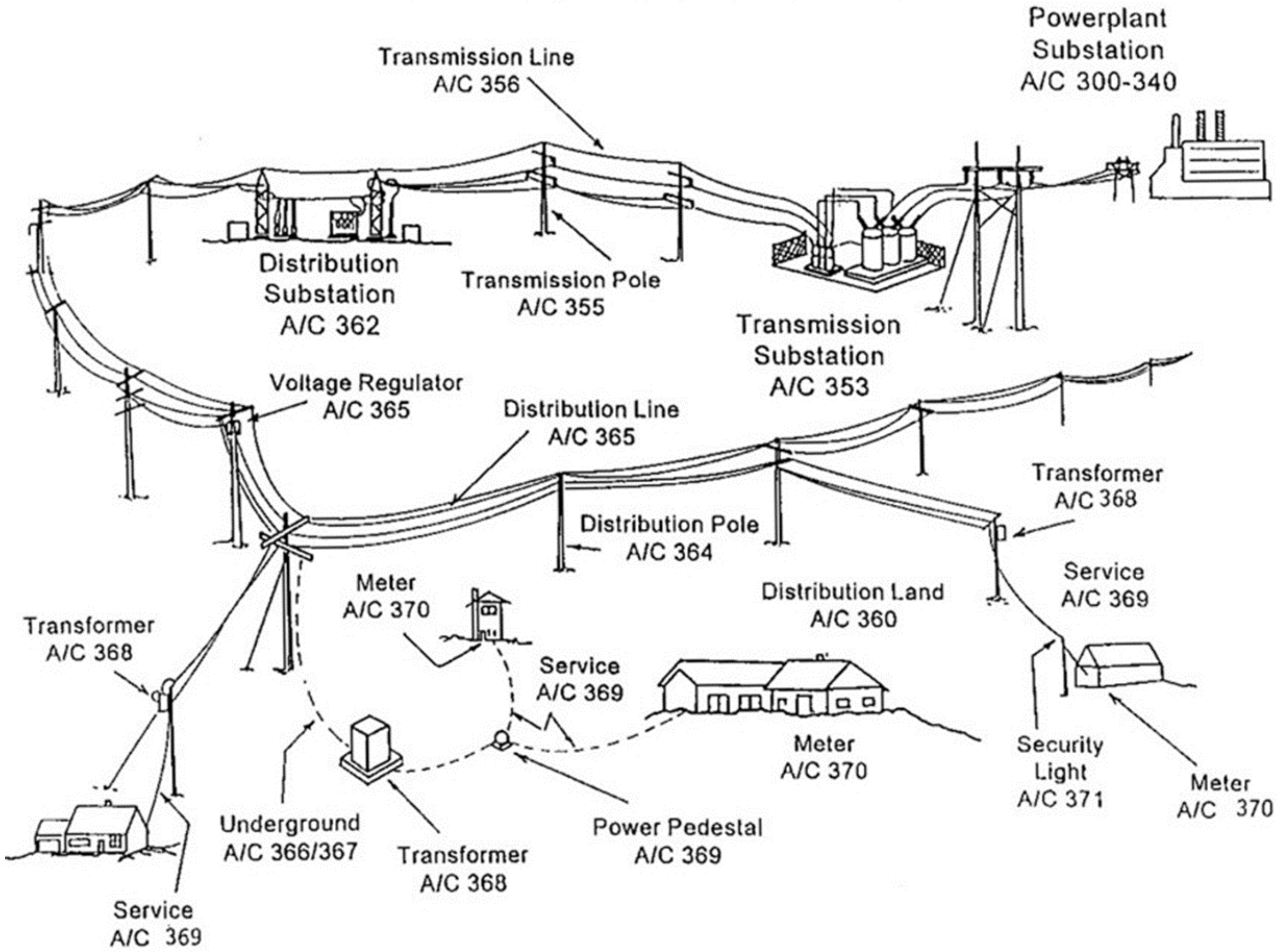
Typical Distribution System

- Allocate plant investment to each rate class
  - Based upon their use of the system and the facilities required to serve them
  - Use Load Data (Sum of Delivery Point NCP)
- Expenses follow the plant allocation



Cost Allocation - Energy

- Energy Allocation Factors
  - Costs allocated based on the energy used
  - Average usage over time – not peak usage
- Used to allocate
  - Purchased Power Energy Charges – developed by taking Energy Sales and adjusting for losses
  - Losses identified here are also often used to assign purchased power demand responsibility

Cost Allocation – Capacity / Purchased

- Pur Pwr Capacity Allocation Factors
  - Costs allocated based on a customer's load for which a service, generator, transformer, and/or system is designed and measured by the customer's demand.
- Used to allocate:
  - Purchased Power Demand Charges
    - Generation – 12 CP for Generation Demand
    - Transmission – 12 CP for Transmission Demand

Cost Allocation - Customer

- Customer Allocation Factors
  - Costs allocated based on being a customer
- Used to allocate:
  - Distribution Cooperative Customer-Related costs using
  - Actual customers
  - Weighted customers

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Cost Allocation – OPALCO Demand

- Capacity Allocation Factors
  - Costs allocated based on a customer's load for which a service, generator, transformer, and/or system is designed and measured by the customer's demand.
- Used to allocate:
  - Distribution Cooperative System Capacity-Related Costs
  - Demand is allocated on a 4 CP using winter months and a ratchet

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Cost of Service Cost Components

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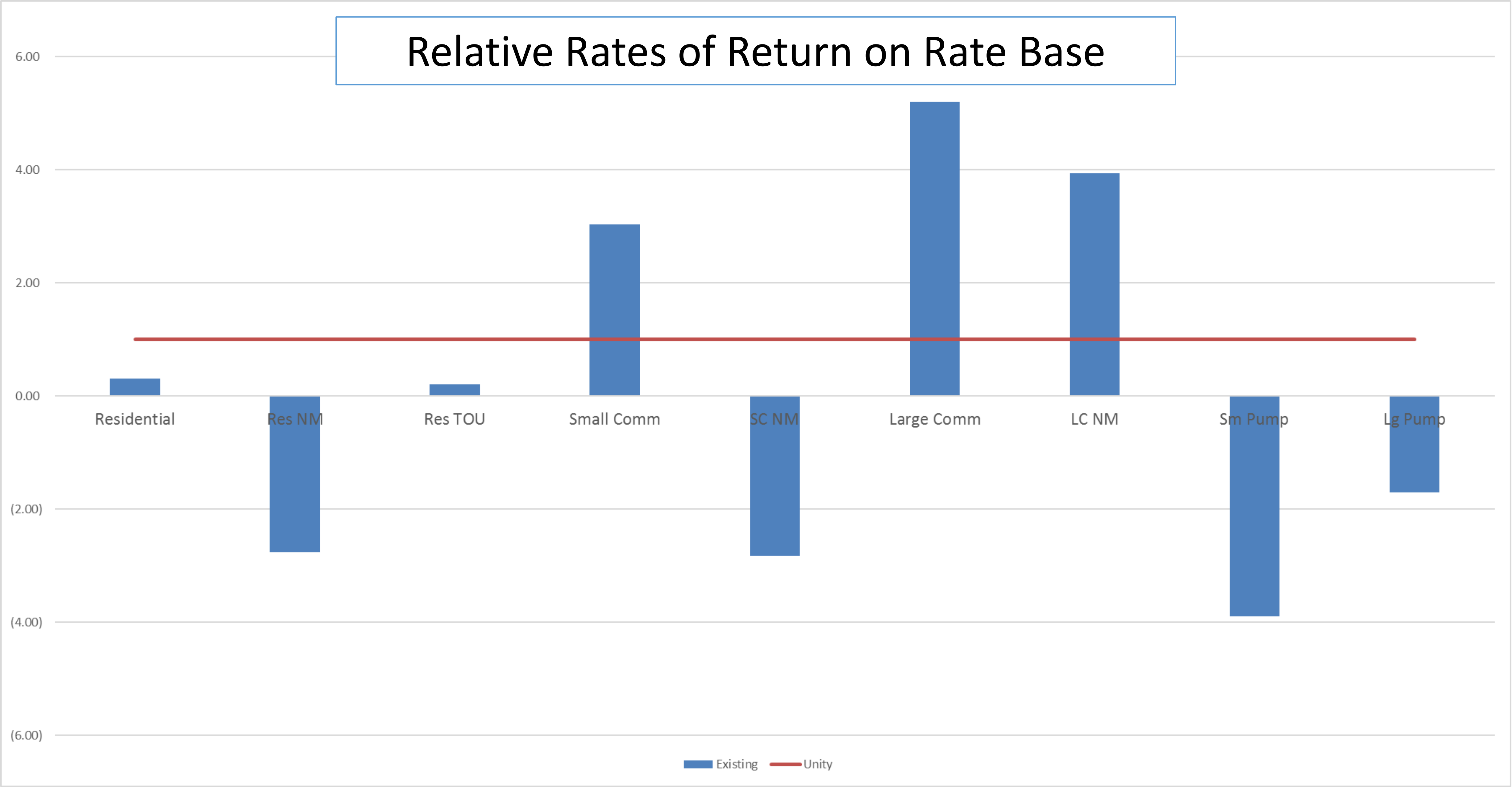
Pur Pwr Energy	Pur Pwr Capacity	OPALCO Wires	OPALCO Customer
PurPwr Energy	Pur Pwr Capacity	OPALCO Transmission Plant	OPALCO – Customer Related Plant Cost
	Pur Pwr Delivery	OPALCO Substation	Metering
		OPALCO Backbone	Meter Reading
		OPALCO Demand-Related Other Plant Cost	Billing & Records
			Customer Service
			Revenue Related

Cost Allocation Summary – Existing Rates

Account	Total	RESIDENTIAL	SMALL COMM	LARGE COMM	Pump <20 kW	PUMP >20	LIGHTS
Rate Base	93,584,103	71,396,224	7,156,416	13,024,534	1,839,057	46,572	121,296
Operating Revenues	28,348,681	20,492,552	2,356,097	5,109,012	354,769	11,934	24,313
Operating Expenses	26,989,130	20,269,661	2,046,410	4,135,606	458,991	13,144	65,314
Return	1,359,551	222,890	309,687	973,405	-104,222	-1,209	-41,001
Rate of Return	1.453 %	0.312 %	4.327 %	7.474 %	-5.667 %	-2.596 %	-33.802 %
Relative ROR	1.000	0.215	2.978	5.144	-3.901	-1.787	-23.264
Interest	1,562,680	1,193,814	119,670	215,383	30,971	779	2,060
Operating Margins	-203,129	-970,924	190,017	758,022	-135,193	-1,988	-43,061
Margin as % Revenue	-0.717 %	-4.738 %	8.065 %	14.837 %	-38.108 %	-16.663 %	-177.109 %
Operating TIER	0.870	0.187	2.588	4.519	-3.365	-1.551	-19.896

Revenue Deficiencies

Uniform ROR = 3.334283	1,760,808	2,157,662	-71,072	-539,130	165,541	2,762	45,045
Deficiency % Rev	6.211 %	10.529 %	-3.017 %	-10.553 %	46.662 %	23.143 %	185.267 %
Uniform % Mar = 5.173384	1,760,808	2,141,890	-71,844	-520,648	161,924	2,748	46,737
Deficiency % Rev	6.211 %	10.452 %	-3.049 %	-10.191 %	45.642 %	23.027 %	192.227 %


Relative Rates of Return on Rate Base
6.00
4.00
2.00
0.00
(2.00)
(4.00)
(6.00)
Residential
Res NM
Res TOU
Small Comm
SC NM
Large Comm
LC NM
Sm Pump
Lg Pump
Existing
Unity

Unbundled Costs and Recovering Costs as Costs are Incurred

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Summary - Residential

Most Commonly Used
Most Strongly Based Cost of Service

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	Energy	Customer	Demand
Purchased Power			
Variable (Energy)	$0.04188 per kWh		
Demand (Options)	$0.00516 per kWh	Or $5.04 per month	Or $0.58 per kW
OPALCO Wires			
Demand Charge	$0.07426 per kWh	Or $72.04 per month	Or $8.30 per kW
Customer Charge		$39.94 per month	
Possible Rate Options			
Strict COSS	$0.04188 per kWh	$39.94 per month	$8.33 per kW
Traditional	$0.12822 per kWh	$39.94 per month	
Blend 25%	$0.10274 per kWh	$57.95 per month	
100% Customer Charge	$0.07404 per kWh	$111.98 per month	

Demand billed on monthly NCP kW – estimated at 9 kW per customer per month on average

Recap

- Systematic approach to rate design / COSS
- Four step process

1. Define revenue requirement needed to meet financial objectives
2. Define performance of rate classes through cost of service
3. Define cost components and consider during rate design
4. Use the cost of service study
    1. Monitor system performance
    2. Develop line extension policy
    3. Develop future special rates
    4. Effectively communicate with members
    5. Meet any regulatory or lender requirements

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