



**Seattle City Light  
City Light Review Panel Meeting  
July 26, 2012**

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**Increasing the Effectiveness of Electric Utility Rates:  
How to Increase Fixed Cost Recovery  
While Meeting Efficiency Objectives and  
Maintaining Customer Acceptance**

**Richard Cuthbert, Senior Project Manager  
Kiley Faherty, Analyst**

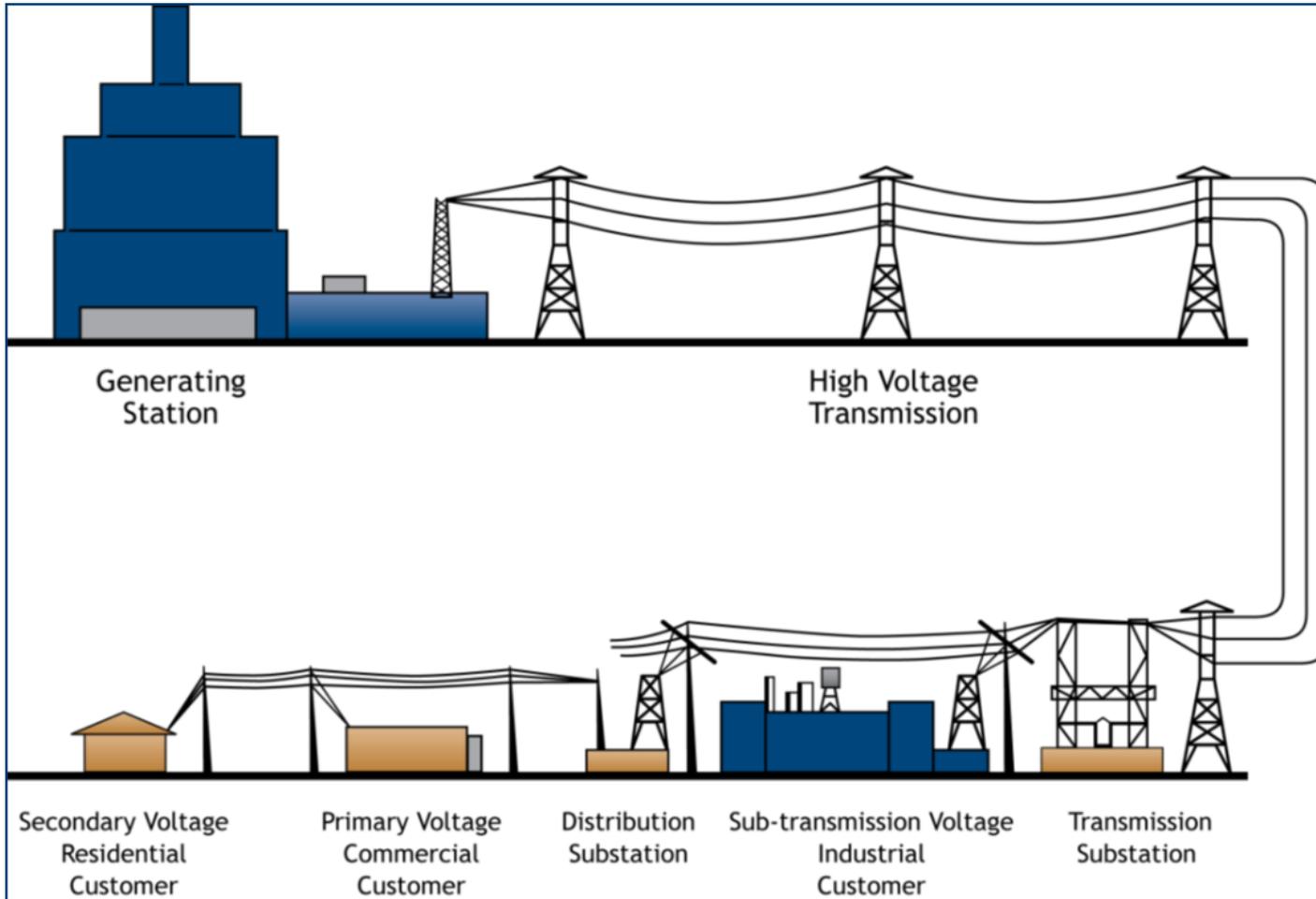
# Overview of Presentation

- **Introduction and discussion of the issue of fixed cost recovery**
- **Rate structure comparison for selected municipal and private utilities nationwide**
- **Possible new options to increase fixed cost recovery with electric rates**
  - **Case Study 1: Minimum Energy Charge**
  - **Case Study 2: Demand Charges for Low Usage Customers**
- **Summary and Conclusions: Implications for Seattle City Light**

# The Problem: Fixed Cost Recovery

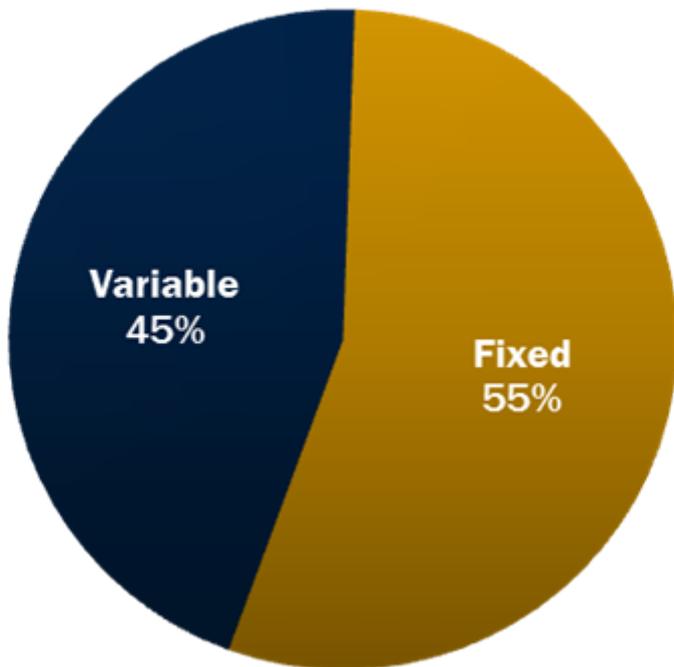
- **The majority of electric utility costs are fixed**
  - Costs do not vary with amount of utility's electricity sales
- **The majority of electric utility revenues are variable**
  - Most electric rates are based on energy usage (cents/kWh)
- **Problems of fixed costs and variable revenues**
  - When electricity sales decrease, revenues decrease but most costs remain constant
  - Revenue shortfall
  - Amplified by recent economic downturn and customer-owned generation (including renewable energy resources)

# Typical Electric Utility System

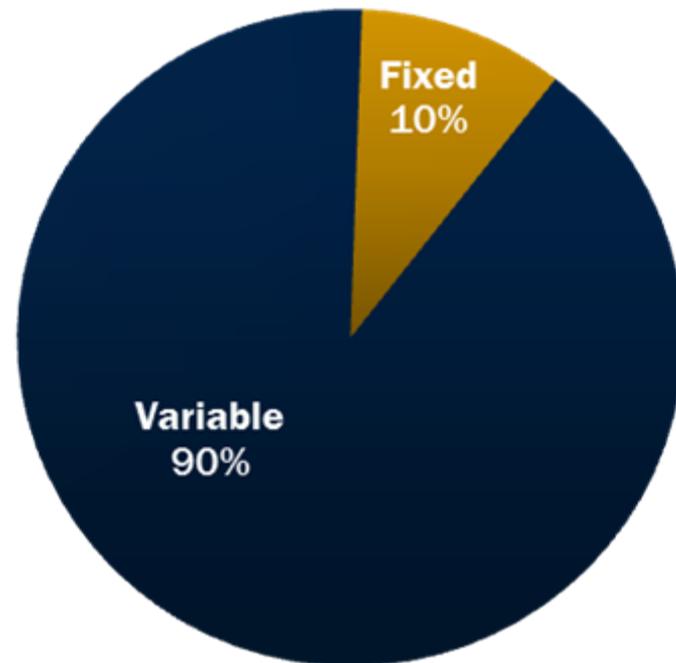


# Electric Utility Fixed Cost Recovery and Revenues

## Costs

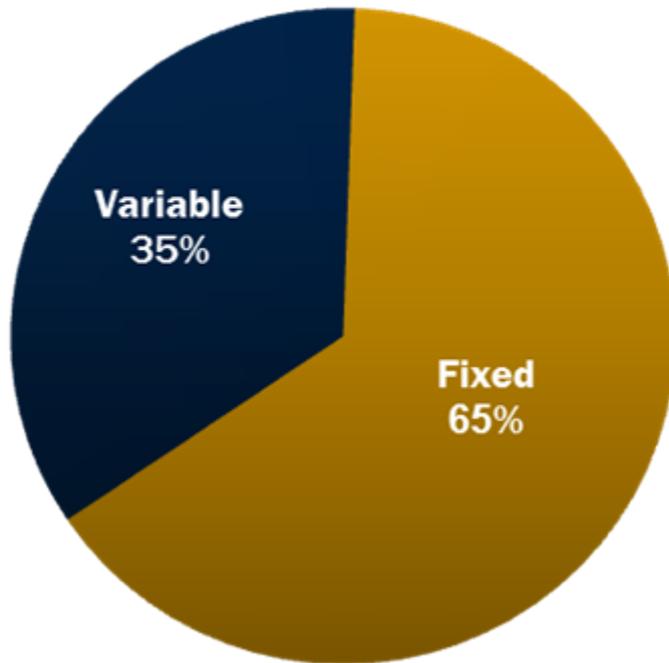


## Revenues

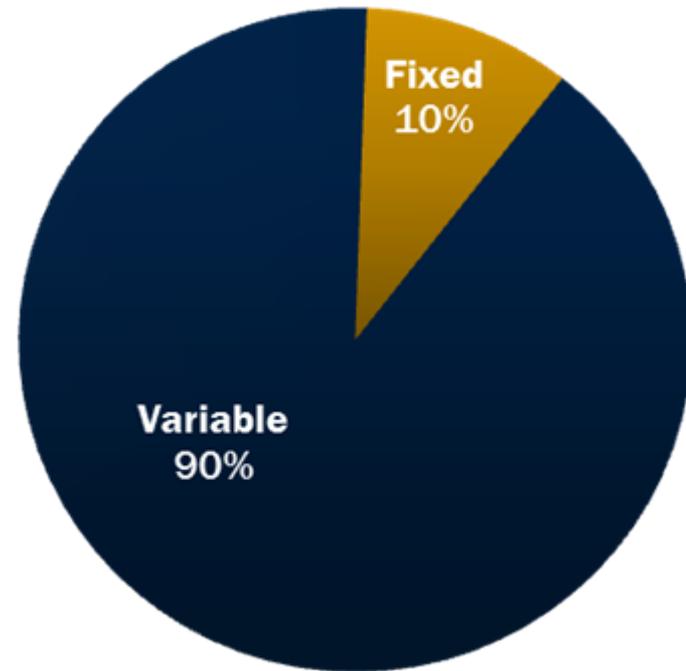


# Residential Costs and Revenues

## Costs



## Revenues





# Solution: More Fixed Revenues

- **Option 1: Higher Customer/Basic Service Charges**
  - Most applicable for lower usage customers
  - Issues: Misunderstood by many customers and unpopular
- **Option 2: Introduce Monthly Minimum Charge (\$/mo.)**
  - Customer has fixed monthly charge that covers certain services (e.g. wires charge, charge for first 250 kWh/month, etc.)
  - Issues: Can be misunderstood by customers, can cause large bill impacts on low usage customers and unpopular with low usage customers
- **Option 3: Introduce/Increase Demand Charges (\$/kW)**
  - In past, infrequently used for lower usage customers
  - Issues: Misunderstood by many customers, can cause large bill impacts on certain customers, likely to be unpopular

# Implications from the Economic Structure of Our Industry

- **“To improve the grid’s efficiency and lower rates, utilities with advanced metering technology should begin a transition to pricing regimes in which customers pay rates that reflect the time-varying costs of supplying power” (i.e., TOD rates).**
- **“To improve utilities’ and their customer’s incentives related to distributed generation and energy conservation, utilities should recover fixed network costs through customer charges that do not vary with the volume of electricity consumption.”**

Source: The Future of the Electric Grid - An interdisciplinary MIT Study, 2011

# Advanced Metering Infrastructure Changes

- **AMI allows for more cost-effective ratemaking options for low usage customers (residential, small commercial)**
- **Customer acceptance of AMI meters remains an important concern in some communities**
- **Careful and strategic modification of rates can be done effectively to increase fixed cost recovery**

# Rate Structure Comparison for Selected 10 Large Municipal and 10 Large Private Utilities Nationwide

	<b>Declining Block</b>	<b>Uniform Rate</b>	<b>Inclining Block</b>	<b>Seasonal Rate</b>	<b>Minimum Charge</b>	<b>Time of Use Rate</b>
<b>Municipal</b>						
Residential Service	5	0	5	9	6	7
Small General Service	1	3	6	8	7	7
<b>Private</b>						
Residential Service	9	0	1	6	6	6
Small General Service	4	2	4	8	5	3
<b>Seattle City Light</b>						
Residential	0	0	1	1	0	0
Small General Service	0	0	1	0	1	0

# Case Studies of Possible Options

- **Case Study 1: Residential Service**

- Introduced a monthly minimum charge (“System Delivery Charge”) for Residential and Small General Service customers

- **Case Study 2: Small General Service**

- Introduced a Demand Charge for Small General Service customers

# Case Study 1: Residential Customer Class Rates

<b>Rate 1: Residential</b>	<b>Prior Rates</b>	<b>Cost of Service</b>	<b>2012 Rates</b>
<u>Base Rates</u>			
Customer Charge (\$/month)	\$11.00	\$38.32	\$15.00
System Delivery Charge (\$/month) -includes first 150 kWh/month			18.14
<u>Non-Fuel Energy Charge</u>			
<u>Non-Fuel and Purchased Power (\$/kWh)</u>			
0 - 800 kWh	0.14622	0.09632	0.12092
> 800 kWh	0.13291	0.09632	0.12092
<u>Cost of Power</u>			
Fuel & Purchased Energy Charge (\$/kWh)	0.04416	0.07266	0.06316
Regulatory Cost Charge (\$/kWh)	0.00055	0.00055	0.00055
Minimum Charge (\$/month)	11.00	-	33.14
Percent Revenue Change		12.9%	3.5%

# Residential Typical Bill Impacts

Monthly Energy Usage (kWh)	Percent of Total	Bill at Current Rates	Bill at COS Rates	Percent Change	Bill at Proposed Rates	Percent Change
100	14.7%	\$30	\$55	83.7%	\$40	31.3%
250	12.4%	59	81	37.4%	61	4.1%
500	23.6%	106	123	15.6%	107	0.8%
750	20.1%	154	165	7.3%	153	-0.5%
1,000	12.5%	199	208	4.3%	200	0.2%
1,250	6.9%	244	250	2.7%	246	0.9%
1,500	3.8%	288	293	1.6%	292	1.3%
1,750	2.2%	332	335	0.8%	338	1.7%
2,000	1.3%	377	377	0.1%	384	2.0%
2,250	0.8%	421	420	-0.4%	430	2.2%
> 2,500	1.6%	466	462	-0.8%	477	2.3%

# How Much is 300 kWh/month?

- **Example of possible minimum energy usage:**

– Refrigerator (Energy Star) 19 cubic foot	=	80 kWh/month
– Electric Range & Oven used 1 hr/day	=	150 kWh/month
– Four 60 watt bulbs 10 hrs/day	=	72 kWh/month
– Personal Computer & Monitor used 4 hours per day	=	<u>33 kWh/month</u>
<b>Total Usage</b>	=	<b>335 kWh/month</b>

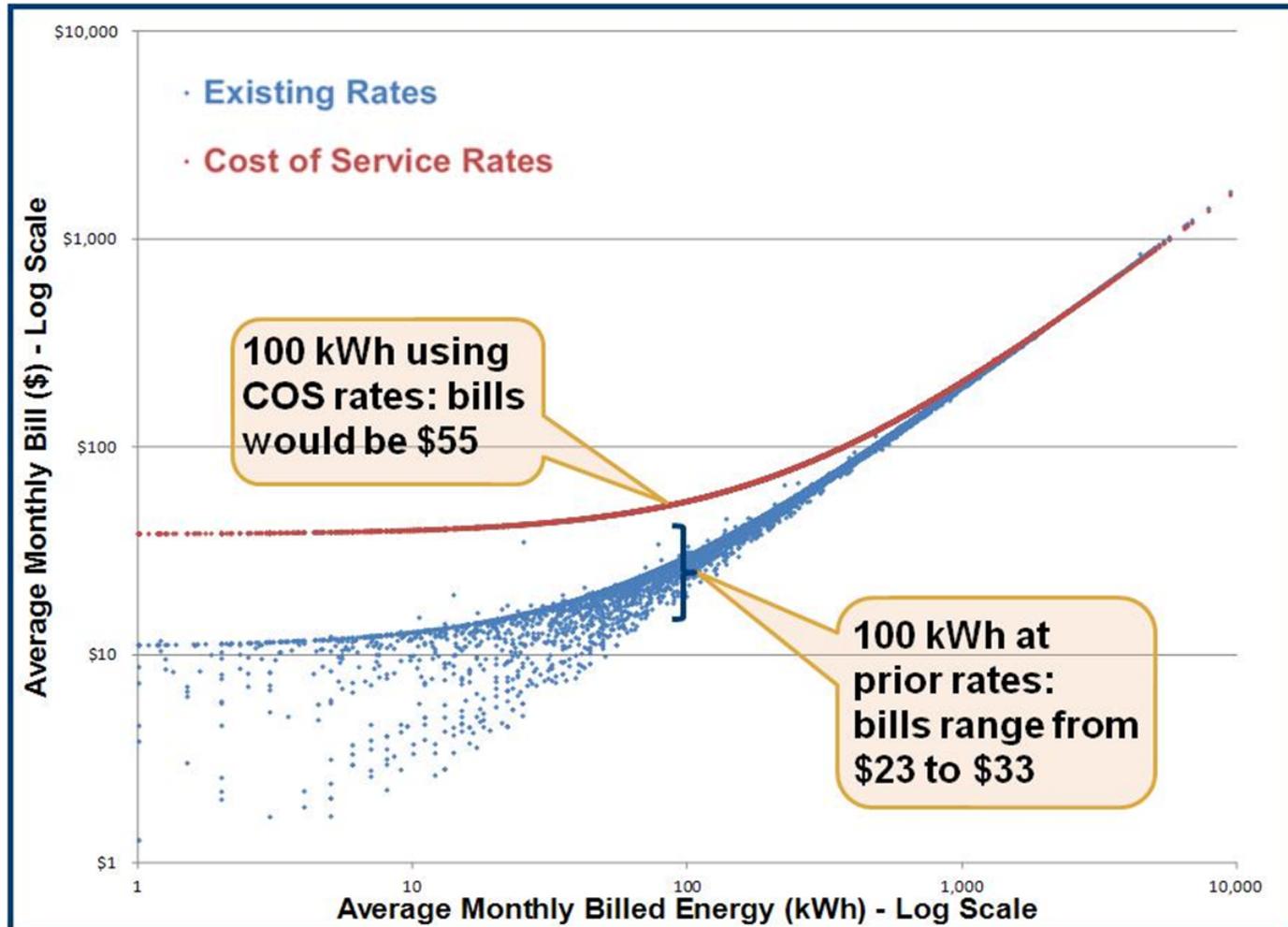
- **SCL Average Residential Usage per Customer = 745 kWh/month**

Sources: Seattle City Light Your Electric Appliances: Typical Energy Costs for Your Home Appliances, [www.seattle.gov/light/conserve](http://www.seattle.gov/light/conserve); Seattle City Light 2011 Audited Financial Statement; U.S. Department of Energy [www.energysavers.gov](http://www.energysavers.gov)

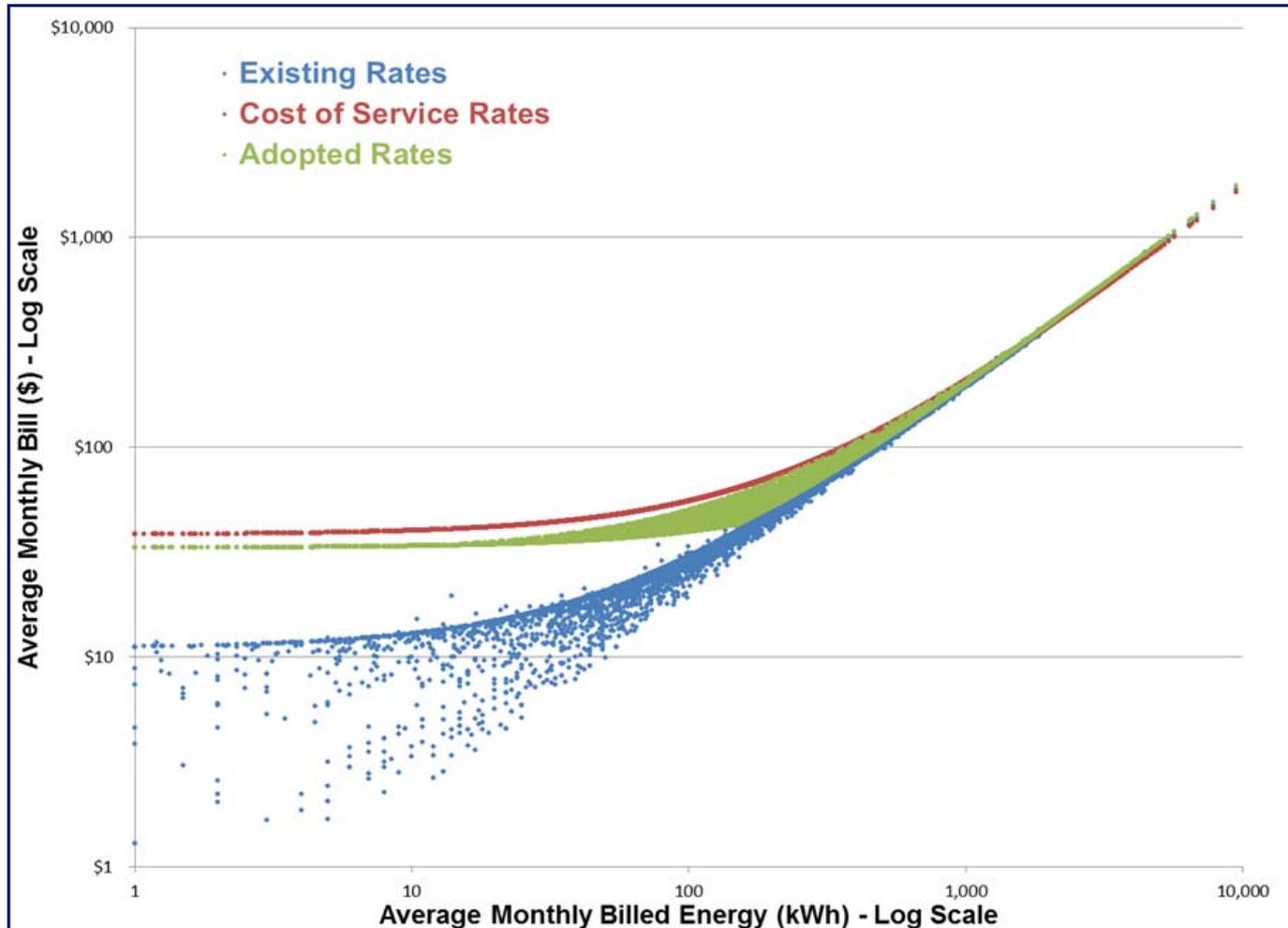
# Existing Rates versus COS Rates



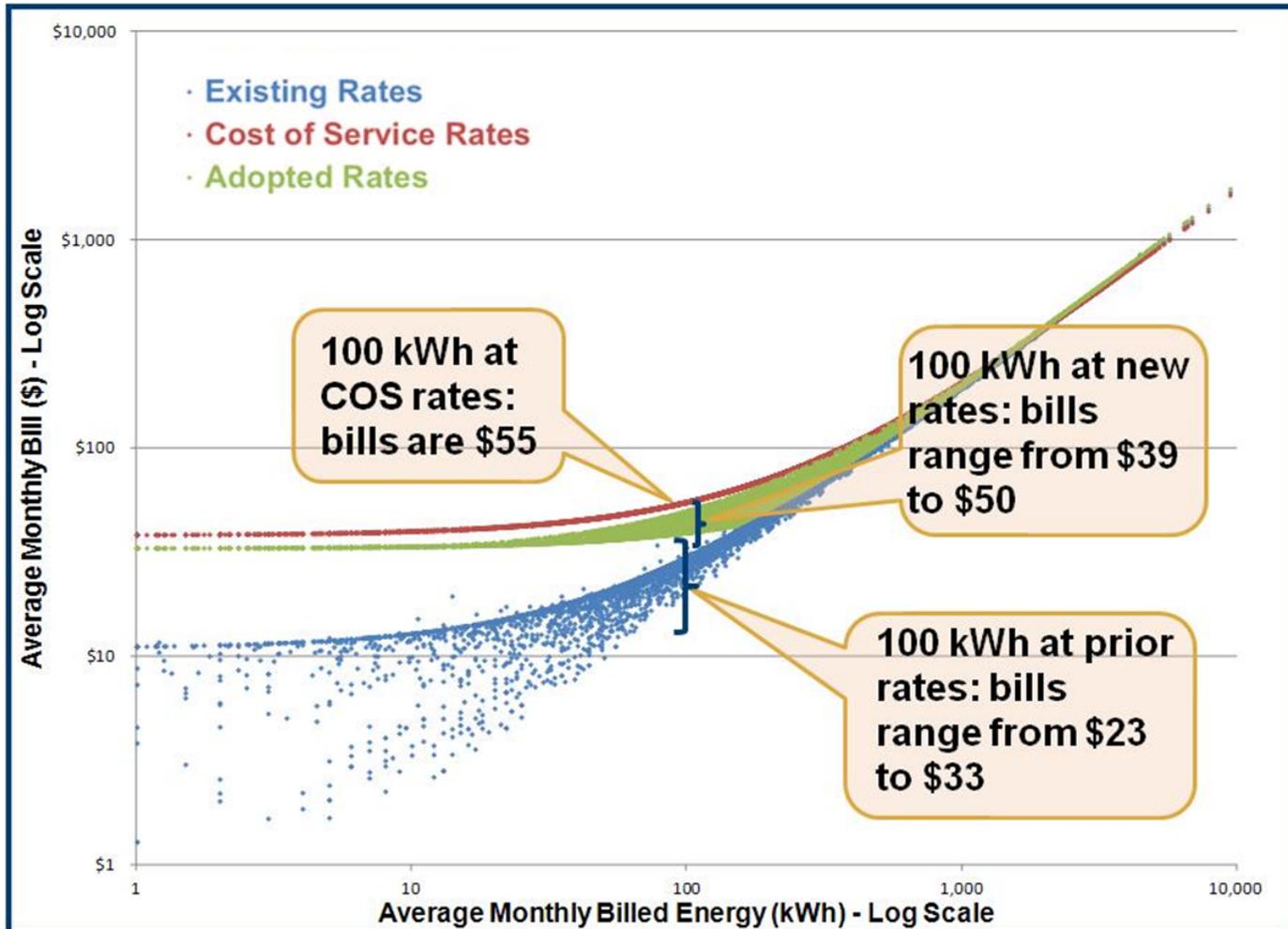
# Existing Rates versus COS Rates



# 2010 COS and New Rates



# 2010 COS and New Rates



# Results

- **Minimum monthly charges help increase fixed cost recovery from seasonal and low usage customers (both residential and general service)**
- **Results in fairer cost recovery (i.e., closer to cost-of-service based rates)**
- **Helps to mitigate rate increases for higher usage customers**
- **Can be misunderstood by customers: requires careful and thoughtful introduction, outreach follow-up, and training of customer service representatives**

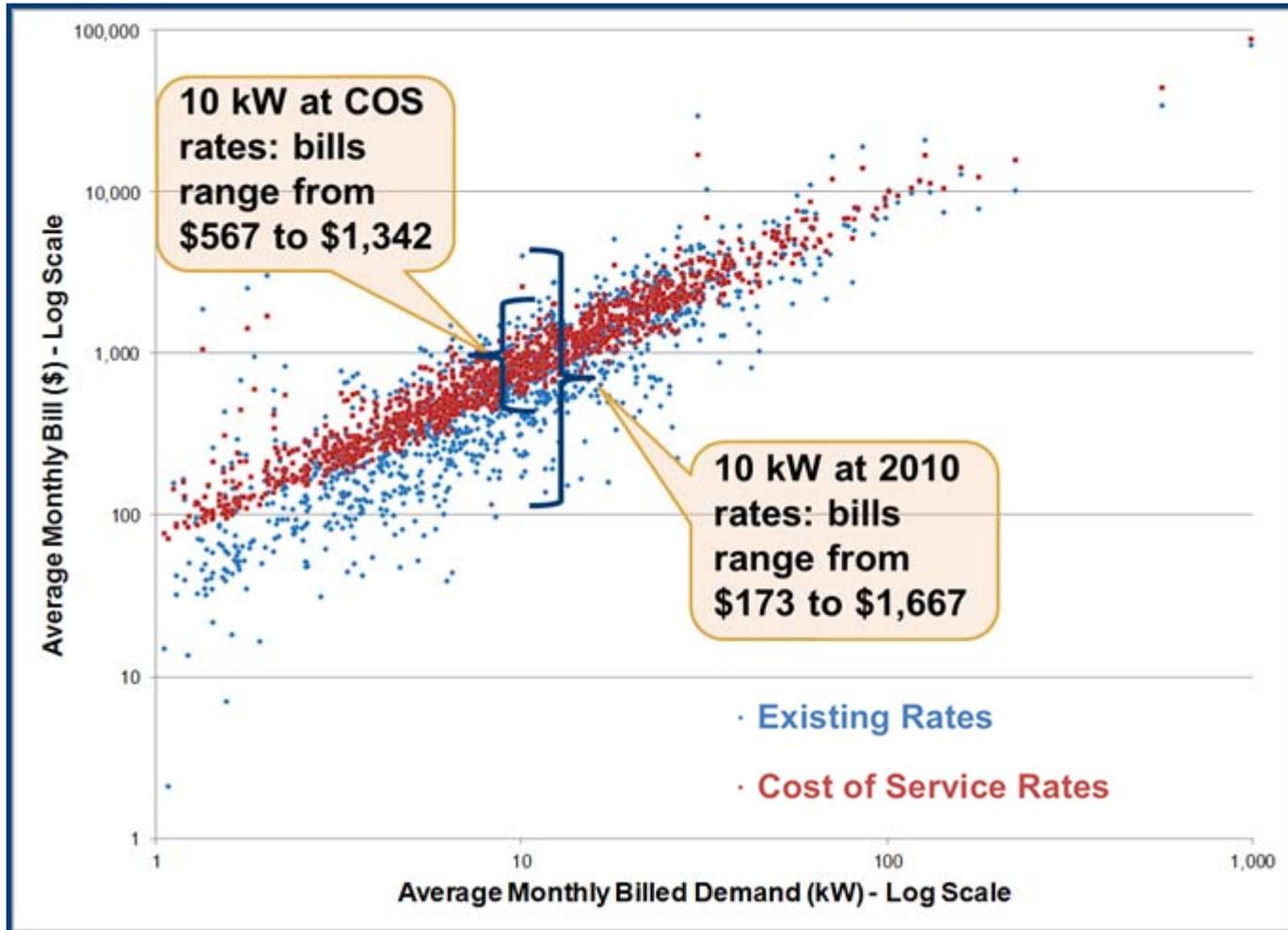
# Case Study 2: Small General Service Rates

	Existing Rates	Cost of Service	Alternative COS
<b>Schedule "G" Small Commercial</b>			
<u>Base Rates</u>			
Customer Charge (\$/month)	\$ 21.89	\$ 21.83	\$ 211.98
Energy Charge (\$/kWh)	\$ 0.19118	\$ 0.18229	\$ 0.18229
Demand Charge			
All kW (\$/kW)	n/a	\$ 46.63	\$ -
<u>Energy Rate Adjustment Clause</u>			
All kWh (\$/kWh)	\$ 0.15916	\$ -	\$ -
Minimum Charge	\$ 24.31	n/a	n/a
Schedule G Percent Revenue Change		-0.2%	-0.2%

# Existing Rates versus Cost of Service



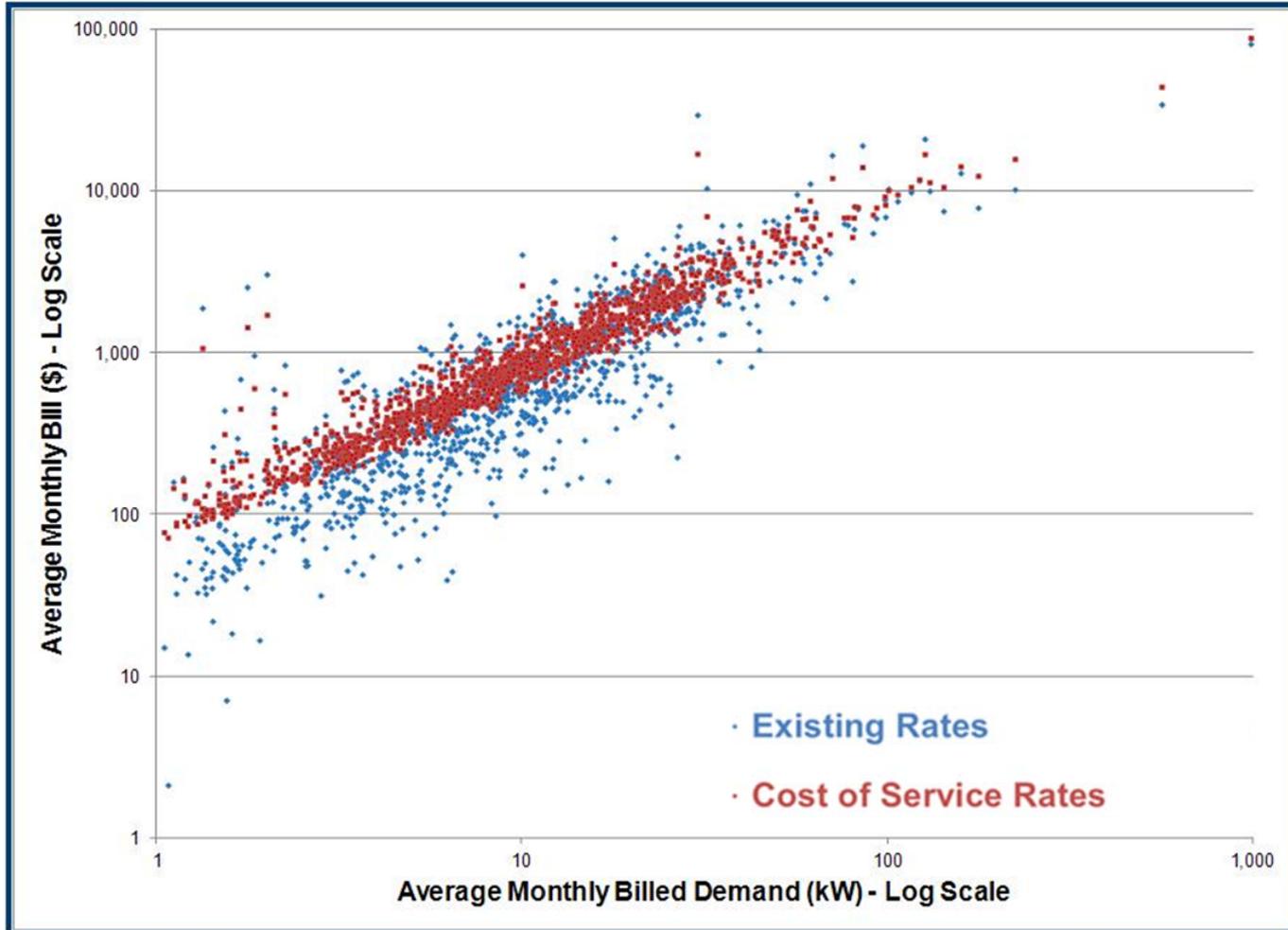
# Existing Rates versus Cost of Service



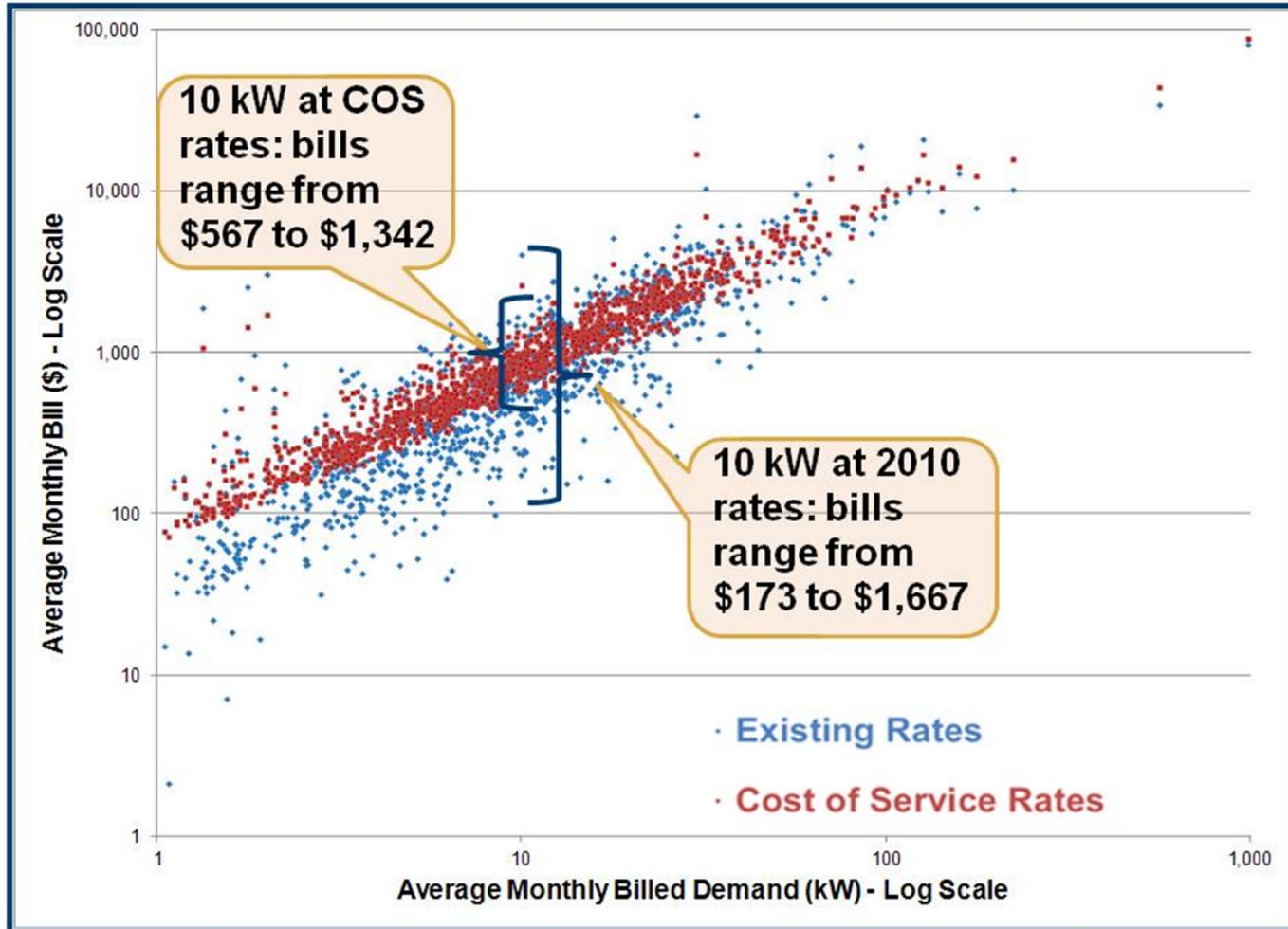
# Small General Service Hypothetical Rates

	Existing Rates	Cost of Service	Option A	Option B	Option C
<b>Schedule "G" Small Commercial</b>					
<u>Base Rates</u>					
Customer Charge (\$/month)	\$ 24.31	\$ 21.83	\$ 50.00	\$ 35.00	\$ 25.00
Energy Charge (\$/kWh)	\$ 0.36532	\$ 0.18229	\$ 0.32483	\$ 0.32368	\$ 0.31812
Demand Charge					
All kW (\$/kW)	n/a	\$ 46.63	\$ -	\$ 4.00	\$ 8.00
<u>Energy Rate Adjustment Clause</u>					
All kWh (\$/kWh)	\$ 0.17325	\$ -	\$ -	\$ -	\$ -
Schedule G Percent Revenue Change					
		-0.2%	-0.2%	-0.2%	-0.2%

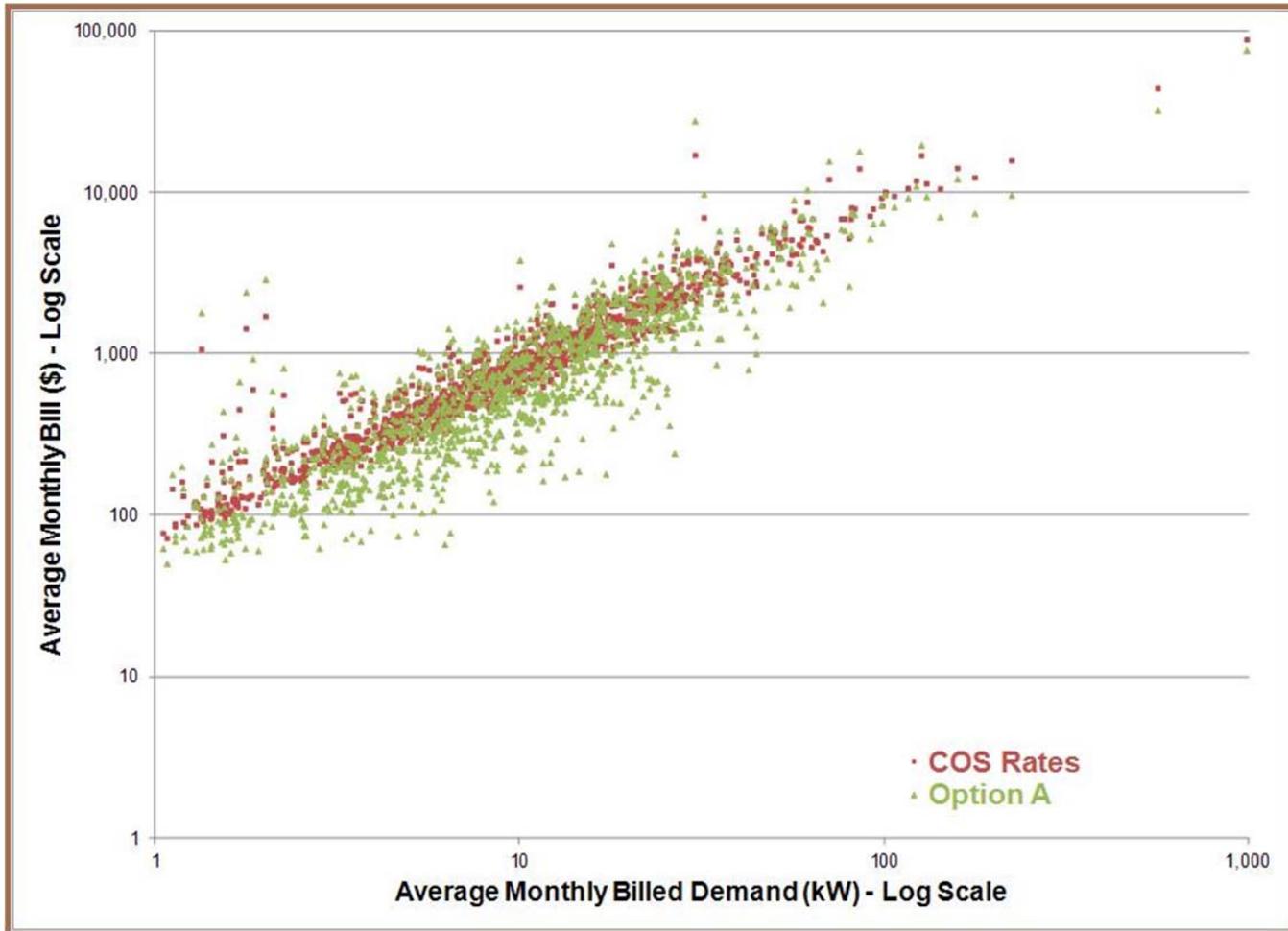
# 2010 Rates versus Cost of Service



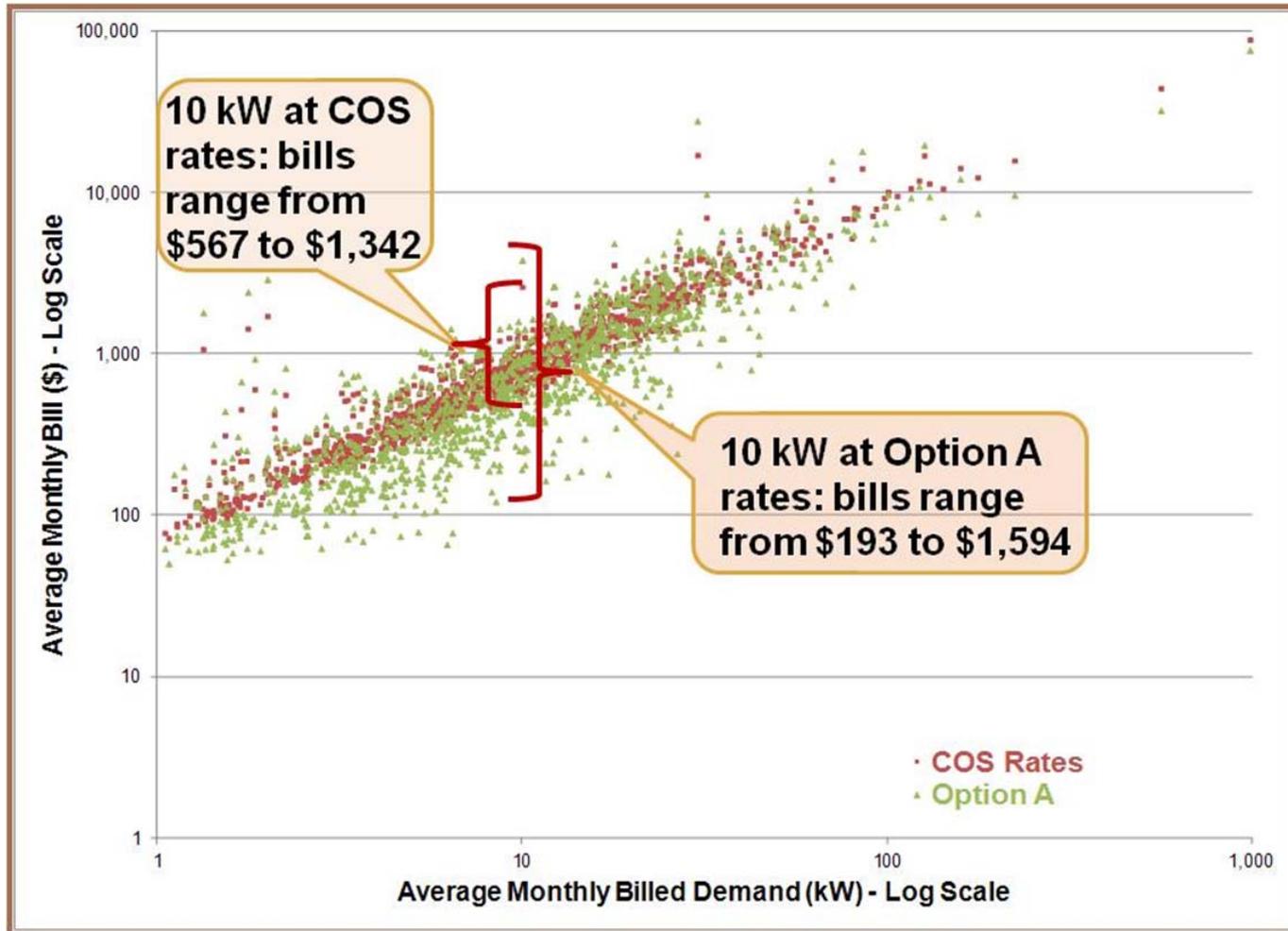
# Existing Rates versus Cost of Service



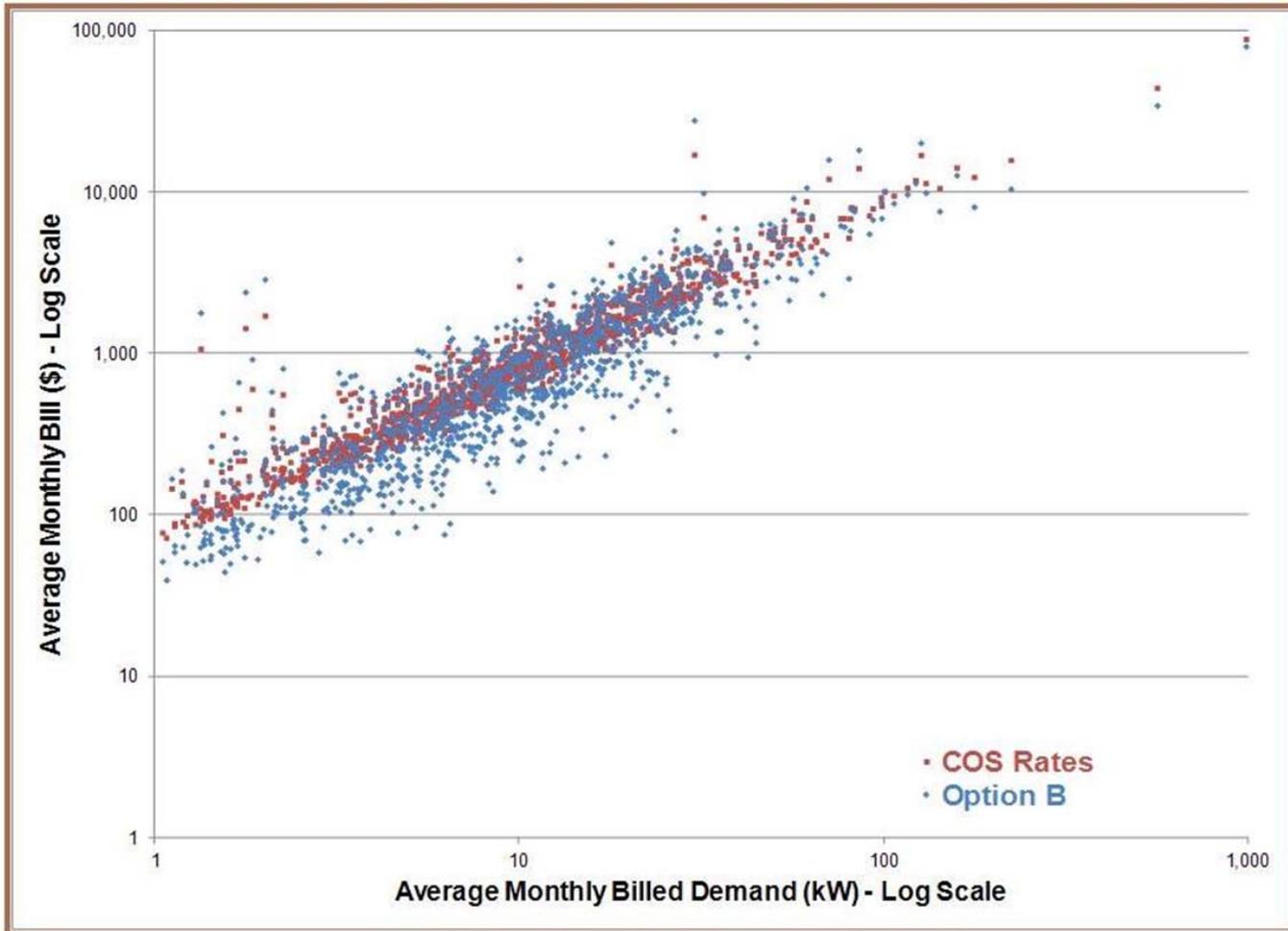
# Cost of Service versus Option A



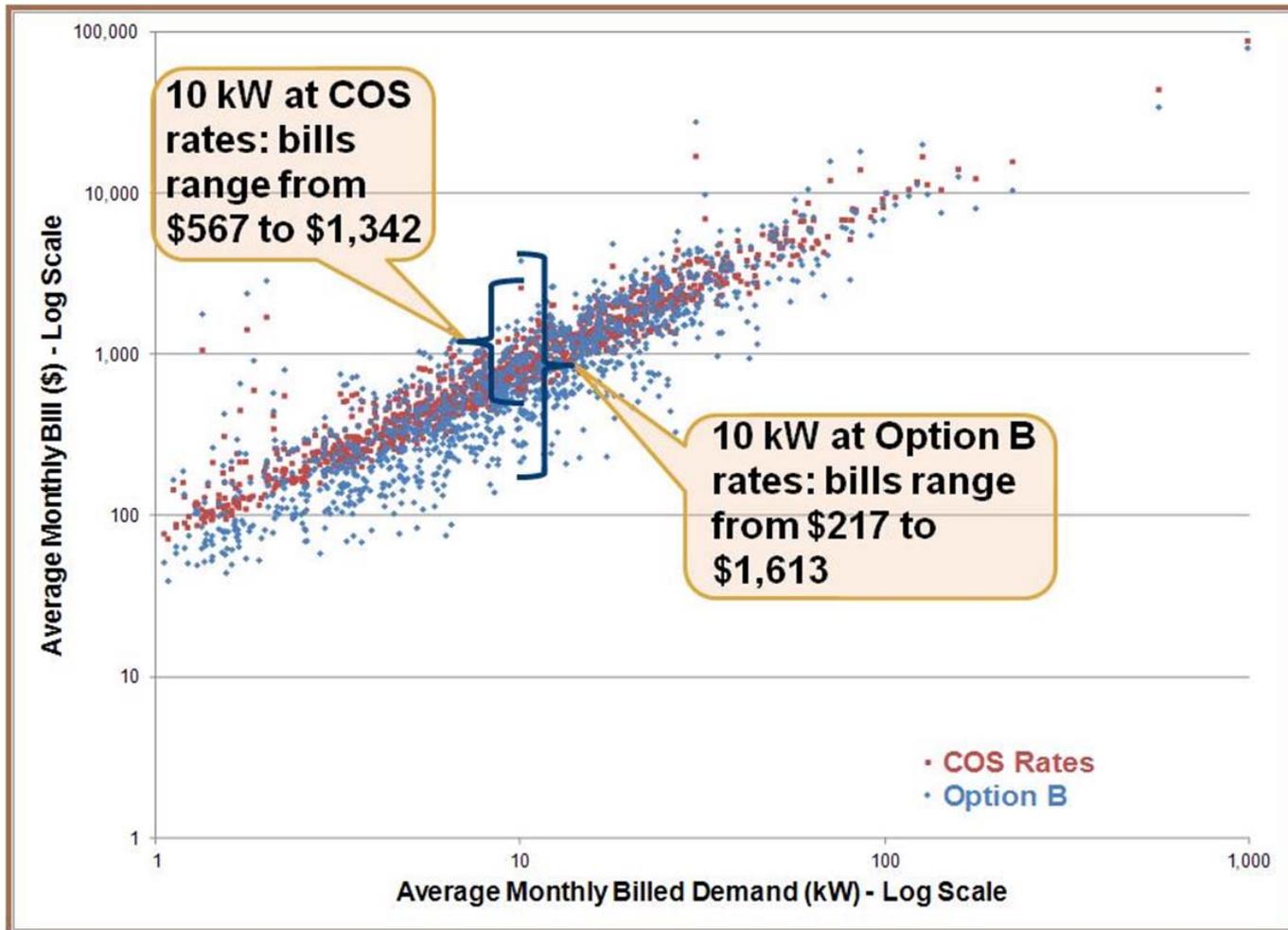
# Cost of Service Rates versus Option A



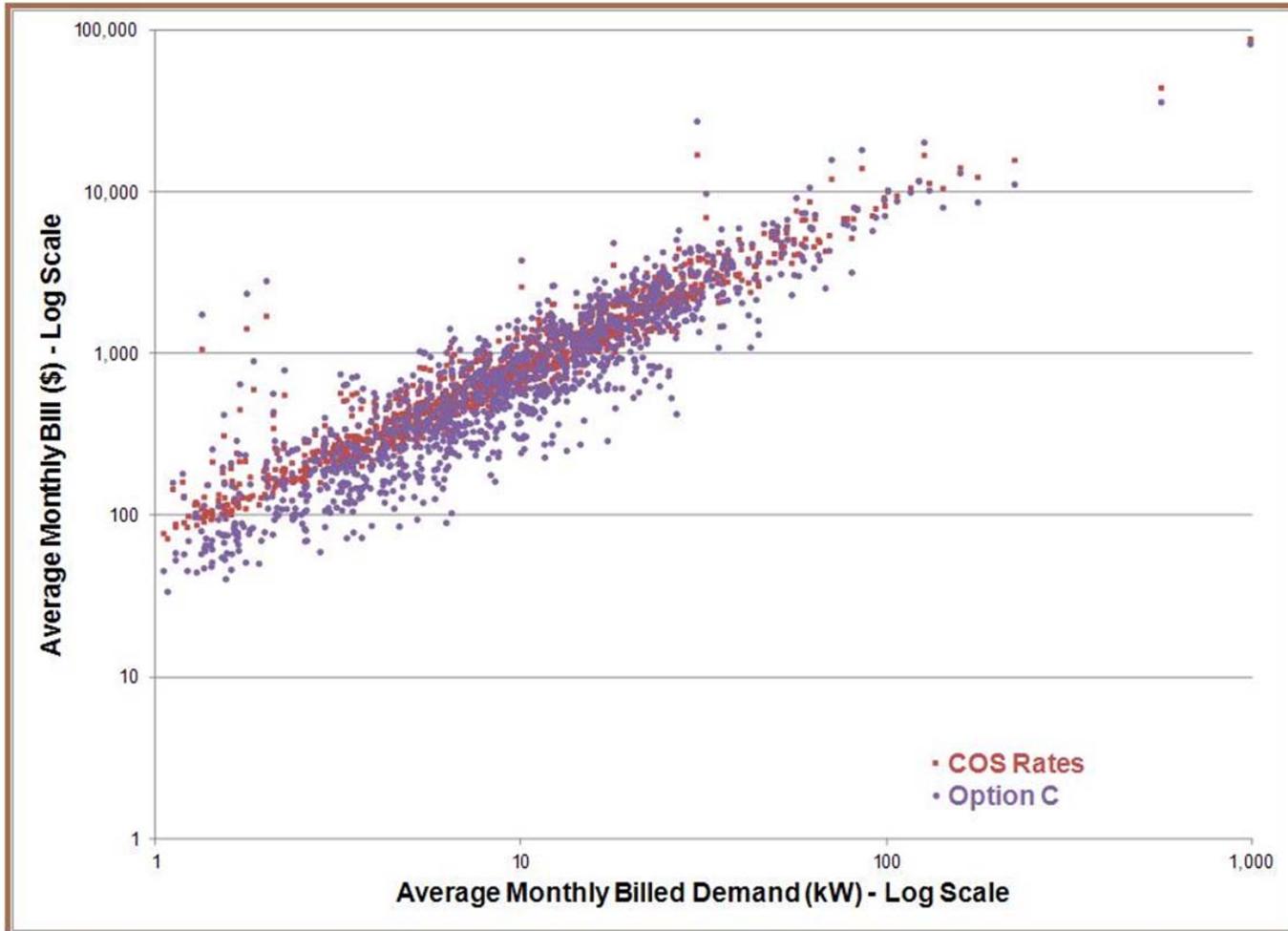
# Cost of Service versus Option B



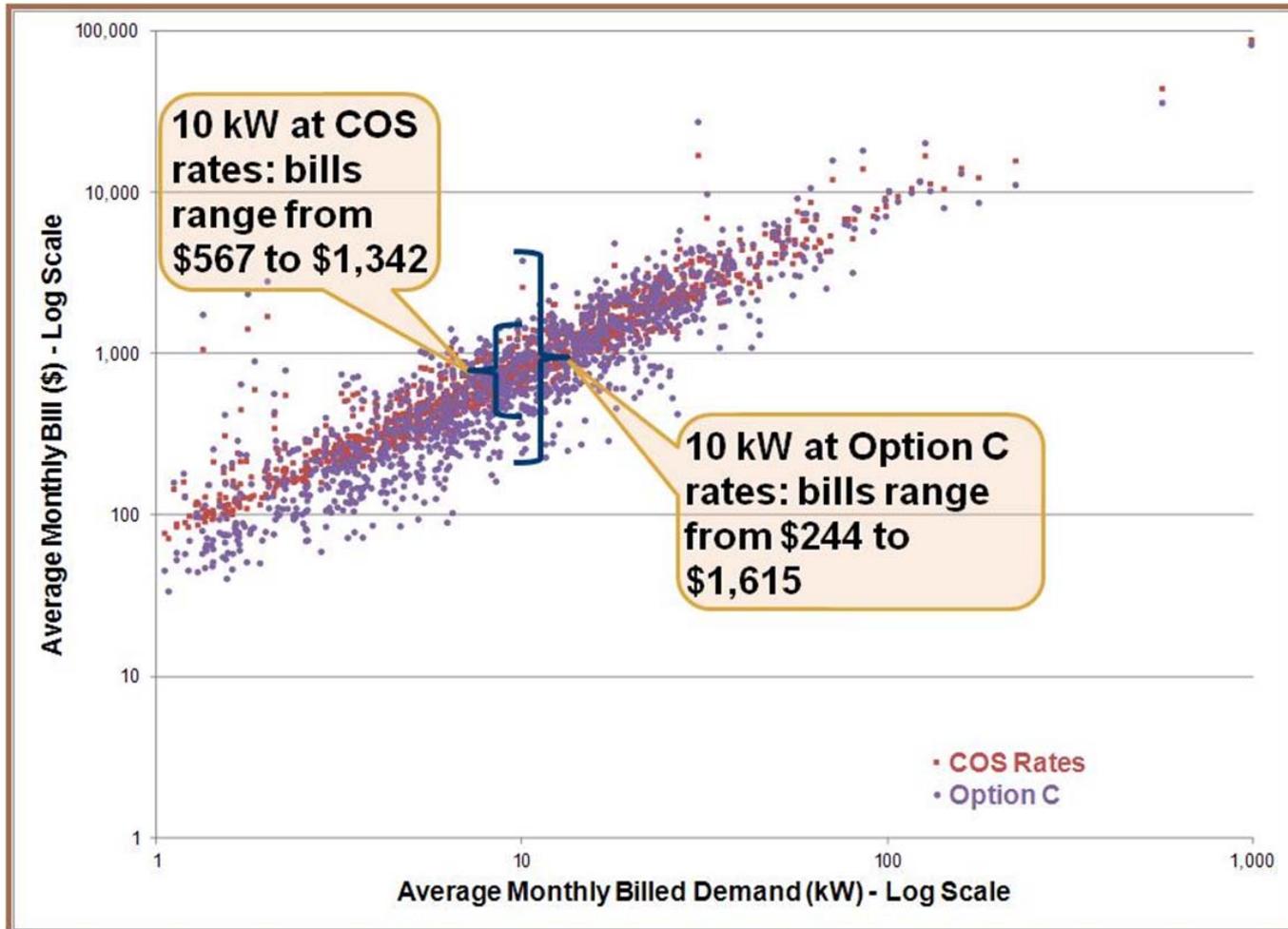
# Cost of Service versus Option B



# Cost of Service versus Option C



# Cost of Service versus Option C



# Results

- **Tremendous variation in energy usage and demand levels for small general service customers**
- **Any change towards cost-of-service based rates results in potentially large bill impacts**
- **Gradual introduction of demand rates will increase customer acceptance of new ratemaking concept**
- **Careful and thoughtful introduction, outreach follow-up, and training of customer service representatives will increase success of new demand charges**

# Summary and Conclusions

- **Fixed cost recovery is increasingly important for all electric utilities**
- **Three ways to increase fixed cost recovery for low usage customers:**
  - Higher Customer Charge
  - Minimum Energy Charge
  - Demand Charge
- **AMI metering increases cost-effectiveness of ratemaking options available for low usage customers**
- **New rate design options increase fixed cost recovery while meeting utility policy objectives (efficiency, customer acceptance, etc.)**
- **Careful implementation including focused public outreach efforts and training of customer service representatives will increase the implementation success of these rate design changes**

# Discussion