Seattle City Light
City Light Review Panel Meeting
October 25, 2012

Use of Block Rate Structures in Electric Utility Ratemaking:
Options for City Light to Consider in Modifying Residential Rate Blocks

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Overview of Presentation

- Introduction and overview
- Discussion of block rates
  - SCL residential block rates
  - Block rate structures used by other municipal and private utilities nationwide
  - Methods for establishing block rate structures
- Changes at SCL impacting lifeline rate concept
- Promoting energy efficiency with block rate structure
- Summary and Discussion: Possible next steps for SCL to consider in adjusting residential rate structure

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Summary from July Meeting: Fixed Cost Recovery Reflects Cost of Service

- 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

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Discussion of Block Rate Structure

- What is a block rate structure?
  - A schedule of prices for electricity wherein the price per kilowatt-hour (kWh) changes at different levels of consumption.
  - For example, if the first 300 kWh of use per month are charged at one rate and all use over 300 kWh is charged at a higher rate, the rate schedule is an inverted or increasing block rate structure.

- Why use an inverted block rate structure?
  - The inverted block rate structure is designed such that the more energy you consume, the higher your average price.
  - Can help promote conservation and/or improve efficiency, and meet other policy objectives (e.g., lifeline rate).

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SCL Residential Block Rates:
History of rate block changes at SCL

Year	Rate Schedule	Block	Energy (kWh)	Rate
1953	Standard Residential	1	First 60	0.0300 ($/kWh)
	Standard Residential	2	Next 90	0.0180 ($/kWh)
	Standard Residential	3	Next 90	0.0100 ($/kWh)
	Standard Residential	4	Next 2250	0.0075 ($/kWh)
	Standard Residential	5	> 2500	0.0090 ($/kWh)
1953	All Electric Residential	1	First 500	5.0000 ($/month)
	All Electric Residential	2	Next 2000	0.0070 ($/kWh)
	All Electric Residential	3	> 2500	0.0090 ($/kWh)
1971	Standard Residential	1	First 60	0.0300 ($/kWh)
	Standard Residential	2	Next 120	0.0200 ($/kWh)
	Standard Residential	3	> 180	0.0090 ($/kWh)
1977	Standard Residential	1	< 480	0.0078 ($/kWh)
	Standard Residential	2	Next 720	0.0099 ($/kWh)
	Standard Residential	3	> 1200	0.0120 ($/kWh)
1977	Limited Residential Rate	n/a	n/a	1.5000 Customer Charge ($/month)
	Limited Residential Rate	n/a	n/a	0.0121 Energy Charge ($/kWh)
1980	Summer Residential	1	First 300	0.0078 ($/kWh)
	Summer Residential	2	> 300	0.0175 ($/kWh)
	Winter Residential	1	First 480	0.0086 ($/kWh)
	Winter Residential	2	> 480	0.0230 ($/kWh)

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Comparison of Residential Rate Structures

Utility	Inverted Block Rate Structure	No. of Blocks	Size of first block (kWh)	Seasonal Rates
Seattle City Light	Yes	2	300 / 480	Yes
PNW Municipal Utilities				
Puget Sound Energy	Yes	2	600	No
Snohomish PUD	No			Yes
Tacoma Power	No			No
Portland General Electric	Yes	2	1000	Yes
Eugene Water & Electric Board (EWEB)	Yes	3	800	Yes
PNW Investor-Owned Utilities				
Avista	Yes	3	600	No
Idaho Power	Yes	2	300	Yes
PacifiCorp (Pacific Power & Light)	Yes	2	600	No

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Comparison of Residential Rate Structures (cont.)

Utility	Inverted Block Rate Structure	No. of Blocks	Size of first block (kWh)	Seasonal Rates
Seattle City Light	Yes	2	300 / 480	Yes
Municipal Utilities				
Austin Energy (Current)	Yes	2	500	Yes
Austin Energy (Proposed Dec. 2011)	Yes	5	500	Yes
City Public Service Energy	No			Yes
Colorado Springs Utilities	No			Yes
Jacksonville Electric Authority	No			No
Long Island Power Authority	Yes	2	250	Yes
LADWP - Zone 1	Yes	3	350	Yes
LADWP - Zone 2	Yes	3	500	Yes
Memphis Light, Gas & Water	Yes	2	2000	Yes
Omaha Public Power District	Yes	3	100	Yes
Sacramento Municipal Utility District	No			Yes
Salt River Project	Yes	3	700	Yes
Santee Cooper	No			Yes

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SCL Residential Block Rates:
Basis and purpose of 1977-1980 Block Rates

- Promote conservation
- Lifeline rates
- Meet “essential residential usage”
  - Cooking
  - Refrigeration
  - Lighting

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SCL Residential Block Rates: Changes since 1977-1980

- Drop in average usage levels
- Change in energy consumption patterns
- Possible changes to definition of “essential residential usage”

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Changes in Average Monthly Usage

SCL Residential Customers:
Average Monthly Use (kWh/month)

	1981	2011	% Decrease
Winter Period	1,329	987	26%
Summer Period	936	631	33%
Annual Average	1,067	750	30%

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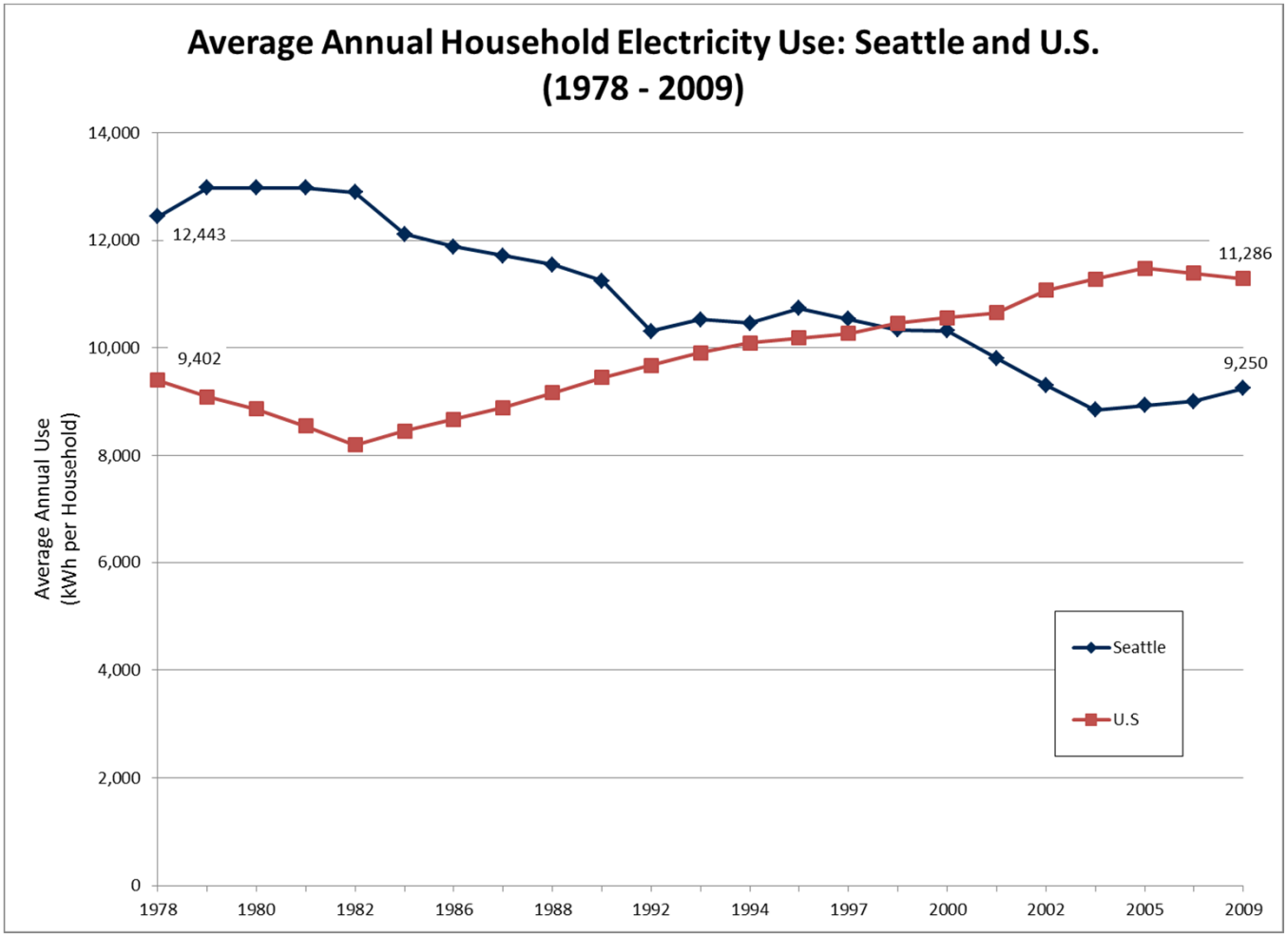
Changes in Average Annual Usage



Source: Seattle City Light Residential Customer Characteristics Survey 2009,
Energy Information Administration's Residential Energy Consumption Survey 2009

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Estimated Energy Usage for Common Appliances

Appliance	Range of Energy Usage (kWh/month)
Stoves (Oven & Cooktop)	43 – 132
Microwave Oven	30
Coffee Maker	10
Toaster Oven	8
Dishwasher	22 – 37
Refrigerator	37 – 102
Separate Freezers	42 – 73
Clothes Washers	3 – 18
Clothes Dryers	100 – 120
Water Heating	155 – 353
Television	29 – 31
Computer & Monitor	20
Laptop	12
CFL Light bulbs	2 – 5
Incandescent Light bulbs	6 - 23

Source: SCL Residential Customer Characteristics Survey 2009, PSE Energy Cost Guide, Snohomish PUD Appliance Cost Fact Sheet, Energy Information Administration's Residential Energy Consumption Survey 2009

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Methods for Establishing Block Rate Structures: Lifeline Rate Methodology

- Lifeline rate concept: Covering essential needs
  - The term “lifeline” comes from telephone companies’ proposals for offering low-cost, limited service to customers who would use the phone only for emergency purposes. The service would thus provide customers with a “lifeline.”
  - An inverted rate schedule for residential customers with the first several hundred kilowatt-hours per month are priced at a low, below-cost rate. The amount of electricity priced at this low rate is the amount considered essential for basic use for lights, cooking, and refrigeration.
  - For City Light’s lifeline rate, the revenue loss due to charging the low lifeline rate is recovered by raising the end block (or tail block) rate for consumption for all residential customers.
  - Question: What is current “essential residential usage”?

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Methods for Establishing Block Rate Structures: Issues with Lifeline Rate Methodology

- Significant reduction in energy usage levels
- Implementation of low income rate assistance program
- Difficulty determining “essential residential usage”
- Greater fixed costs and lower variable costs

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Methods for Establishing Block Rate Structures: Promoting Energy Efficiency/Conservation Methodology

- Setting rate blocks so that a portion of customers and/or energy usage are priced at higher rates.
- Complexity of rate structure (number of blocks)?
- Steepness of rate differentials?

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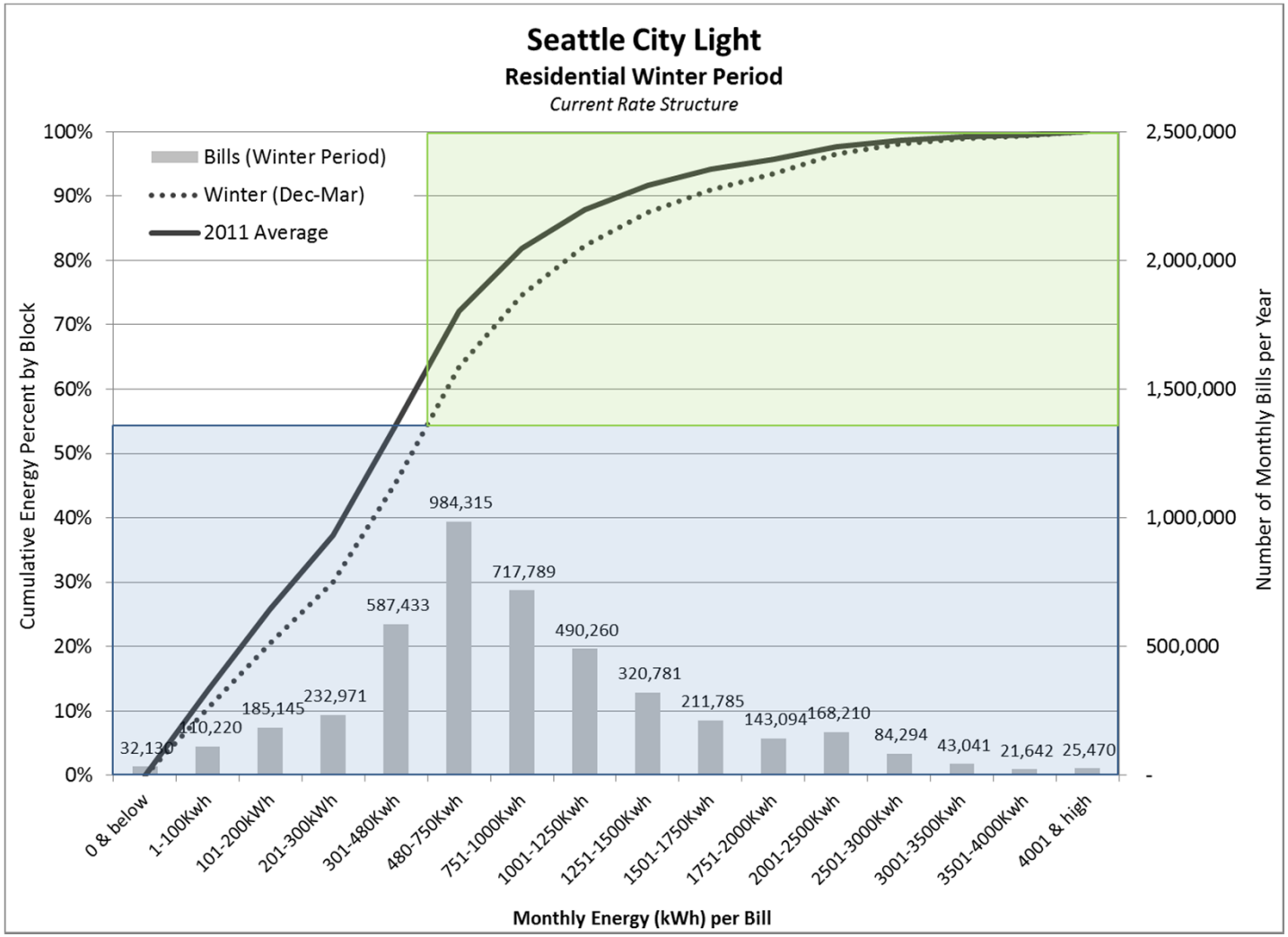
Bill Frequency Analysis:
Current Rate Structure in Winter Period



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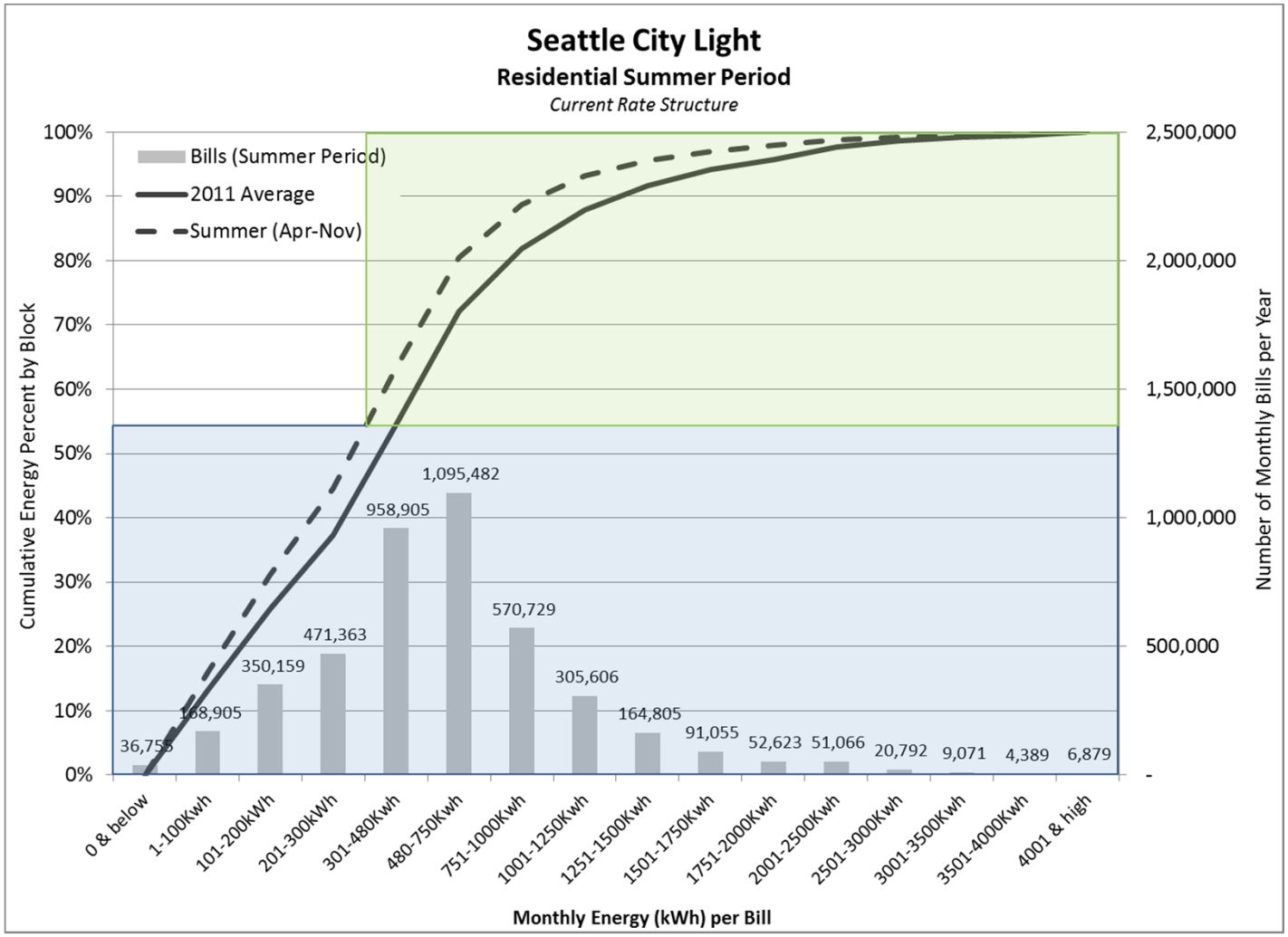
Bill Frequency Analysis:
Current Rate Structure in Summer Period



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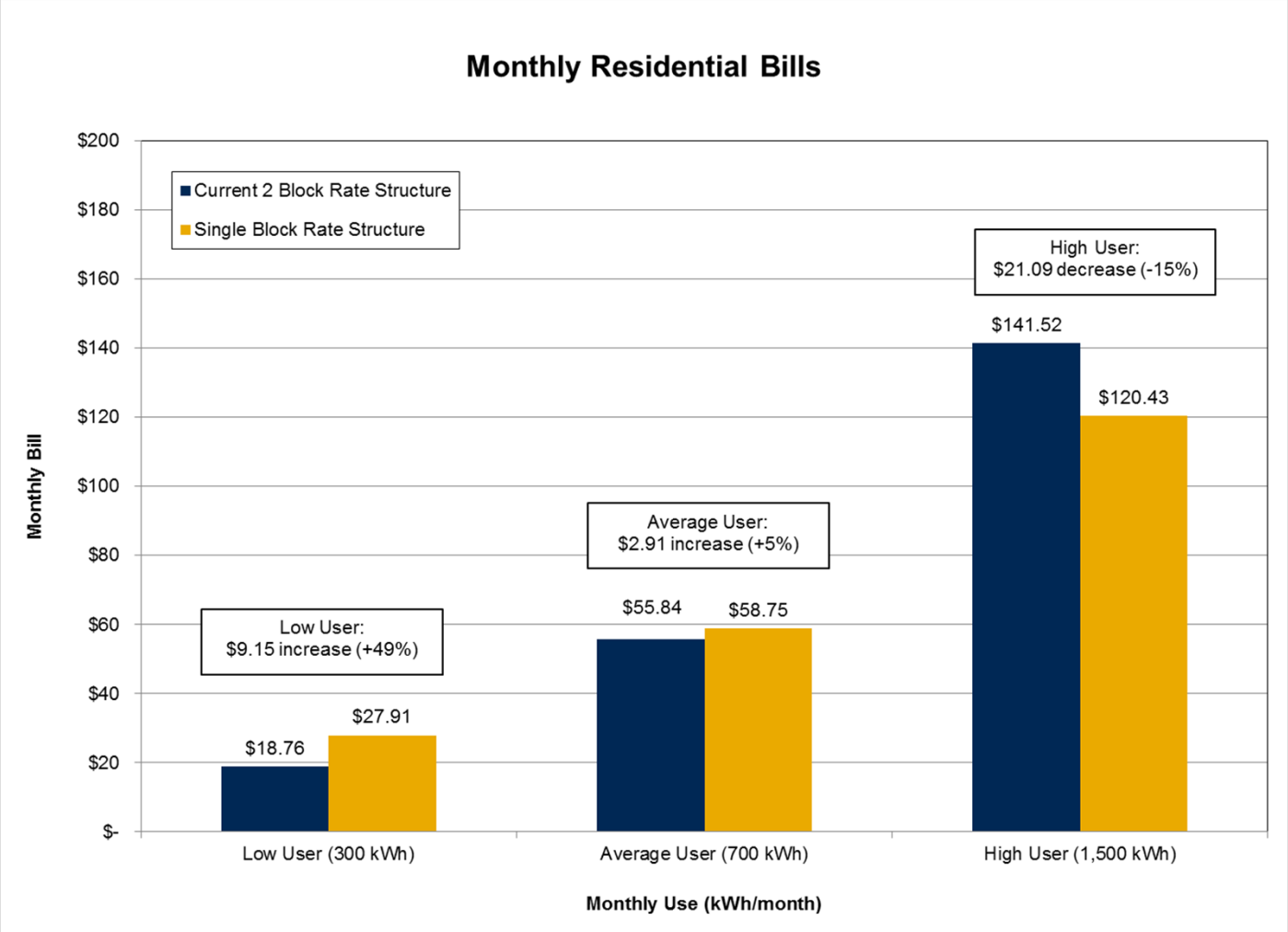
Alternative Single Block Rate



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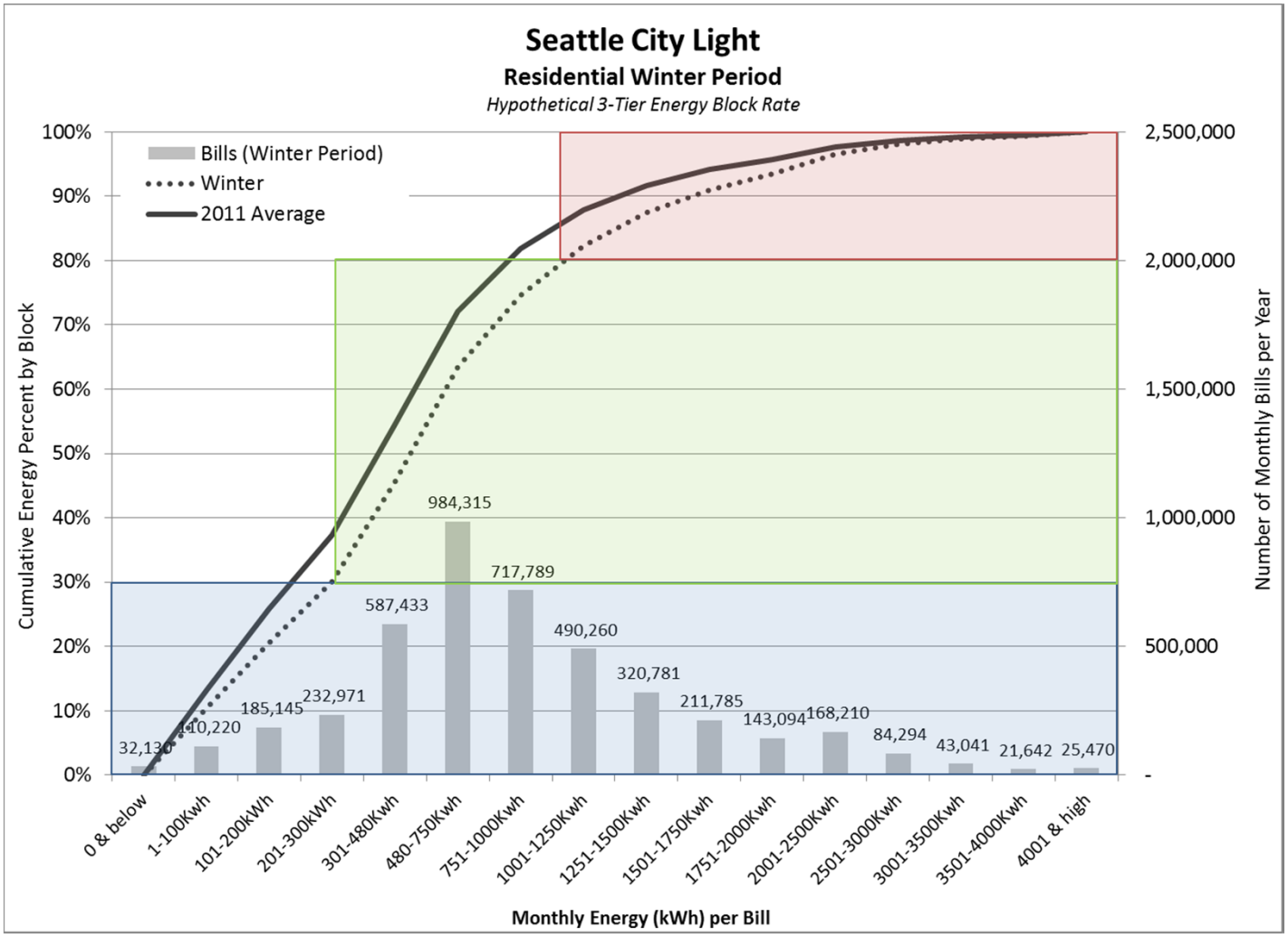
Bill Frequency Analysis:
Hypothetical 3-Tier Block Rate in Winter Period



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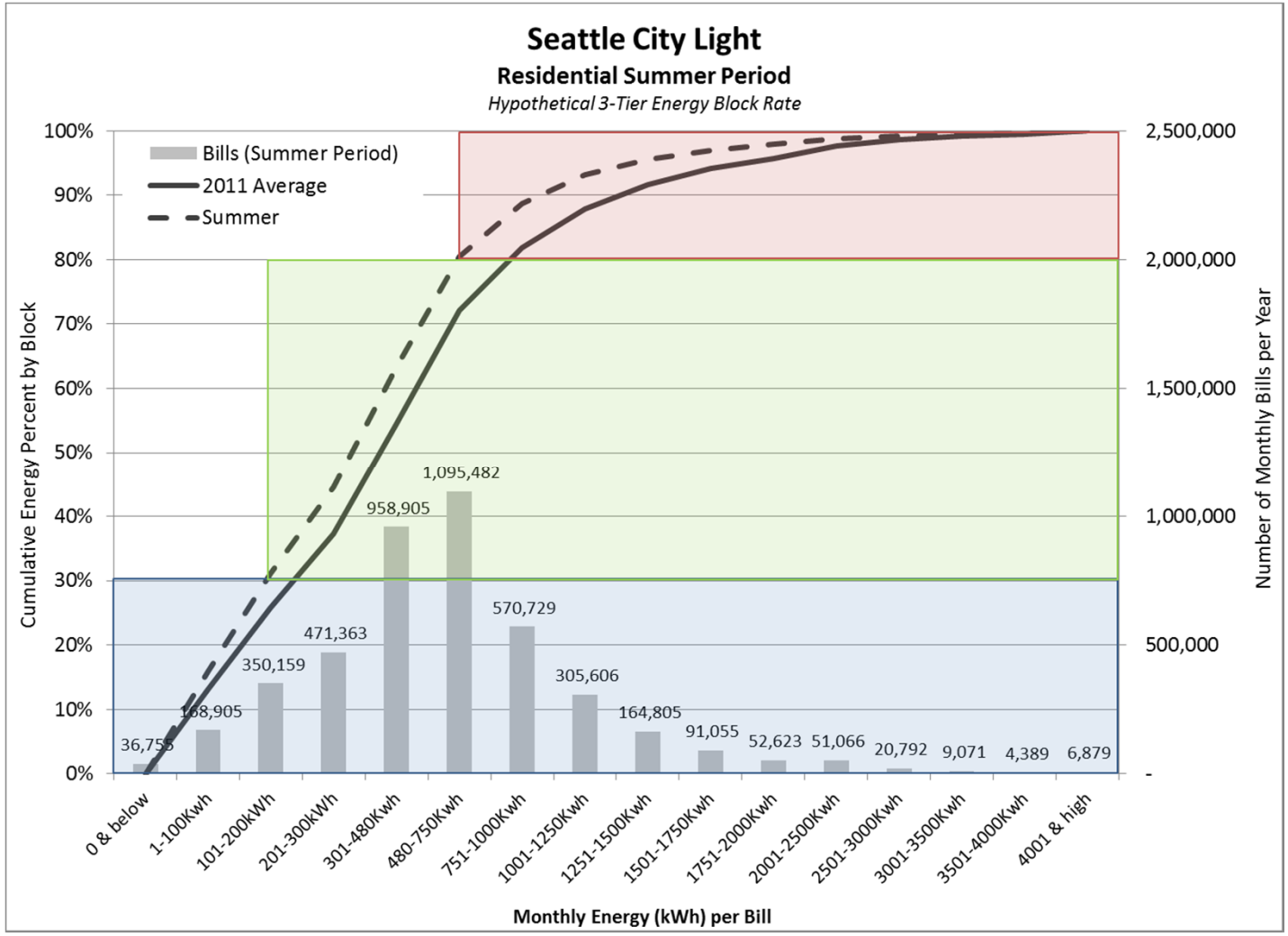
Bill Frequency Analysis:
Hypothetical 3-Tier Block Rate in Summer Period



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3-Tier Block Rate Structure: Hypothetical Rates

- Use of marginal and average costs for setting block rate structure
  - Marginal Cost (without tax) = 9.5 ¢/kWh
  - Average Cost = 8.5 ¢/kWh
  - Low Cost = 5.5 ¢/kWh

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Summary and Conclusions

- Existing SCL rate structure established under very different circumstances.
- Implementation of low income discount and difficulty in defining “essential use” makes updating existing rate structure challenging.
- An inverted block rate structure that targets set number of customers or energy usage may better meet current policy objectives.
- Need for fixed cost recovery needs to be included in evaluation of rate structures.

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Discussion

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