Part B – Pre-filed Testimony of John Howat

BEFORE THE PUBLIC UTILITIES REGULATORY AUTHORITY OF CONNECTICUT

PURA Investigation into Distribution	**)**	
System Planning of the Electric Distribution	**)**	
Companies – New Rate Designs	**)**	**Docket 17-1203RE11**
and Rate Reviews	**)**	

DIRECT TESTIMONY AND EXHIBITS OF

JOHN HOWAT

ON BEHALF OF

THE OFFICE OF EDUCATION, OUTREACH, AND ENFORCEMENT

April 26, 2021

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EXHIBITS

I. Introduction

Q. PLEASE STATE YOUR NAME, JOB TITLE, EMPLOYER AND BUSINESS ADDRESS.

A. My name is John Howat. I am a Senior Policy Analyst at the National Consumer Law Center ("NCLC"), 7 Winthrop Square, Boston, Massachusetts 02110. The National Consumer Law Center is a non-profit law and policy advocacy organization using expertise in consumer law and energy policy to advance consumer justice, racial justice, and economic security for low-income families and individuals in the United States.

Q. PLEASE DESCRIBE YOUR PROFESSIONAL BACKGROUND AND EXPERIENCE.

A. Over the past 21 years at NCLC, I have managed a range of regulatory, legislative, and advocacy projects across the country in support of low-income consumers' access to utility and energy-related services. I have been involved with the design and implementation of energy affordability and efficiency programs, regulatory consumer protections, transportation electrification, rate design, home energy improvement financing, issues related to metering and billing, credit scoring and reporting, energy burden and demographic analysis. In addition, I have presented at national conferences, including for the National Community Action Partnership, National Community Action Foundation, National Association of Regulatory Utility Commissions, and National Association of State Utility Consumer Advocates, National Energy Assistance

Directors Association, National Energy and Utility Affordability Coalition, and the National Governors Association.

I am the co-author of Access to Utility Service, a law and policy manual published by NCLC, and the 2016 Lawrence Berkeley National Laboratory report, "Recovery of Utility Fixed Costs: Utility, Consumer, Environmental and Economist Perspectives."[1] I am the primary author of "Home Energy Costs: The New Threat to Independent Living for the Nation's Low-Income Elderly,"[2] "Tracking the Home Energy Needs of Low-Income Households through Trend Data on Arrearages and Disconnections," [3] "Rethinking Prepaid Utility Service: Customers at Risk,"[4] and "Public Service Commission Consumer Protection Rules and Regulations: A Resource Guide."[5] My list of filings before state regulatory commissions is included as Attachment JH-1.

I have been professionally involved with energy program and policy issues since 1981. Prior to joining the Advocacy Staff at National Consumer Law Center, I consulted with a broad range of public and private entities on issues related to utility industry restructuring. Previously, I worked as Research Director of the Massachusetts Joint Legislative Committee on Energy, Economist with the Electric Power Division of the Massachusetts Department of Public Utilities, and Director of the Association of Massachusetts Local Energy Officials. I have a Master's Degree from Tufts University's Graduate Department of Urban and

Environmental Policy and a Bachelor of Arts Degree from The Evergreen State College.

Q. HAVE YOU TESTIFIED PREVIOUSLY BEFORE STATE PUBLIC UTILITIES COMMISSIONS?

A. I have presented testimony before utility regulatory commissions in Alabama, Arizona, California, Idaho, Illinois, Indiana, Louisiana, Maryland, Massachusetts, Missouri, New Mexico, Nevada, North Carolina, Pennsylvania, Rhode Island, South Carolina, Texas, Vermont, Virginia, Washington State, and Wisconsin. A list of my Testimony delivered over the past 21 years is attached as Exhibit JH-1.

Q. ON WHOSE BEHALF ARE YOU TESTIFYING?

A. I am testifying on behalf of the Connecticut Public Utilities Regulatory Authority's ("PURA") Office of Education, Outreach and Enforcement ("EOE").

Q. WHAT ARE THE PURPOSES OF YOUR TESTIMONY?

A. The purposes of my testimony are to (1) address issues related to the affordability of home electricity service and the need in Connecticut for enhanced affordability programming, (2) identify and describe appropriate programmatic responses to affordability challenges, (3) provide cost and benefit estimates of company-specific "tiered discount" and "straight discount" programs, and (3) recommend that PURA direct Eversource and United Illuminating ("UI") to submit detailed plans to implement tiered discount programs for income-eligible residential

customers to operate in conjunction with effective arrearage management programs.

Q. PLEASE SUMMARIZE YOUR KEY POINTS AND RECOMMENDATIONS.

A. Testimony that follows will present evidence demonstrating the following:

- Low-income households served by Eversource and UI carry heavy home electricity burdens, much higher than those households with more stable, higher income.
- Eversource's and UI's low-income, "hardship" customers carry past due account balances in greater numbers and at higher levels than "general residential" customers who have not been identified as having income that would qualify them to participate in the Connecticut Energy Assistance Program or other available means-tested energy assistance programs.
- UI and Eversource hardship customer arrearage rates are 2- to 3-times higher than those of general residential customers.
- The average dollar values of arrearages is much higher for hardship customers and has increased over the past year since the onset of the COVID-19 pandemic.
- Examination of Eversource zip code level disconnections reveals a strong correlation between race and disconnections. (UI was unable to provide zip code level disconnections data.)

- For many families and households in Connecticut, income in excess of 300% of the federal poverty guidelines is required to pay for the most basic necessities.
- Nearly 35% of Connecticut's population lives at or below 300% of poverty.
- Elevated rates of low-income service disconnections and bill payment pressures pose a threat to the health and safety of customers.
- Unaffordable home energy bills lead many low-income households to resort to unsafe and unhealthy means of heating their homes, or to forego other basic necessities to retain access to utility service.
- Distinct from the straight discount program design, the tiered discount approach brings the electricity burdens of the lowest-income participants to a level that is more manageable than that which would be provided under the straight discount model.

Based on these findings, I will recommend the following:

- PURA should direct Eversource and UI to implement low-income customer affordability programs that meet the following objectives:
  - Serves all residential electricity customers at or below 60% of the state median income eligible to participate in the Low Income Home Energy Assistance Program ("LIHEAP");
  - Lowers program participants' electricity burdens to an affordable level;

- Promotes regular, timely payment of electric bills by program participants;
- Comprehensively addresses payment problems associated with program participants' current and past-due bills;
- Is funded through a mechanism that is reliable while providing sufficient resources to meet policy objectives over an extended timeframe; and
- Is administered efficiently and effectively.

- PURA should direct Eversource and UI to expeditiously develop and file plans to implement tiered discount programs modeled after those currently operating in New Hampshire. Development of implementation plans should be in collaboration with EOE and other stakeholders.
- Program benefits levels should be set to reduce participant payments to achieve target electricity burden levels of either
  - 5% for all participants, or
  - 4% for non-heating customers and 6% for electric heating customers.
- Eversource and UI should continue to offer arrearage management programs operating in conjunction with tiered low-income rates.
- Program funding should come from non-bypassable, uniform volumetric charges – approved prior to program implementation – on all UI and Eversource customers.

- Administrative structures and procedures that apply to the state's LIHEAP should be "piggybacked" onto any new electricity affordability program to create administrative efficiencies.

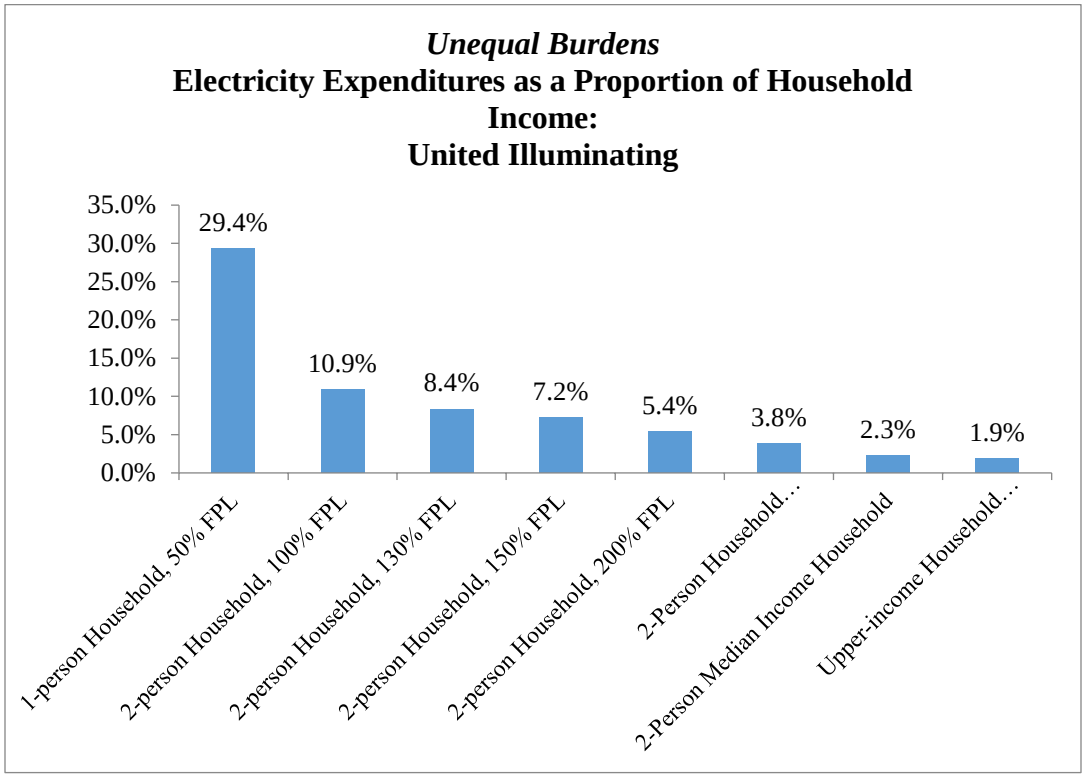
II. Affordability Challenges

Q. PLEASE PROVIDE EVIDENCE OF AFFORDABILITY CHALLENGES FACED BY LOW-INCOME CUSTOMERS OF EVERSOURCE AND UNITED ILLUMINATING.

A. Many low-income customers struggle to maintain basic electricity service. Low-income bill payment challenges experienced by Eversource's and UI's low-income customers are partially explained through examination of federal poverty guidelines, data relative to income required by various family types to pay for basic necessities, residential customer expenditure data, and credit and collections data. Review of these data sets demonstrates that low-income households carry heavy home electricity burdens[1], much higher than those households with more stable, higher income. For example, as illustrated below, a two-person household income at 100% of the federal poverty level in the UI service territory shoulders an electricity burden that is more than 5 times higher than that of a household with annual income of $100,000.

[1] The term "electricity burden" refers to the proportion of household income devoted to electric bill payment.

Figure 1

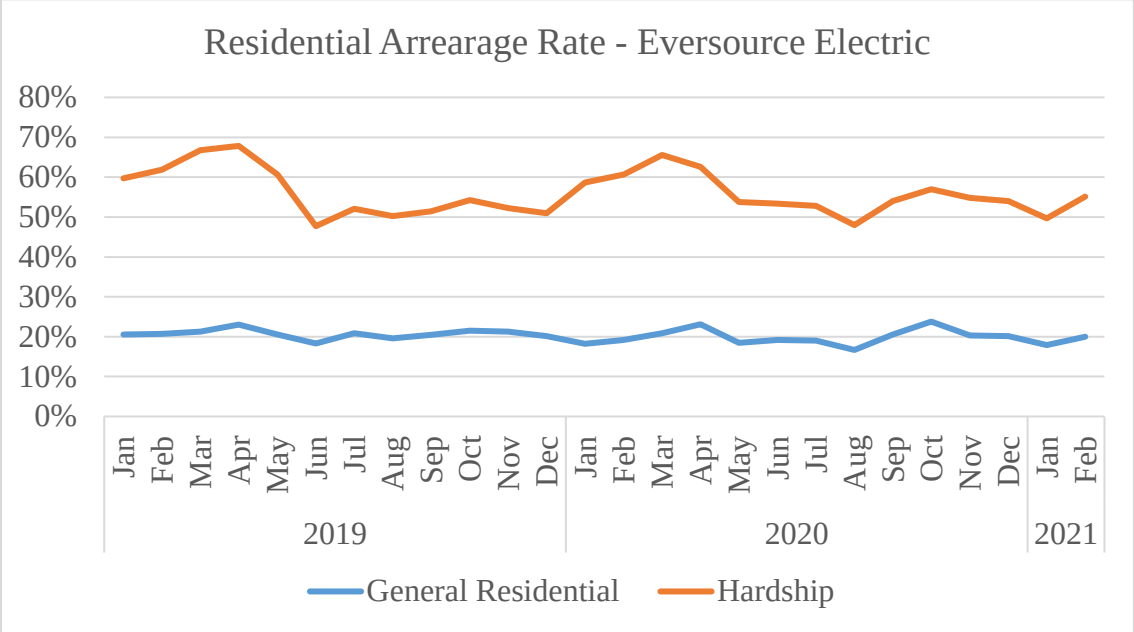


Sources: 2021 Poverty Guidelines, UI-EOE 3.

In addition to receiving bills that are very high relative to household income, Eversource's and UI's low-income, "hardship" customers carry past due account balances in greater numbers and at higher levels than "general residential" customers who have not been identified as having income that would qualify them to participate in the Connecticut Energy Assistance Program or other available means-tested energy assistance programs. The charts below, based on Eversource and UI responses to EOE discovery requests, show the gap in arrearage rates between general residential customers and hardship customers for both companies.[2]

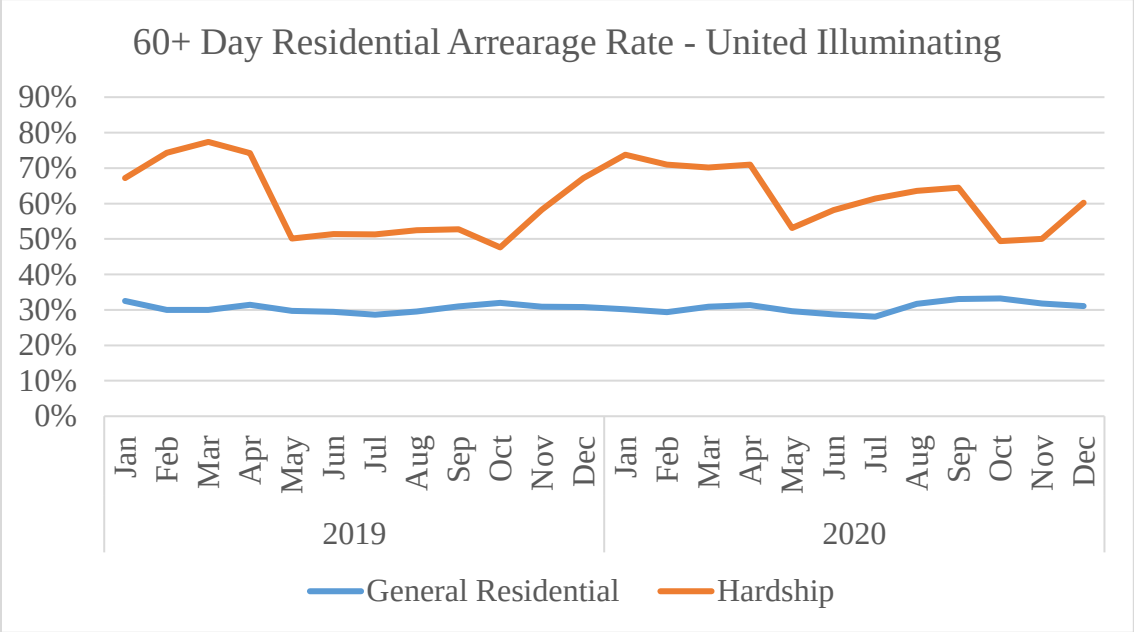
[2] Please note that the charts illustrating UI arrearage rates and levels reflect only those customers with seriously past due accounts of 60 days or more. Eversource was unable to compile a response reflecting

Figure 2



Source: Eversource-EOE 2, 3.

Figure 3



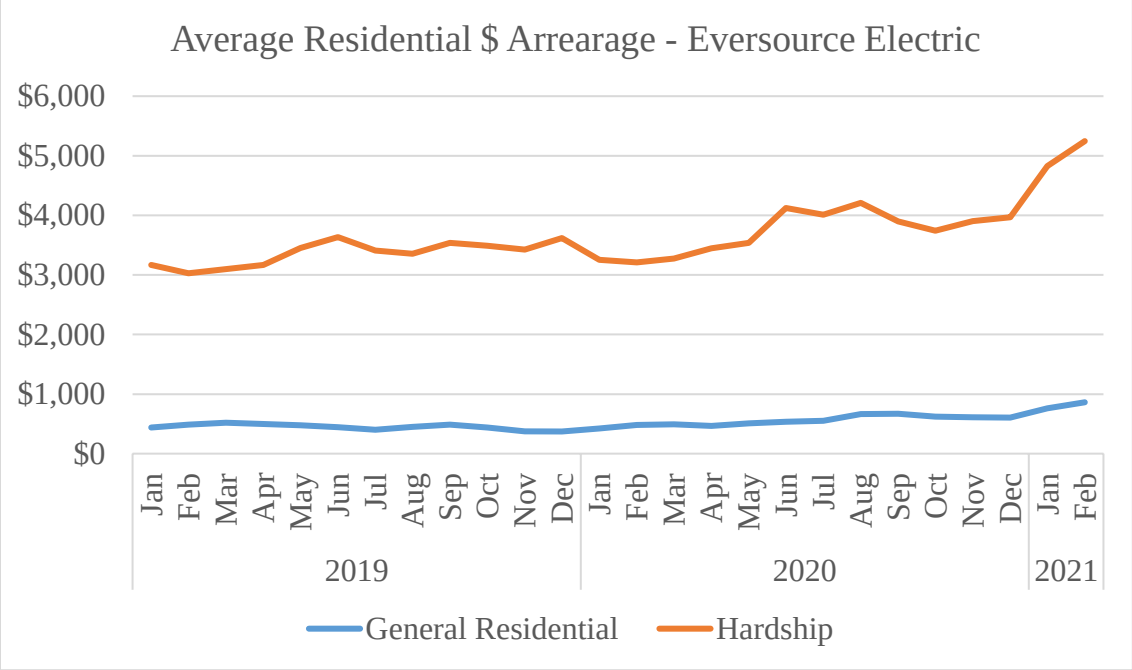
Source: UI-EOE 2, 3

arrearages by vintage. Thus, the charts illustrating Eversource residential customer arrears reflect all accounts, rather than those only of customers with accounts 60 days or more past due.

The graphs above show that over the past 2 years, hardship customer arrearage rates are at least 2- to 3-times higher than those of general residential customers. As discussed in greater detail below, the gaps in arrearage rates are directly attributable to household income and expense circumstances, and income that is inadequate to pay for basic monthly necessities.

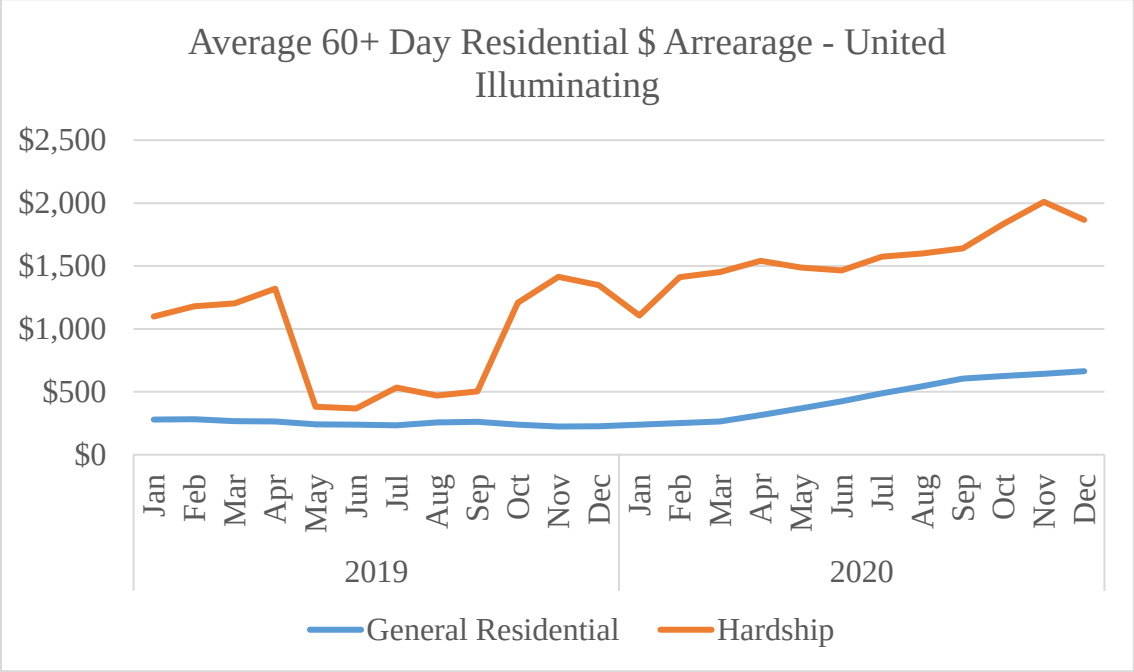
In addition to a gap in arrearage rates between low-income and non-low-income electricity customers, the Companies' data show that the average dollar value of low-income household arrearages is also far higher than that of their higher-income counterparts. This dynamic is illustrated in the charts below.

Figure 4



Source: Eversource-EOE 2, 3

Figure 5



Source: UI-EOE 2, 3.

Perhaps attributable the economic impacts of the COVID-19 pandemic, the average dollar value of arrears has increased substantially, particularly for hardship customers of both companies, beginning in March, 2020. However, even before the onset of COVID-19, the average dollar value of arrear was, unsurprisingly, much greater for those households struggling to make ends meet.

Q. ARE THERE RACIAL JUSTICE RAMIFICATIONS OF UNAFFORDABLE ELECTRIC BILLS?

A. Yes. In addition to the arrearage data describes above, I examined zip code level disconnections data by provided by Eversource.[3] This examination entailed matching zip code-level American Community Survey race and population data

[3] UI was unable to provide data on service disconnections by zip code.

with the zip code-level disconnections data provided by Eversource. I then calculated total disconnections by zip code over the period from January 2019 – February 2021 and created a ratio of total disconnections to total residential accounts for each of the zip codes served by Eversource. Finally, I sorted and ranked zip codes by percent of the population consisting of people of color and Latinx people (Non-white population).

The data show a striking correlation between race/ethnicity and service disconnections. The table provided as Exhibit JH-2 shows that among the 20 zip codes with the highest disconnections ratio, 12 were among the top 20 zip codes with the highest people of color/Latinx populations. The top 20 disconnection ratios and the top 20 non-white population cells are shaded in the table provided in Exhibit JH-2 to more clearly illustrate the relationship between race and service disconnections.

As illustrated below, the correlation analysis of the race and disconnections data shows a strong relationship between the two variables, with a correlation coefficient of .774.

Correlations

		TotDisconnRate	PercentNonWhite
TotDisconnRate	Pearson Correlation	1	.774**
	Sig. (2-tailed)		.000
	N	248	236
PercentNonWhite	Pearson Correlation	.774**	1
	Sig. (2-tailed)	.000	
	N	236	245

**. Correlation is significant at the 0.01 level (2-tailed).

These findings and their unequivocal racial equity ramifications place added emphasis on the need for enhanced utility bill affordability in Connecticut. Reversing the inequities that are 'baked into' the existing home energy security landscape requires purposive corrective action.

Q. WHY ARE LOWER INCOME HOUSEHOLDS SOMETIMES LATE IN PAYING THEIR UTILITY BILLS?

A. For most customers with past due accounts, there is simply insufficient income to pay for basic necessities such as rent, food, clothing, childcare, and health care. Understanding low-income household utility arrearages, and designing programs and credit and collection protocols that effectively reduce past due accounts, requires examination of income and expense realities faced by households lacking sufficient income to make ends meet. The "Self-Sufficiency Standard" provides an analytical framework for conducting such an examination.

Q. WHAT IS THE SELF-SUFFICIENCY STANDARD?

A. Over the past 20 years, a number of alternatives to the traditional poverty measurements have been developed by analysts interested in overcoming shortcomings of the traditional, federal poverty measurement. These shortcomings include inability to account for locational price differences, family or household composition, and the true cost of a basic necessity "basket of goods." One alternative measure is the "Self-sufficiency Standard," developed primarily by Diana Pearce of the University of Washington.

The Self-sufficiency Standard entails a calculation of the amount of income required to meet basic needs. Self-sufficiency budgets are calculated for a range of family compositions, from one adult with no children, to one adult with one infant, one adult with one preschooler, up to two-adult families with six teenagers. The self-sufficiency budget includes the cost of only the most basic necessities, including food, housing (including home energy service), health care, childcare, transportation, and clothing. There is nothing for entertainment, vacations, or other "non-essential" items. The Standard is calculated by city/town using publicly-available data sources, including HUD Fair Market Rents, USDA Low Cost Food Plan, the National Household Travel Survey and other sources. The Self-sufficiency Standard has thus far been calculated for 169 Connecticut cities and towns. Calculations of the Standard incorporate geographic variations in costs and cost variation by family composition.

A Self-sufficiency Standard report was prepared for the Connecticut Office of Health Strategy and the Connecticut Office of the State Comptroller in 2019.[4] I calculated the figures in the tables below using microdata included with the report and 2019 poverty guidelines from the U.S. Department of Health and Human Services.

[4] Pearce, "The Self-Sufficiency Standard for Connecticut 2019," October 2019. (http://www.selfsufficiencystandard.org/Connecticut)

Table 1

Connecticut Self-Sufficiency Wage by Selected Household Composition

Family Composition	*Median Connecticut Self-Sufficiency Wage - 2019*	*Ratio of 2019 Self-Sufficiency Wage to Poverty*
1 Adult	$26,011	208.3%
1 Adult, 1 Preschooler	$55,286	326.9%
1 Adult, 1 Teenager	$35,325	208.9%
2 Adults, 1 Infant, 1 Preschooler	$85,677	332.7%
2 Adults, 2 Schoolagers	$65,320	253.7%
2 Adults, 1 Teenager	$45,409	212.9%

Source: NCLC calculation using Connecticut Self-Sufficiency Standard microdata (http://www.selfsufficiencystandard.org/sites/default/files/selfsuff/docs/CT2019_all_families.xlsb)

Table 2

Connecticut Self-Sufficiency Wage by Household Size

Household Size	*Median Connecticut Self-Sufficiency Wage - 2019*	*Ratio of 2019 Self-Sufficiency Wage to Poverty*
1	$26,011	208.3%
2	$46,207	273.3%
3	$60,889	285.5%
4	$77,242	300.0%
5	$93,040	308.4%
6	$111,366	322.0%
7	$127,205	326.1%
8	$138,057	317.9%

Source: NCLC calculation using Connecticut Self-Sufficiency Standard microdata (http://www.selfsufficiencystandard.org/sites/default/files/selfsuff/docs/CT2019_all_families.xlsb)

Table 2 shows that the amount of income needed for a range of family types to pay for basic necessities exceeds 2- to 3-times the federal poverty guidelines. While there are considerable cost-of-living disparities across Connecticut cities and towns, Table 2 indicates that for a single adult, the median income level needed to make ends meet is 208% of poverty. A single adult with a preschool-aged child needs income of 326% of the poverty level to get by. Similarly, Table 3 shows the median self-sufficiency wage required in Connecticut by household size and shows that the average-sized household in Connecticut[5] requires income at nearly 300% of the federal poverty level to pay for the most basic necessities.

Q. HOW MANY PEOPLE IN CONNECTICUT LIVE BELOW 300% OF THE FEDERAL POVERTY LEVEL?

A. Based on the Census Bureau data highlighted in Table 4, below, nearly 35% of the Connecticut population lives below 300% of the poverty level. Thus, for many families, particularly those with young children, basic economic survival presents a great challenge. The Census Bureau estimates reveal that nearly 413,000 Connecticut residents live below 300% of the poverty level.

[5] The Connecticut average is 2.51 persons per household. American Community Survey Table B25010.

Table 3

Ratio of Income in 2019 to Poverty: Connecticut

Income to Poverty Ratio	Population	Percent	Cumulative Percent
Total:	3,460,446	100.0%	
Under .50	161,001	4.7%	4.7%
.50 to .74	82,418	2.4%	7.0%
.75 to .99	103,730	3.0%	10.0%
1.00 to 1.24	102,917	3.0%	13.0%
1.25 to 1.49	116,635	3.4%	16.4%
1.50 to 1.74	114,822	3.3%	19.7%
1.75 to 1.84	38,574	1.1%	20.8%
1.85 to 1.99	69,929	2.0%	22.8%
2.00 to 2.99	413,701	12.0%	34.8%
3.00 to 3.99	408,594	11.8%	46.6%
4.00 to 4.99	360,168	10.4%	57.0%
5.00 and over	1,487,957	43.0%	100.0%

In summary, examination of reliable data describing the income and expense circumstances of Connecticut families and households reveals that for many, struggles to stay current on utility bill payments are rooted in the lack of income to pay for basic necessities. For those that struggle to survive economically, enhanced programming to limit home energy bills would be a welcome relief while reducing pressure on utility uncollectible account balances.

III. Low-Income Utility Payment Difficulties and the Threat to Health and Safety from Loss of Service

Q. PLEASE DESCRIBE THE THREAT TO HEALTH AND SAFETY FROM LOSS OF ELECTRIC SERVICE.

A. Electricity service is widely considered to be a necessity of life and essential to public health and safety. In addition to providing everyday functions, secure,

reliable electricity service is critical in avoiding health and safety risks by providing safe lighting, heat,[6] cooling, power for medical devices, refrigeration of food and medications, and fuel for electric cooking appliances and electrically heated hot water.

Elevated rates of low-income service disconnections and bill payment pressures pose a threat to the health and safety of customers as well as the communities in which we live.

Q. HOW DO LOW-INCOME HOUSEHOLDS BALANCE RETAINING HOME ENERGY SERVICE WITH PAYING FOR OTHER BASIC NECESSITIES?

A. The National Energy Assistance Directors' Association's ("NEADA") *National Energy Assistance Survey* outlines the steps that many individuals and families must take in order to afford basic utility services, often at a risk to their own health.[7] The NEADA survey includes households that received assistance from the Low Income Home Energy Assistance Program ("LIHEAP"). In most states, this includes homes earning at or below 150% of the federal poverty level, but in some states includes those earning 60% or less of the state median income, or those enrolled in programs such as Temporary Assistance for Needy Families,

[6] Electricity is required for electric resistance space heating and to operate a boiler or furnace fueled by natural gas or heating oil.

[7] National Energy Assistance Directors' Association, *National Energy Assistance Survey* (Nov. 2011), *available at* http://neada.org/wp-content/uploads/2013/05/NEA_Survey_Nov11.pdf.

food stamps, Social Security Insurance, or similar assistance.[8] The NEADA survey found that in vulnerable homes, "[b]ecause of the difficultly they faced in paying their utility bills as many as 37% went without medical or dental care, and 34% did not fill a prescription or took less than their full dose of prescribed medication."[9] Many individuals reported making difficult or even dangerous decisions when addressing unaffordable energy costs: 39% closed off part of their home; 23% kept the home at a temperature they felt was unsafe or unhealthy; 21% left their home for part of the day; 33% used their kitchen stove or oven to provide heat; and 24% went without food for at least one day.[10]

Q. WHAT HARM MAY OCCUR WHEN A HOUSEHOLD EXPERIENCES LOSS OF HOME ENERGY SERVICE?

A. As noted in a report from AARP and others, "[i]t is common for a household that is denied electricity to turn to alternative and often dangerous means of providing light and heat in the home …. There are instances reported every year of the deaths of children and adults due to the use of a candle in a dwelling without electricity or heat."[11]

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[8] National Energy Assistance Directors' Association, *2009 National Energy Assistance Survey* (Apr. 2010), at 1-2, *available at:* http://neada.org/wp-content/uploads/2013/03/2010-04-19NEADA_2009_Survey_Report.pdf.

[9] *Id.* at 2.

[10] *Id.* at 5 (Table II).

[11] AARP, National Consumer Law Center, National Association of State Utility Consumer Advocates, Consumers Union, and Public Citizen, *The Need for Essential Consumer Protections: Smart Metering Proposals and the Move to Time-Based Pricing* (Aug. 2010), at 17, *available at* http://energy.gov/sites/prod/files/oeprod/DocumentsandMedia/NASUCA_Smart_Meter_White_Paper.pdf .

When candles are used for light in the absence of electricity, there is additional risk of fatal fire, according to the National Fire Protection Association ("NFPA").[12] An example of fatalities caused by a candle fire after a utility shut-off was the case of Tashika Turner, who lost three of her young children in a candle fire in New York in October, 2013, one day after her electric utility disconnected service for non-payment.[13]

In addition to safe lighting, electric service is required to operate most indoor cooling and heating equipment. Loss of such equipment can have fatal consequences. Extreme heat leads to deaths and illnesses that are preventable when people are able to stay cool indoors. From 1979 through 2003, excessive heat exposure caused at least 8,000 deaths in the United States.[14] In 2001, 300 deaths in the United States were attributed to excessive heat exposure.[15]

According to the US Department of Health and Human Services, Centers for Disease Control and Prevention, "[a]ir conditioning is the strongest protective factor against heat-related illness."[16] In cold weather, young children and the

[12] In a report entitled "Home Candle Fires," NFPA reviewed fire service reports and news clips about 117 identified fatal home candle fires in 2005 - 2010 that resulted in a total of 177 civilian fire deaths. Candles were used for light in the absence of power in 30, or one-quarter (26%), of these fires and in 60, or one-third (34%), of the associated deaths. Ahrens, Mary, "Home Candle Fires," National Fire Protection Association, December 2015, p. iv.
[13] *See*, e.g. CNN, "Official: 3 children die in Bronx fire after candle lit," http://www.cnn.com/2013/10/26/us/bronx-deadly-fire
[14] National Weather Service, National Oceanic and Atmospheric Administration, https://www.weather.gov/arx/heatindex_climatology
[15] Central Plains Area Agency on Aging, *Avoid Hot Weather Health Emergencies*, (July 20, 2011), accessible at: http://www.cpaaa.org/news-events/2011/7/20/avoid-hot-weather-health-emergencies.html.
[16] Centers for Disease Control and Prevention, https://www.cdc.gov/disasters/extremeheat/faq.html.

elderly are particularly at risk for cold-related illness or death.[17] Extreme heat is particularly dangerous for the elderly, the very young, and those with chronic health conditions.[18]

Loss of electric service also makes it difficult to manage chronic health conditions. In a 2007 report entitled "Unhealthy Consequences: Energy Costs and Child Health: A Child Health Impact Assessment of Energy Costs and the Low Income Home Energy Assistance Program," researchers identified effects of high energy bills and utility disconnections on health and safety. A key finding of the report is that "[i]n addition to imposing general hardship, disconnected utilities make it difficult to manage chronic conditions such as asthma or diabetes, which require electricity to operate medical equipment or to refrigerate medications, such as insulin."[19]

Utility shut offs are widely recognized grounds justifying the termination of rental leases.[20] Low-income households fortunate enough to have secured limited federally subsidized housing benefits are particularly at risk, as a utility service

[17] U.S. National Institutes of Health, National Institute on Aging, *Hypothermia: A Cold Weather Risk for Older People*, Press Release (Jan. 16, 2009), *available at* https://www.nih.gov/news-events/news-releases/hypothermia- cold-weather-risk-older-people.

[18] U.S. Centers for Disease Control and Prevention, *Extreme Heat Prevention Guide*, *available at* https://www.cdc.gov/disasters/extremeheat/heat_guide.html.

[19] Smith, Lauren A., et al., "Unhealthy Consequences: Energy Costs and Child Health: A Child Health Impact Assessment of Energy Costs and the Low Income Home Energy Assistance Program," Child Health Impact Working Group, April 2007, p. 7.

[20] *See, e.g Long Drive Apts. V. Parker*, 421 S.E.2d 631 (N.C. App. 1992) (affirming trial court ruling that tenant had materially breached the lease by allowing the electricity in her apartment to be cut off during periods of freezing temperatures.)

shut-off constitutes grounds for eviction and the loss of the subsidy altogether.[21] In addition, loss of essential utility service results in other costs to the consumer, including spoiled food, lost wages, and the like; as well as other costs to society, such as hospital room emergency care, other health care costs, and credit and collection costs.[22]

In short, despite the rapid changes in energy and utility economics and technologies, affordable access to service remains a basic necessity of life.

IV. Bill Affordability Programming

Q. PLEASE LAY OUT POLICY OBJECTIVES AND PROGRAM DESIGN PRINCIPLES OF AN EFFECTIVE LOW-INCOME ELECTRICITY AFFORDABILITY PROGRAM.

A. As noted above, reliable electricity service is a necessity of life. Without electricity, residents cannot participate effectively in present-day society or be secure from threats to health and safety. All utility customers, including those with low incomes, should have access to reliable and secure sources of electricity. To help ensure home energy security for low-income residents, what is needed is an electricity affordability program that:

[21] *See, e.g. Crochet v. Housing Authority of City of Tampa*, 37 F.3d 607, 613 (11th Cir. 1994) (referencing provision of public housing authority lease requiring tenants to maintain utility service as a condition of residency).

[22] National Association of State Utility Consumer Advocates, Encouraging State Legislatures and State Public Utility Commissions to Institute Programs to Reduce the Incidence of Disconnection of Residential Gas and Electric Service Based on Nonpayment (June 28, 2011), available at https://nasuca.org/encouraging-state-legislatures-andstate-public-utility-commissions-to-institute-programs-to-reduce-the-incidence-of-disconnection-of-residential-gasand-electric-service-based-on-nonpayment-2011-01/.

- Serves all residential electricity customers at or below 60% of the state median income eligible to participate in the Low Income Home Energy Assistance Program ("LIHEAP");
- Lowers program participants' electricity burdens to an affordable level;
- Promotes regular, timely payment of electric bills by program participants;
- Comprehensively addresses payment problems associated with program participants' current and past-due bills;
- Is funded through a mechanism that is reliable while providing sufficient resources to meet policy objectives over an extended timeframe; and
- Is administered efficiently and effectively.

Q. PLEASE PROVIDE RECOMMENDATIONS REGARDING ELIGIBILITY GUIDELINES, PARTICIPATION AND ENROLLMENT.

A. Income eligibility for participation in a discount program should be capped at no less than the LIHEAP income-eligibility guideline, currently 60% of the state median income.

All households receiving or eligible for benefits through the federal LIHEAP should be automatically enrolled in the electric affordability program. In the event that the electricity affordability program's participation level does not exceed any enrollment ceiling that may be established, consenting households receiving benefits from other means-tested benefit programs (e.g., SNAP,

Medicaid) should also be automatically enrolled in the electricity affordability program.

Q. PLEASE PROVIDE RECOMMENDATIONS REGARDING PROGRAM BENEFITS.

A. Affordability program participants should receive benefits in the form of discounted electric rates on their electric bills. The goal of the program should be to substantially lower the electricity burden of all participants. To meet these objectives, I recommend that one of the following be funded and implemented:

- A tiered discount setting payments at a targeted electricity burden level of approximately 5%; or
- 4% for non-heating customers and 6% for electric heating customers.

Q. PLEASE DESCRIBE YOUR RECOMMENDATIONS REGARDING INCORPORATION OF AN ARREARAGE MANAGEMENT COMPONENT INTO AN AFFORDABLE BILL PAYMENT PROGRAM.

A. To sustain participants' affordability and home energy security, program design must be comprehensive in its approach to dealing with *both* participants' current bills and arrearage balances. Affordability objectives of energy assistance programs that discount current bills, but fail to address preprogram arrears, are undermined by the requirement that participants must add arrearage payoff to that of the current bill. In other words, incorporating arrearage management helps ensure that a portion of the household energy burden reductions that come from discounted current bills is not simply "given back" as customers pay off

outstanding balances. Similarly, energy assistance programs that focus entirely on retirement of arrears but not on the affordability of current bills are unlikely to result in long-term household energy security. If current bills are not affordable, there is a strong likelihood that arrears will simply re-accrue after balances are initially retired.

In order to enhance the effectiveness of discounts on *current* bills and promote timely program participant payments going forward, I recommend that companies continue to offer arrearage write-down, or management programs, in conjunction with tiered low-income rates. Effectively promoting regular bill payment entails ensuring that *total* payments are affordable. A program that is intended to promote regular, timely payments by participants through reduction of electricity burdens to an affordable level is rendered less effective by a requirement that participants pay an amount in addition to the affordable current bill. Simultaneous payment of pre-existing arrears and the discounted electric bill therefore runs counter to the policy objective of promoting regular, timely payments by program participants.

There are two basic models of low-income utility arrearage management that have been implemented in the United States. One entails the write-down of customer arrears over time after a series of timely payments on current bills. The other model entails the retirement of arrearage balances in full on a one-time basis. The one-time "forgiveness" model is administratively straightforward, but entails a

large initial outlay of program cash resources. Write-downs over a period of 12 months may provide customers with an enhanced incentive to keep up with current bills (as long as they are affordable), while placing less strain on program cash flow. I recommend that the Companies continue to implement arrearage management programs that allow low-income rate participants to write down one-twelfth (1/12) of a pre-program overdue balance with each timely payment of a current bill.

Q. PLEASE DESCRIBE YOUR RECOMMENDATIONS REGARDING PROGRAM FUNDING.

A. Funding for an electricity affordability program needs to be sufficient and reliable. Program funding should be sufficient to provide meaningful energy burden reduction and energy security for all electricity customers living below 60% of the state median income. In addition, program administration costs of 5% to 7% of program benefits to the total program cost estimate are required.

A sustainable electricity affordability program with set benefit levels and participation rates also requires funding that is predictable and reliable. A uniform volumetric charge – approved prior to program implementation – is the optimal funding source for an effective program.

Q. PLEASE PROVIDE YOUR RECOMMENDATIONS REGARDING PROGRAM ADMINISTRATION AND IMPLEMENTATION.

A. Electricity affordability program design should foster efficient, streamlined administrative procedures. With limited program resources available, funds

should be devoted to participant benefits rather than administrative costs to the greatest extent feasible. Minimizing administrative costs while delivering an effective electricity affordability program requires that certain agencies, organizations and individuals work together cooperatively and efficiently. I recommend that whenever possible, administrative structures and procedures that apply to the state's LIHEAP be "piggybacked" onto any new electricity affordability program to create administrative efficiencies.

The state's Community Action Agencies, with sufficient support from program administrative funds collected by the Company, are ideally suited to conduct program intake and outreach functions. The agencies that certify LIHEAP eligibility could then simultaneously certify low-income rate and arrearage management eligibility using the same procedures that currently apply to LIHEAP.

The companies would be responsible for collecting program-related charges from all customers, and assigning qualified customers to a tariffed, low-income rate. They would further be responsible for tracking arrearage write-down for each participating customer. The companies would also be responsible for regular reporting to PURA of program activities and financial transactions. All program costs, including bill credits or discounts, approved startup and ongoing administrative expenses, and approved arrearage retirement amounts should be recoverable through volumetric charges, as described above.

Affordability rate applicants would provide documentation required for certification on an annual basis. In addition, program applicants should be referred to all appropriate energy efficiency services that may be available.

Q. WHAT ARE THE UTILITY SYSTEM COSTS OF IMPLEMENTING THE PROGRAM THAT YOU HAVE PROPOSED?

A. Most prospective low-income assistance program costs may be readily identified and quantified. Projecting the cost of implementing the affordability program requires multiplying the projected number of program participants by the sum of the value of the monthly discount (or revenue loss) per customer and the average arrearage per customer that is retired. Program administration costs must then be added to the value of discounts and retired arrearages to obtain an estimate of total program costs.

Q. WHAT ARE SOME OF THE UTILITY SYSTEM BENEFITS ASSOCIATED WITH EFFECTIVE BILL PAYMENT ASSISTANCE?

A. Quantifying the entire range of program benefits, including those associated with utility uncollectible accounts, presents a greater analytical challenge than quantifying costs. Nonetheless, quantification challenges do not appropriately lead to the conclusion that benefits simply do not exist. Rather, they suggest that decisions regarding adoption and implementation of low-income payment assistance programs should not hinge entirely on the results of overly simplified cost-benefit analysis.

That said, effective bill payment assistance programming may bring the benefit of reduced uncollectible account write-offs. Precise quantification of the bad debt mitigation impact of a low-income payment assistance program presents a considerable analytical challenge, particularly on a prospective basis. The extent to which this objective may be achieved is contingent on a number of existing conditions and key program design and implementation elements, including the following:

- A company's existing bad debt profile and the extent to which uncollectible account write-offs are currently concentrated among low-income customers;
- Income and expense circumstances of the program participants;
- Program benefit levels and reduction of participants' utility burden (i.e., reduction of the proportion of a participant's income that is devoted to utility bills);
- Outreach and targeting of "payment troubled" customers and prospective program participants;
- The extent to which the program comprehensively incorporates reduction of current bills with means of effectively managing pre-program arrears; and
- Contact and follow-up with program participants.

Q. WHAT ARE THE PREDOMINANT LOW-INCOME BILL AFFORDABILIY PROGRAM DESIGN MODELS OPERATIVE IN THE U.S.?

A. The predominant models are the straight discount, the percentage of income payment plan, and the tiered discount. The percentage of income payment plan

and the tiered discount model differ from the straight percentage discount in that the programs are designed to bring all participants' payments a predetermined target burden level, whereas the straight discount decreases all participants' bills by the same percentage without regard to burden impact.

Q. PLEASE BRIEFLY DESCRIBE THE STRAIGHT DISCOUNT PROGRAM DESIGN MODEL.

A. A straight discount entails reducing the total utility bill by a specified percentage or dollar amount. Under this model, the discount may be achieved through a set customer charge reduction and/or a usage charge reduction. The states of California and Massachusetts have adopted straight discount rates that are available to utility customers who participate in LIHEAP. The straight discount model reduces the energy burden of participants at a relatively low administrative cost. However, this model does not differentiate the benefit level within the broad participant group. In other words, the benefit level is the same for a household living at 50% of the federal poverty level as it is for a household living at the upper limit of the income eligibility guideline. Households with the lowest income experience the least energy burden reductions under a straight discount.

The table below illustrates the electricity burden impacts of a 36% discount on various low-income household configurations, assuming an undiscounted non-heating annual electricity service expenditure of $1,525.[23] For comparative

[23] Eversource (CL&P) 2019 FERC Form 1, p. 304.

purposes, the table also reflects the home electricity burdens of higher-income, nonparticipating residential customers.

Table 4

Electricity Burden Impacts: Straight Discount - Eversourc

	1-person Household, 50% FPL	2-person Household, 100% FPL	2-person Household, 130% FPL	2-perso Household 150% FI
Annual Pretax Income	$6,440	$17,420	$22,646	$26
Monthly Pretax Income	$537	$1,452	$1,887	$2
Undiscounted Current Annual Electricity Expenditure	$1,525	$1,525	$1,525	$1
Undiscounted Current Monthly Electricity Expenditure	$127	$127	$127	
Monthly Arrearage Payment	$0	$0	$0	
Total Undiscounted Monthly Payment	$127	$127	$127	
Undiscounted Electricity Burden	23.7%	8.8%	6.7%	
Discounted Electricity Expenditure	$976	$976	$976	
Discounted Electricity Burden	15.2%	5.6%	4.3%	

Q. PLEASE BRIEFLY DESCRIBE THE PERCENTAGE OF INCOME PAYMENT PLAN MODEL.

A. A percentage of income payment plan ("PIPP") entails participant customers paying a predetermined, "affordable" percentage of income for natural gas or electric service. PIPPs therefore target benefit levels to a household's particular income circumstances based on a predetermined affordability goals. However, since separate billing and payment arrangements must be developed for each participating customer, PIPPs generally entail a somewhat higher level of administrative complexity than straight discount rates. The Colorado Public Utilities Commission recently approved a PIPP for Excel Energy customers, Illinois investor-owned utilities have also implemented a PIPP. In addition, the program model has been operative for many years in Ohio, Pennsylvania, New Jersey and Maine.

Q. PLEASE BRIEFLY DESCRIBE THE TIERED DISCOUNT MODEL.

A. A tiered discount represents a hybrid of design elements of straight discount and PIPP models. In a tiered discount, the level of the discount depends on the customer's income or poverty level. Like a PIPP, the tiered discount is designed to reduce a customer's bill to an affordable level, and households in the lower income or poverty tiers receive a steeper discount than those in higher tiers. Thus, benefits are targeted according to a household's income circumstances, but the individual payment arrangements and billing typified by a PIPP are not required.

A tiered discount entails somewhat higher administrative cost than a straight discount, but considerably less than a PIPP. Tiered discount programs currently operate in New Hampshire[24] and Indiana. The table below illustrates the electricity burden impacts of a tiered discount that sets the target electricity burden level at 5% of household income, assuming an undiscounted annual electricity service expenditure of $1,891.

[24] A report detailing the New Hampshire tiered discount program may be found at https://www.puc.nh.gov/electric/SBC%20Reports/Electric-2019-SBC-Report.pdf.

Table 5

Electricity Burden Impacts: Tiered Discount - United Illuminating

	1-person Household, 50% FPL	2-person Household, 100% FPL	2-person Household, 130% FPL	2-person Household, 150% FPL	2-person Household, 200% FPL	2-Person Household 60% Median Income	2-Person Median Income Household	Upper-income Household ($100,000)
Annual Pretax Income	$6,440	$17,420	$22,646	$26,130	$34,840	$49,228	$82,047	$100,000
Monthly Pretax Income	$537	$1,452	$1,887	$2,178	$2,903	$4,102	$6,837	$8,333
Undiscounted Current Annual Electricity Expenditure	$1,891	$1,891	$1,891	$1,891	$1,891	$1,891	$1,891	$1,891
Undiscounted Current Monthly Electricity Expenditure	$158	$158	$158	$158	$158	$158	$158	$158
Monthly Arrearage Payment	$0	$0	$0	$0	$0	$0	$0	$0
Total Undiscounted Monthly Payment	$158	$158	$158	$158	$158	$158	$158	$158
Undiscounted Electricity Burden	29.4%	10.9%	8.4%	7.2%	5.4%	3.8%	2.3%	1.9%
Discounted Electricity Annual Expenditure	$326.63	$766.48	$1,201.98	$1,201.98	$1,739.72	$1,739.72	$1,891	$1,891
Discounted Electricity Monthly Expenditure	$27.22	$63.87	$100.17	$100.17	$144.98	$144.98	$157.58	$157.58
Discounted Electricity Burden	5.1%	4.4%	5.3%	4.6%	5.0%	3.5%	2.3%	1.9%

Q. PLEASE PROVIDE A COMPARATIVE VIEW ILLUSTRATING THE BURDEN IMPACTS OF THE TIERED AND STRAIGHT DISCOUNT PROGRAM DESIGNS THAT YOU DESCRIBED ABOVE.

A. The charts below were derived from current poverty guidelines and an estimate of Eversource residential customer expenditure levels.[25] The charts are based on a tiered discount target burden level of 4% for non-heating customers and 6% for heating customers. The straight discount charts reflect the burden impacts of a 36% discount[26] for both electric heat and non-electric heat for all participating customers.

[25] Average expenditure levels of Eversource residential customers using electric heat and those not using electric heat were derived from Connecticut Light and Power 2019 FERC Form 1, p. 304.
[26] Eversource's income-eligible customers in Massachusetts receive a 36% discount on electricity bills.

Figure 6

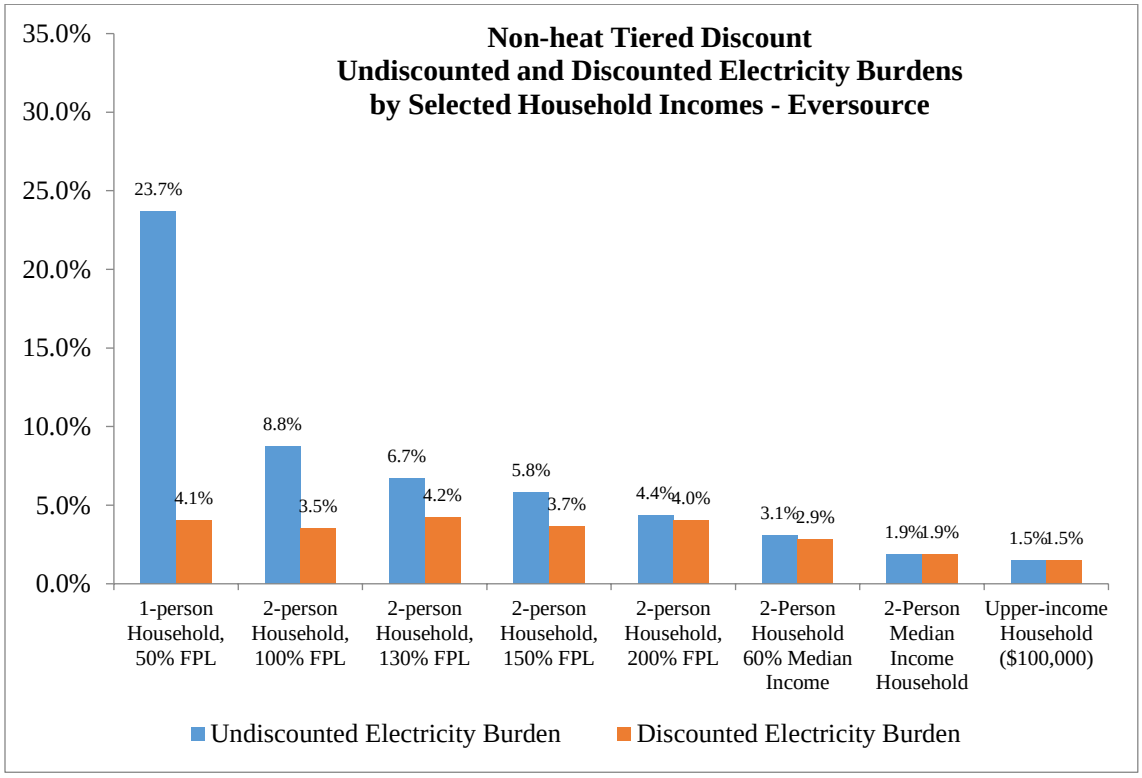


Figure 7

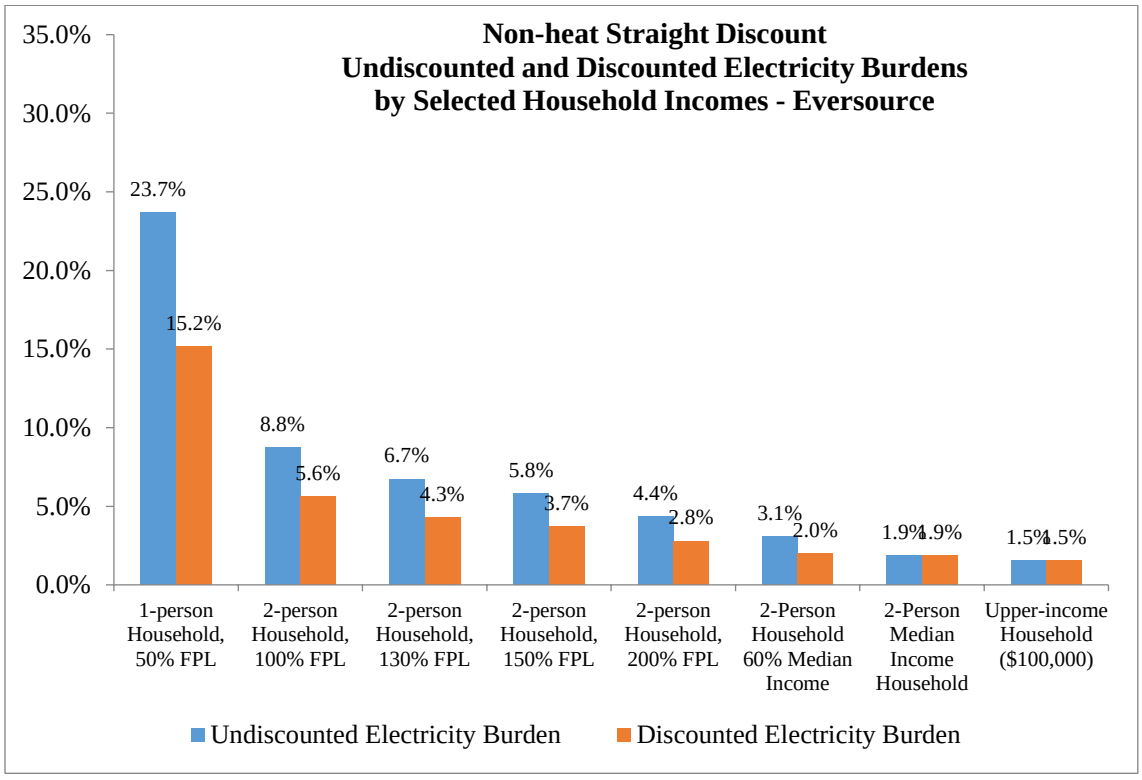


Figure 8

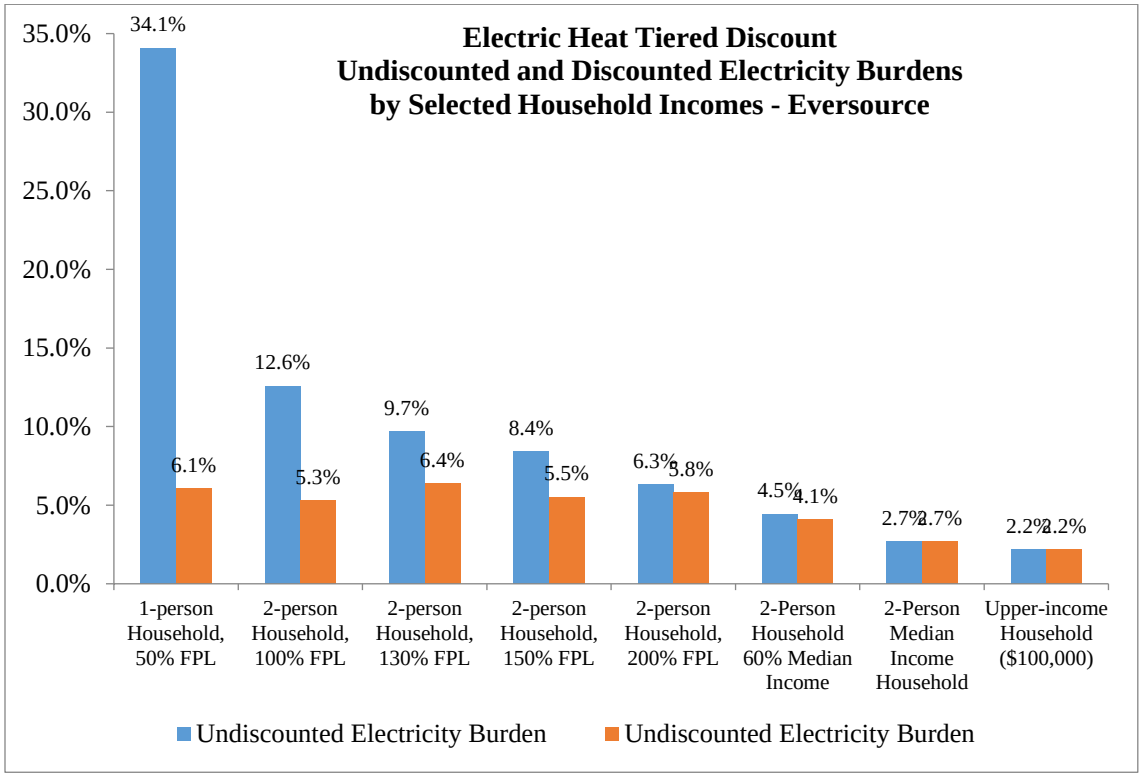
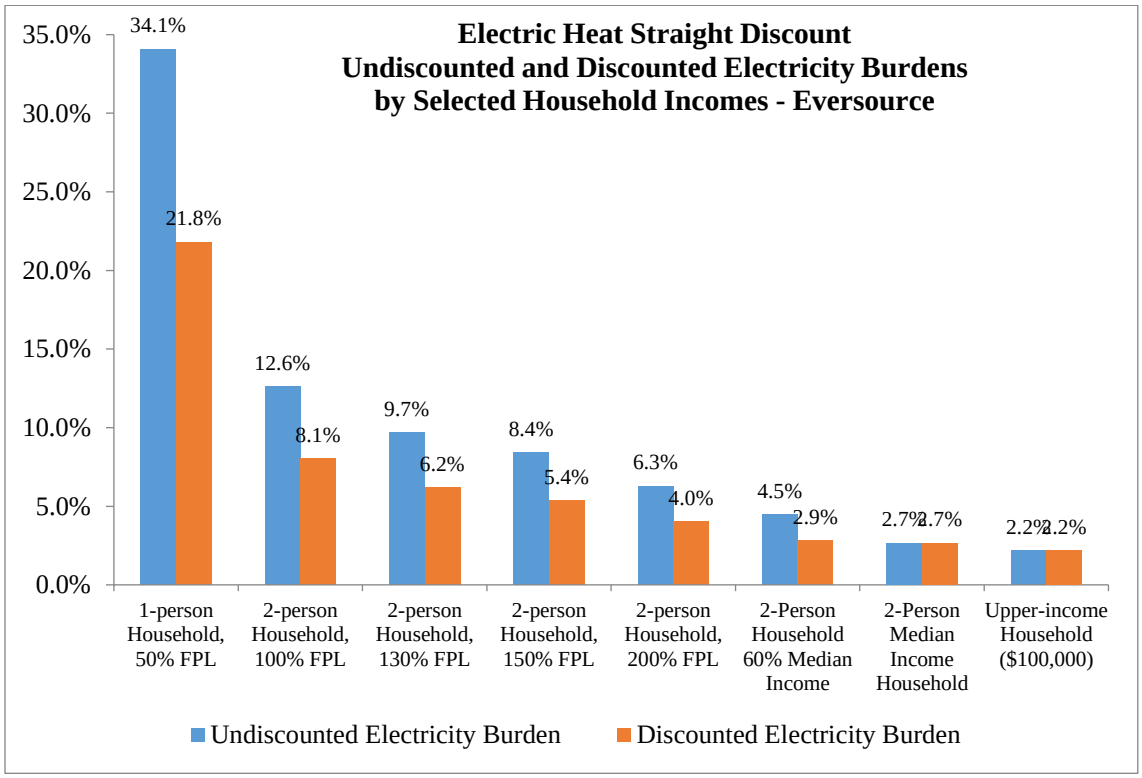


Figure 9



These charts illustrate that under a tiered discount, steeper discounts are provided to households with the lowest incomes, resulting in burdens that are fairly consistent throughout the spectrum of participants' incomes, and all participants' bills are brought closer to an "affordable" level. The charts include selected non-participant electricity burdens for comparative purposes.

Q. WHICH OF THE DESCRIBED PROGRAM DESIGNS DO YOU RECOMMEND?

A. Based on the foregoing, I recommend that Eversource and UI implement tiered discount programs to operate in conjunction with arrearage management programs. The tiered discount approach brings the electricity burdens of the lowest-income participants to a level that is more manageable than that which would be provided under the straight discount model.

V. Analysis of Prospective Tiered Discount Program Costs and Benefits

Q. PLEASE PROVIDE ESTIMATES OF THE INITIAL COST OF THE PROGRAMS OUTLINED ABOVE.

A. Calculating an estimate of tiered discount program cost requires (1) determining a target electricity burden level, (2) determining ratio of income to poverty brackets (income tiers), (3) estimating the number of participants per income bracket, (4) estimating the undiscounted annual electricity expenditure level, and (5) estimating program administrative cost. Below there are program cost and benefit worksheets for prospective Eversource and UI tiered discount programs. There

are separate worksheets for participating non-heat customers and electric heat customers for Eversource and a single worksheet for UI, which does not provide a separate rate for electric heating customers. The Eversource target burden level for non-heat customers is set at 4% of household income and at 6% for electric heat customers. The UI target burden is set at 5% for all participants. Income tiers for both companies are consistent with those used in the New Hampshire tiered discount program, and are set as follows:

Table 6

Ratio of Income to Poverty Brackets

	Lower	Upper
Tier 1	0	0.75
Tier 2	0.76	1
Tier 3	1.01	1.25
Tier 4	1.26	1.5
Tier 5	1.51	60% State Median Income

For cost estimation purposes, I assumed that an Eversource program would include 80,000 non-heat participants and 10,000 electric heat customers, and that participants would be distributed equally among the income tiers. For UI, I assumed that 22,000 of its income-eligible customers would participate in the program and also be distributed equally among the income tiers. To estimate undiscounted expenditure levels, I drew on Eversource's 2019 FERC Form 1 reporting of rate schedule-specific customer and revenue data, and for UI I estimated the undiscounted expenditure using data from EOE-UI-3. Finally, I assumed that program administrative costs would be equal to 5% of participant benefits. Program cost and benefit worksheets are on the following page.

Q. ARE THE ASSUMPTIONS YOU USED TO DEVELOP PROGRAM COSTS AND BENEFITS SUBJECT TO CHANGE?

A. Yes. The assumptions I used to develop these estimates are based on publicly available data and some discovery responses. If participation rates vary, undiscounted expenditure levels of prospective participants differ from those reflected in my estimates, or the costs to administer the programs varies from the assumed levels, total program costs will differ from those reflected in the estimates. Therefore, I recommend that PURA direct the companies to, in collaboration with EOE and other stakeholders, develop program implementation plans that reflect the best available information on customer expenditure levels and other relevant program cost inputs. Plans should also detail critical program design and implementation components, such as eligibility guidelines, income and discount tiers, program intake protocols, and means of coordination between the new tiered discounts and arrearage management programs.

Table 7

Non-heat Tiered Discount Worksheet - Eversource

Target Burden	4.0%			# of Participants	80,000	Annual Expenditure (2019 FERC Form 1)	$1,525	Program Administration (% of Arrearage Write-	5%						
Ratio of Income to Poverty Brackets													Program Costs		
Lower	Upper	Income at Category Midpoint (2-person hh)	# HH	Average Annual Electricity Expenditure	Target Burden	Discounted Expenditure	$ Annual Discount	$ Monthly Discount	Percentage Discount		Average Total Benefits per participant		Total $ Discount per Tier		Total $ Program Administration per Tier		Total $ per Tier
0.00	0.75	$ 6,533	16,000	$ 1,525	4.0%	$ 261	$ 1,264	$ 105	82.9%		$ 1,264		$ 20,225,366		$ 1,011,268		$ 21,236,635
0.76	1.00	$ 15,330	16,000	$ 1,525	4.0%	$ 613	$ 912	$ 76	59.8%		$ 912		$ 14,595,222		$ 729,761		$ 15,324,984
1.01	1.25	$ 19,685	16,000	$ 1,525	4.0%	$ 787	$ 738	$ 62	48.4%		$ 738		$ 11,808,022		$ 590,401		$ 12,398,424
1.26	1.50	$ 24,040	16,000	$ 1,525	4.0%	$ 962	$ 564	$ 47	37.0%		$ 564		$ 9,020,822		$ 451,041		$ 9,471,864
1.51	60% SMI	$ 37,679	16,000	$ 1,525	4.0%	$ 1,403	$ 122	$ 10	8.0%		$ 122		$ 1,952,493		$ 97,625		$ 2,050,118
Weighted Average Discount			47.2%														
						8% Discount - (not target burden calc)						*Total Program Cost*	*$ 48,581,105*		*$ 2,429,055*		*$ 51,010,160*

Table 8

Heat Tiered Discount Worksheet - Eversource

Target Burden	6.0%			# of Participants	10,000	Annual Expenditure (2019 FERC Form 1)	$2,195	Program Administration (% of Arrearage Write-	5%

Ratio of Income to Poverty Brackets												Program Costs		
Lower	Upper	Income at Category Midpoint (2-person hh)	# HH	Undiscounted Annual Electricity Expenditure	Target Burden	Discounted Annual Expenditure	$ Annual Discount	$ Monthly Discount	Percentage Discount		Average Total Benefits per participant	Total $ Discount per Tier	Total $ Program Administration per Tier	Total $ per Tier
0.00	0.75	$ 6,533	2,000	$ 2,195	6.0%	$ 392	$ 1,803	$ 150	82.1%		$ 1,803	$ 3,606,316	$ 180,316	$ 3,786,632
0.76	1.00	$ 15,330	2,000	$ 2,195	6.0%	$ 920	$ 1,275	$ 106	58.1%		$ 1,275	$ 2,550,664	$ 127,533	$ 2,678,197
1.01	1.25	$ 19,685	2,000	$ 2,195	6.0%	$ 1,181	$ 1,014	$ 85	46.2%		$ 1,014	$ 2,028,064	$ 101,403	$ 2,129,467
1.26	1.50	$ 24,040	2,000	$ 2,195	6.0%	$ 1,442	$ 753	$ 63	34.3%		$ 753	$ 1,505,464	$ 75,273	$ 1,580,737
1.51	60% SMI	$ 37,679	2,000	$ 2,195	6.0%	$ 2,019	$ 175.61	$ 15	8.0%		$ 176	$ 351,217	$ 17,561	$ 368,778
Weighted Average Discount			45.7%											
						8% Discount - (not target burden calc)				Total Program Cost		$ 7,491,062	$ 374,553	$ 7,865,615

Table 9

Tiered Discount Worksheet - United Illuminating

Target Burden	5.0%			# of Participants	22,000	Annual Expenditure (UI-EOE-3)	$1,891	Program Administration (% of Arrearage Write-	5%		

Ratio of Income to Poverty Brackets												Program Costs		
Lower	Upper	Income at Category Midpoint (2-person hh)	# HH	Average Annual Electricity Expenditure	Target Burden	Discounted Expenditure	$ Annual Discount	$ Monthly Discount	Percentage Discount	Average Arrearage per Customer	Average Total Benefits per participant	Total $ Discount per Tier	Total $ Program Administration per Tier	Total $ per Tier
0.00	0.75	$ 6,533	4,400	$ 1,891	5.0%	$ 327	$ 1,564	$ 130	82.7%	$ -	$ 1,564	$ 6,883,250	$ 344,163	$ 7,227,413
0.76	1.00	$ 15,330	4,400	$ 1,891	5.0%	$ 766	$ 1,125	$ 94	59.5%	$ -	$ 1,125	$ 4,947,888	$ 247,394	$ 5,195,282
1.01	1.25	$ 19,685	4,400	$ 1,891	5.0%	$ 984	$ 907	$ 76	48.0%	$ -	$ 907	$ 3,989,788	$ 199,489	$ 4,189,277
1.26	1.50	$ 24,040	4,400	$ 1,891	5.0%	$ 1,202	$ 689	$ 57	36.4%	$ -	$ 689	$ 3,031,688	$ 151,584	$ 3,183,272
1.51	60% SMI	$ 37,679	4,400	$ 1,891	5.0%	$ 1,740	$ 151	$ 13	8.0%	$ -	$ 151	$ 665,632	$ 33,282	$ 698,914
Weighted Average Discount			46.9%											
						8% Discount - (not target burden calc)				Total Program Cost		$ 16,486,558	$ 824,328	$ 17,310,886

Under the assumptions incorporated into these estimates, the annual cost of the Eversource tiered discount program would be $58.9M. The annual cost of the UI program would be $17.3M.

Q. DID YOU ESTIMATE THE BILL IMPACTS OF THE PROGRAMS THAT YOU PROPOSED?

A. Yes. Estimated bill impacts by rate schedule for Eversource customers are attached as Exhibit JH-3 and estimated bill impacts for UI customers are attached as Exhibit JH-4. I calculated rate-schedule-specific bill impact estimates using the customer, usage, and revenue information provided on page 304 of the companies' 2019 FERC Form 1 filings by applying a uniform percentage of revenue adder to each listed rate schedule or tariff designation. The percentage of revenue adder was derived by dividing estimated program costs, as delineated in in Tables 7 – 9, above, by total revenues from sales, as reported in the FERC Form 1.

The estimated cost of implementing the tiered discount programs I have recommended, including administrative expenses, would represent 2.03% of Eversource's 2019 revenues from sales to all customers, and 2.06% of UI's revenues from sales. Tables reflecting these calculations are attached as Exhibit JH-3 and Exhibit JH-4.

VI. Conclusions

Q. PLEASE SUMMARIZE YOUR FINDINGS.

A. I have found the following:

- Low-income households served by Eversource and UI carry heavy home electricity burdens, much higher than those households with more stable, higher income.
- Eversource's and UI's low-income, "hardship" customers carry past due account balances in greater numbers and at higher levels than "general residential" customers who have not been identified as having income that would qualify them to participate in the Connecticut Energy Assistance Program or other available means-tested energy assistance programs.
- UI and Eversource hardship customer arrearage rates are 2- to 3-times higher than those of general residential customers.
- The average dollar values of arrearages is much higher for hardship customers and has increased over the past year since the onset of the COVID-19 pandemic.
- Examination of Eversource zip code level disconnections reveals a strong correlation between race and disconnections. (UI was unable to provide zip code level disconnections data.)
- For many families and households in Connecticut, income in excess of 300% of the federal poverty guidelines is required to pay for the most basic necessities.
- Nearly 35% of Connecticut's population lives at or below 300% of poverty.

- Elevated rates of low-income service disconnections and bill payment pressures pose a threat to the health and safety of customers.
- Unaffordable home energy bills lead many low-income households to resort to unsafe and unhealthy means of heating their homes, or to forego other basic necessities to retain access to utility service.
- Distinct from the straight discount program design, the tiered discount approach brings the electricity burdens of the lowest-income participants to a level that is more manageable than that which would be provided under the straight discount model.

Q. PLEASE SUMMARIZE YOUR RECOMMENDATIONS

A. Based on the findings above, I recommend the following:

- PURA should direct Eversource and UI to implement low-income customer affordability programs that meet the following objectives:
  - Serves all residential electricity customers at or below 60% of the state median income eligible to participate in the Low Income Home Energy Assistance Program ("LIHEAP");
  - Lowers program participants' electricity burdens to an affordable level;
  - Promotes regular, timely payment of electric bills by program participants;
  - Comprehensively addresses payment problems associated with program participants' current and past-due bills;

- Is funded through a mechanism that is reliable while providing sufficient resources to meet policy objectives over an extended timeframe; and
- Is administered efficiently and effectively.

- PURA should direct Eversource and UI to expeditiously develop and file plans to implement tiered discount programs modeled after those currently operating in New Hampshire. Development of implementation plans should be in collaboration with EOE and other stakeholders.
- Program benefits levels should be set to reduce participant payments to achieve target electricity burden levels of either
  - 5% for all participants, or
  - 4% for non-heating customers and 6% for electric heating customers.
- Eversource and UI should continue to offer arrearage management programs operating in conjunction with tiered low-income rates.
- Program funding should come from non-bypassable, uniform volumetric charges – approved prior to program implementation – on all UI and Eversource customers.
- Administrative structures and procedures that apply to the state's LIHEAP should be "piggybacked" onto any new electricity affordability program to create administrative efficiencies.

Q. DOES THIS CONCLUDE YOUR TESTIMONY?

A. Yes.

Exhibit JH-1

John Howat Regulatory Commission Testimony and Comment Experience

Case Name/Docket	Client	Topic	Jurisdiction	Date
Rulemaking 18-07-005	NCLC's low-income clients	Establishment of a Percentage of Income Payment Plan	California	Feb-21
Docket No. E-01345A-19-0236	Arizona Wildfire - AZ Community Action Association	Surrebuttal Testimony - Establishment of a tiered discount and arrearage management program	Arizona	Jan-21
Docket No. E-01345A-19-0236	Arizona Wildfire - AZ Community Action Association	Direct Testimony - Establishment of a tiered discount and arrearage management program	Arizona	Oct-20
Case No. PUR-2020-00117	Southern Environmental Law Center and Appalacian Voices	Establishment of a PIPP rate - Appalician Power Company	Virginia	Sep-20
Case No. PUR-2020-00109	Southern Environmental Law Center and Appalacian Voices	Establishment of a PIPP rate - Dominion Energy	Virginia	Sep-20
Docket No. E-7, Sub 1214 - Duke Energy Carolinas	North Carolina Justice Center, North Carolina Housing Coalition, Natural Resources Defense Council, Southern Alliance for Clean Energy, Southern Environmental Law Center	Affordability of electric utility service	North Carolina	Feb-20
Docket No. 32953 - Alabama Power Company	Energy Alabama and Gasp	Direct Testimony - Affordability of residential electricity service	Alabama	Dec-19
Cause No. 45253 - Duke Energy Indiana	Indiana Citizens Action Coalition, Indiana Community Action Association, Environmental Working Group	Direct Testimony - Low-income affordability program, credit and collections data reporting	Indiana	Oct-19
D.P.U. 18-150 - National Grid	Massachusetts Energy Directors Association	Direct Testimony - Transportation Electrification, Rate Design	Massachusetts	Mar-19
Docket No. 2018-318-E - Duke Energy Progress	Southern Environmental Law Center, NAACP, South Carolina Coastal Conservation League	Direct Testimony - Rate design, low-income energy efficiency and affordability programs	South Carolina	Mar-19
Cause No. 45159 - Northern Indiana Public Service Company	Citizens Action Coalition of Indiana	Direct Testimony - Rate design, low-income affordability program, credit and collections data reporting	Indiana	Feb-19
Docket No. 2018-319-E - Duke Energy Carolinas	Southern Environmental Law Center, NAACP, South Carolina Coastal Conservation League	Direct Testimony - Rate design, low-income energy efficiency and affordability programs	South Carolina	Feb-19
Docket No. 18-1008/1009 - Ameren Illinois Company	Illinois Attorney General's Office	Rebuttal Testimony - Prepaid utility service	Illinois	Nov-18
Docket No. 18-1008/1009 - Ameren Illinois Company	Illinois Attorney General's Office	Direct Testimony - Prepaid utility service	Illinois	Sep-18
D.P.U. 18-40 - The Berkshire Gas Company	Massachusetts Low-Income Weatherization and Fuel Assistance Program Network and the Massachusetts Energy Directors Association	Direct Testimony - General rate case, low-income discount rate	Massachusetts	Sep-18
D.P.U. 18-45 - Bay State Gas Company d/b/a Columbia Gas of Massachusetts	Massachusetts Low-Income Weatherization and Fuel Assistance Program Network and the Massachusetts Energy Directors Association	Direct Testimony - General rate case, low-income discount rate	Massachusetts	Aug-18
Case No. 18-00043-UT - Public Service Company of New Mexico	New Mexico Coalition for Clean Affordable Energy	Direct Testimony - Rate design	New Mexico	Aug-18
Cause No. 45029 - Indianapolis Power & Light Company	Citizens Action Coalition of Indiana, Indiana Coalition for Human Services, Indiana Community Action Association, Sierra Club	Direct Testimony - Rate design	Indiana	May-18
Docket No. 17-0837 - Commonwealth Edison Company	Illinois Attorney General's Office	Direct Testimony - Prepaid utility service	Illinois	Mar-18
D.P.U. 17-170 - Boston Gas Company, Colonial Gas Company, each d/b/a National Grid	Massachusetts Low-Income Weatherization and Fuel Assistance Program Network and the Massachusetts Energy Directors Association	Direct Testimony - General rate case, low-income discount rate	Massachusetts	Mar-18
Docket No. E-7, Sub 1146 - Duke Energy Carolinas	Southern Environmental Law Center, North Carolina Justice Center, North Carolina Housing Coalition, Natural Resources Defense Council, and Southern Alliance for Clean Energy	Direct Testimony - General rate case, rate design, affordable payment program	North Carolina	Jan-18
Cause No. 44967 - Indiana Michigan Power Company	Citizens Action Coalition of Indiana, Indiana Coalition for Human Services, Indiana Community Action Association, Sierra Club	Direct Testimony - Rate design, affordable payment program	Indiana	Nov-17
Docket No. E-2, Sub 1142 - Duke Energy Progress	Southern Environmental Law Center, North Carolina Justice Center, North Carolina Housing Coalition, Natural Resources Defense Council, and Southern Alliance for Clean Energy	Direct Testimony - General rate case, rate design, affordable payment program	North Carolina	Oct-17

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John Howat Regulatory Commission Testimony and Comment Experience

Case Name/Docket	Client	Topic	Jurisdiction	Date
Docket No. P-2016-2572033 - RECO Energy Company's plan for an advanced payments program and petition for waiver of a portion of the Commission's regulations	Pennsylvania Office of Consumer Advocate	Surrebuttal Testimony - Prepaid utility service	Pennsylvania	Aug-17
Docket No. P-2016-2572033 - RECO Energy Company's plan for an advanced payments program and petition for waiver of a portion of the Commission's regulations	Pennsylvania Office of Consumer Advocate	Rebuttal Testimony - Prepaid utility service	Pennsylvania	Jul-17
Docket No. P-2016-2572033 - RECO Energy Company's plan for an advanced payments program and petition for waiver of a portion of the Commission's regulations	Pennsylvania Office of Consumer Advocate	Direct Testimony - Prepaid utility service	Pennsylvania	Jun-17
D.P.U 15-155 - Massachusetts Electric Company, Nantucket Electric Company, each d/b/a National Grid	Massachusetts Low-Income Weatherization and Fuel Assistance Program Network	Direct Testimony - low-income discount rate, rate design, net energy metering and solar renewable energy credits	Massachusetts	Mar-16
Cause No. 44688 - Northern Indiana Public Service Company	Citizens Actions Coalition of Indiana and the Environmental Law & Policy Center	Direct Testimony - General rate case - rate design, affordability program, credit and collections data reporting	Indiana	Jan-16
Case No. 15-00261-UT - Public Service Company of New Mexico	New Mexico Coalition for Clean Affordable Energy	Direct Testimony - Rate design, affordable payment program, credit and collections data collection and reporting	New Mexico	Jan-16
6690-UR-124 - Wisconsin Public Service Corporation	Wisconsin Community Action Program Association	Comment - Rate design	Wisconsin	Oct-15
Cause No. 44576 - Indianapolis Power and Light Company	Citizens Actions Coalition of Indiana, Indiana Association for Community and Economic Development, Indiana Coalition of Human Services, Indiana Community Action Association, Indiana NAACP, and National Association of Social Workers Indiana Chapter	Direct Testimony - energy affordability program, rate design	Indiana	Jul-15
05-UR-107 - Wisconsin Electric Power Company and Wisconsin Gas Company	Wisconsin Community Action Program Association	Comment - Rate design	Wisconsin	Oct-14
3270-UR-120 - Madison Gas and Electric Company	Wisconsin Community Action Program Association	Comment - Rate design	Wisconsin	Oct-14
6690-UR-123 - Wisconsin Public Service Corporation	Wisconsin Community Action Program Association	Comment - Rate design	Wisconsin	Sep-14
Docket 14-05004 - Nevada Energy Company	Nevada Bureau of Consumer Protection	Direct Testimony - Prepaid utility service	Nevada	Aug-14
D.P.U. 14-04 - Investigation into time-varying rates	NCLC's low-income clients	Comment - Rate design, regulatory consumer protections	Massachusetts	Mar-14
Docket No. 4450 - Rules and regulations governing the termination of residential electric and natural gas service	George Wiley Center	Comment - Regulatory consumer protections	Rhode Island	Dec-13
Application 11-10-002 - San Diego Gas and Electric Company For Authority To Update Marginal Costs, Cost Allocation, And Electric Rate Design	National Consumer Law Center's low-income clients, The Utility Reform Network, Center for Accessible Technology, Greenlining Institute	Direct Testimony - Prepaid utility service	California	Jun-12
Rulemaking 09-11-014 - Rulemaking to Examine the Commission's Post-2008 Energy Efficiency Policies, Programs, Evaluation, Measurement, and Verification, and Related Issues	NCLC's low-income clients	Comment - Energy efficiency financing	California	Feb-12

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John Howat Regulatory Commission Testimony and Comment Experience

Case Name/Docket	Client	Topic	Jurisdiction	Date
Rulemaking 09-11-014 - Rulemaking to Examine the Commission's Post-2008 Energy Efficiency Policies, Programs, Evaluation, Measurement, and Verification, and Related Issues	NCLC's low-income clients	Reply Comment - Energy efficiency financing	California	Feb-12
Docket Nos. UE-111048 and UG-111049 - Puget Sound Energy	The Opportunity Council	Direct Testimony - Bill payment assistance, home energy affordability	Washington	Dec-11
R-10-02-005 - Rulemaking to address the issue of customers' electric and natural gas service disconnection	NCLC's low-income clients	Comments - Regulatory consumer protections	California	Sep-10
Docket No. 7535 - Petition of AARP for the establishment of reduced rates for low-income consumers of Green Mountain Power Corporation and Central Vermont Public Service Corporation; and as expanded to possibly include general applicability to all Vermont retail electric utilities	AARP Vermont	Rebuttal Testimony - Bill payment assistance	Vermont	Jun-10
Docket 10-02009 - Nevada Energy	Washoe County Senior Law Project	Direct Testimony - Advanced meter consumer protections	Nevada	Apr-10
R-10-02-005 - Rulemaking to address the issue of customers' electric and natural gas service disconnection	NCLC's low-income clients	Opening Comment - Regulatory consumer protections	California	Mar-10
Docket No. 06-0703 - Rulemaking IL Admin. Code - Part 280	South Austin Community Council and Community Action for Fair Utility Practice	Direct Testimony - Regulatory consumer protections	Illinois	Jan-10
Project No. 35533	NCLC's low-income clients	Comment - Prepaid utility service	Texas	Jan-10
Cause No. 43669 - Citizens Gas, Northern Indiana Public Service Company, and Vectren Energy Delivery	AARP and Citizens Action Coalition	Direct Testimony - Bill payment assistance, home energy affordability	Indiana	Sep-09
Docket No. 7535 - Petition of AARP for the establishment of reduced rates for low-income consumers of Green Mountain Power Corporation and Central Vermont Public Service Corporation; and as expanded to possibly include general applicability to all Vermont retail electric utilities	AARP Vermont	Direct Testimony - Bill payment assistance	Vermont	Sep-09
D.P.U. 09-34 - Western Massachusetts Electric Company	Low Income Weatherization and Fuel Assistance Network	Comment - Prepaid utility service	Massachusetts	Jun-09
Case No. ER-2008-0318 - Ameren UE	AARP	Surrebuttal Testimony - Hot weather safety program	Missouri	Nov-08
Case No. ER-2008-0318 - Ameren UE	AARP	Direct Testimony - Hot weather safety program	Missouri	Aug-08
D.T.E./D.P.U. 07-30 - Petition of the Attorney General for an Oversight Investigation of the Proposed Merger of National Grid and Keyspan	Low-Income Weatherization and Fuel Assistance Program Network and Massachusetts Energy Directors Association	Supplemental Direct Testimony - Customer service and regulatory consumer protections	Massachusetts	Nov-07
D.T.E./D.P.U. 07-30 - Petition of the Attorney General for an Oversight Investigation of the Proposed Merger of National Grid and Keyspan	Low-Income Weatherization and Fuel Assistance Program Network and Massachusetts Energy Directors Association	Direct Testimony - Customer service and regulatory consumer protections	Massachusetts	Nov-07
CASE NO. PAC- 07-5 - Rocky Mountain Power	Community Action Partnership of Idaho	Direct Testimony - Collection agency costs, credit and collection rules	Idaho	Sep-07
Docket No. P- 00062240 - Equitable Gas company for Approval to Increase the Level of Funding for its Customer Assistance Program and to Implement an Adjustable Rate Mechanism to Recover Associated Expenses Concerning Universal Service and Energy Conservation Plan Costs	Pennsylvania Utility Law Project	Surrebuttal Testimony - Low Income affordability programs	Pennsylvania	May-07

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John Howat Regulatory Commission Testimony and Comment Experience

Case Name/Docket	Client	Topic	Jurisdiction	Date
Docket No. P- 00062240 - Equitable Gas company for Approval to Increase the Level of Funding for its Customer Assistance Program and to Implement an Adjustable Rate Mechanism to Recover Associated Expenses Concerning Universal Service and Energy Conservation Plan Costs	Pennsylvania Utility Law Project	Rebuttal Testimony - Low Income affordability programs	Pennsylvania	May-07
Docket No. P- 00062240 - Equitable Gas company for Approval to Increase the Level of Funding for its Customer Assistance Program and to Implement an Adjustable Rate Mechanism to Recover Associated Expenses Concerning Universal Service and Energy Conservation Plan Costs	Pennsylvania Utility Law Project	Direct Testimony - Low Income affordability programs	Pennsylvania	Apr-07
Project No. 33814 - Rulemaking concerning prepaid retail electric service	AARP	Reply Comment - Prepaid electric service	Texas	Mar-07
Docket No. D-06-13 - Petition of Narragansett Electric Company and Southern Union Gas Company for Purchase and Sale of Assets	George Wiley Center	Direct Testimony - Merger impact mitigation	Rhode Island	Jun-06
Docket No. 06-0202 - Petition to Initiate Rulemaking with Notice and Comment for Approval of Certain Amendments to Illinois Administrative Code Part 280	South Austin Community Council and Community Action for Fair Utility Practice	Direct Testimony - Regulatory consumer protections	Illinois	Apr-06
Docket No. 3696 - New England Gas Company	George Wiley Center	Direct Testimony - General rate case - mitigation of low-income rate and bill impacts	Rhode Island	Oct-05
Docket 05-0237 - Petition to Initiate Rulemaking with Notice and Comment for Approval of Certain Amendments to Illinois Administrative Code Part 280	South Austin Community Council and Community Action for Fair Utility Practice	Direct Testimony - Regulatory consumer protections	Illinois	Jun-05
Docket No. 04-5003 - Nevada Power Company	Nevada Bureau of Consumer Protection	Direct Testimony - Prepaid utility service	Nevada	Jun-04
Docket No. R-00049255 - PPL Universal Service Programs	Commission on Economic Opportunity	Direct Testimony - Universal service programs	Pennsylvania	Jun-04
Docket No. UD-97-5 - Entergy New Orleans' and Entergy Louisiana's Electric and Natural Gas Service Regulations, Policies and Standards	Alliance for Affordable Energy, Louisiana Environmental Action Network, League of Women Voters of New Orleans, Pax Christi, and Bread for the World	Direct Testimony - Regulatory consumer protections	New Orleans City Council	Jul-00

Exhibit JH-2

Involuntary Residential Service Disconnections by Zip Code and Race:
January 2019 - February 2021 - Eversource Service Territory

Zip	Total Accounts	Total Disconnections for Non-payment - January 2019 -	Disconnections to Accounts Ratio	Disconntions to Accounts Ratio Rank	Non-white Percent of Population	NonWhite Population Rank	White Population	City	County
06710	4091	1097	0.2681	1	41%	17	59%	WATERBURY	NEW HAVEN
06120	4529	1166	0.2575	2	80%	2	20%	HARTFORD	HARTFORD
06112	8644	2168	0.2508	3	87%	1	13%	HARTFORD	HARTFORD
06702	1070	263	0.2458	4	46%	11	54%	WATERBURY	NEW HAVEN
06114	10970	2560	0.2334	5	71%	3	29%	HARTFORD	HARTFORD
06105	9617	2207	0.2295	6	63%	5	37%	HARTFORD	HARTFORD
06106	15415	3431	0.2226	7	57%	6	43%	HARTFORD	HARTFORD
06051	13423	2962	0.2207	8	36%	23	64%	NEW BRITAIN	HARTFORD
06704	10594	2332	0.2201	9	47%	9	53%	WATERBURY	NEW HAVEN
06708	12878	2479	0.1925	10	26%	36	74%	WATERBURY	NEW HAVEN
06706	5758	1080	0.1876	11	46%	12	54%	WATERBURY	NEW HAVEN
06705	10807	2018	0.1867	12	41%	18	59%	WATERBURY	NEW HAVEN
06108	9535	1711	0.1794	13	47%	10	53%	EAST HARTFORD	HARTFORD
06372	42	7	0.1676	14		237			
06052	3437	530	0.1542	15	25%	38	75%	NEW BRITAIN	HARTFORD
06451	9932	1513	0.1523	16	23%	40	77%	MERIDEN	NEW HAVEN
06855	287	40	0.1395	17	25%	39	75%	NORWALK	FAIRFIELD
06053	14456	1958	0.1354	18	26%	37	74%	NEW BRITAIN	HARTFORD
06450	14990	1980	0.1321	19	21%	43	79%	MERIDEN	NEW HAVEN
06320	11865	1541	0.1299	20	43%	15	57%	NEW LONDON	NEW LONDON
06118	11162	1430	0.1281	21	43%	16	57%	EAST HARTFORD	HARTFORD
06810	20785	2553	0.1228	22	45%	13	55%	DANBURY	FAIRFIELD
06263	225	27	0.1199	23	3%	195	97%	ROGERS	WINDHAM
06103	1397	167	0.1196	24	41%	19	59%	HARTFORD	HARTFORD
06854	5769	676	0.1172	25	36%	24	64%	NORWALK	FAIRFIELD
06002	9043	1024	0.1132	26	64%	4	36%	BLOOMFIELD	HARTFORD
06226	6650	751	0.1129	27	32%	26	68%	WILLIMANTIC	WINDHAM
06387	410	46	0.1123	28	19%	53	81%	WAUREGAN	WINDHAM
06010	27161	2880	0.106	29	16%	64	84%	BRISTOL	HARTFORD
06040	16061	1701	0.1059	30	39%	22	61%	MANCHESTER	HARTFORD
06110	5469	551	0.1007	31	35%	25	65%	WEST HARTFORD	HARTFORD
06353	112	11	0.098	32	53%	7	47%	MONTVILLE	NEW LONDON
06018	1397	133	0.0952	33	6%	152	94%	CANAAN	LITCHFIELD
06770	13252	1236	0.0933	34	21%	44	79%	NAUGATUCK	NEW HAVEN
06095	12165	1133	0.0931	35	49%	8	51%	WINDSOR	HARTFORD
06061	108	10	0.0927	36	0%	224	100%	PINE MEADOW	LITCHFIELD
06902	27817	2571	0.0924	37	44%	14	56%	STAMFORD	FAIRFIELD
06373	124	11	0.0887	38	0%	225	100%	ONECO	WINDHAM
06383	23	2	0.0883	39		238			
06790	16513	1441	0.0873	40	11%	97	89%	TORRINGTON	LITCHFIELD
06457	20654	1746	0.0845	41	27%	32	73%	MIDDLETOWN	MIDDLESEX
06098	5241	430	0.082	42	7%	135	93%	WINSTED	LITCHFIELD
06081	690	56	0.0812	43	15%	73	85%	TARIFFVILLE	HARTFORD
06850	9117	740	0.0812	44	28%	30	72%	NORWALK	FAIRFIELD
06786	3797	308	0.0811	45	7%	136	93%	TERRYVILLE	LITCHFIELD
06779	3388	263	0.0776	46	6%	153	94%	OAKVILLE	LITCHFIELD
06851	11490	892	0.0776	47	22%	41	78%	NORWALK	FAIRFIELD
06042	10000	771	0.0771	48	40%	20	60%	MANCHESTER	HARTFORD

Exhibit JH-2

Involuntary Residential Service Disconnections by Zip Code and Race:
January 2019 - February 2021 - Eversource Service Territory

Zip	Total Accounts	Total Disconnections for Non-payment - January 2019 -	Disconnections to Accounts Ratio	Disconntions to Accounts Ratio Rank	Non-white Percent of Population	NonWhite Population Rank	White Population	City	County
06467	170	13	0.0766	49	7%	137	93%	MILLDALE	HARTFORD
06119	6956	532	0.0765	50	19%	54	81%	WEST HARTFORD	HARTFORD
06062	8173	623	0.0762	51	14%	75	86%	PLAINVILLE	HARTFORD
06256	948	72	0.076	52	16%	65	84%	NORTH WINDHAM	WINDHAM
06811	11794	894	0.0758	53	30%	27	70%	DANBURY	FAIRFIELD
06801	7852	585	0.0745	54	16%	66	84%	BETHEL	FAIRFIELD
06246	162	12	0.074	55		239			
06332	522	38	0.0729	56	0%	226	100%	CENTRAL VILLAGE	WINDHAM
06260	4275	308	0.072	57	5%	164	95%	PUTNAM	WINDHAM
06906	3962	284	0.0717	58	29%	28	71%	STAMFORD	FAIRFIELD
06354	2275	163	0.0716	59	5%	165	95%	MOOSUP	WINDHAM
06239	4976	355	0.0713	60	11%	98	89%	DANIELSON	WINDHAM
06907	3874	270	0.0697	61	22%	42	78%	STAMFORD	FAIRFIELD
06785	358	24	0.067	62	13%	79	88%	SOUTH KENT	LITCHFIELD
06082	17550	1166	0.0664	63	18%	57	82%	ENFIELD	HARTFORD
06776	11606	765	0.0659	64	11%	99	89%	NEW MILFORD	LITCHFIELD
06330	1159	76	0.0656	65	12%	87	88%	BALTIC	NEW LONDON
06482	4000	261	0.0652	66	7%	138	93%	SANDY HOOK	FAIRFIELD
06058	973	63	0.0647	67	5%	166	95%	NORFOLK	LITCHFIELD
06483	6951	446	0.0642	68	13%	80	87%	SEYMOUR	NEW HAVEN
06787	3379	210	0.0621	69	2%	209	98%	THOMASTON	LITCHFIELD
06241	2107	125	0.0593	70	6%	154	94%	DAYVILLE	WINDHAM
06479	3907	230	0.0589	71	4%	183	96%	PLANTSVILLE	HARTFORD
06262	256	15	0.0586	72	0%	227	100%	QUINEBAUG	WINDHAM
06096	5627	329	0.0585	73	16%	67	84%	WINDSOR LOCKS	HARTFORD
06405	14257	832	0.0584	74	10%	107	90%	BRANFORD	NEW HAVEN
06382	4490	259	0.0577	75	28%	31	72%	UNCASVILLE	NEW LONDON
06456	174	10	0.0576	76	0%	228	100%	MIDDLE HADDAM	MIDDLESEX
06024	175	10	0.057	77	0%	229	100%	EAST CANAAN	LITCHFIELD
06066	14819	836	0.0564	78	21%	45	79%	VERNON ROCKVILLE	TOLLAND
06901	5846	327	0.0559	79	40%	21	60%	STAMFORD	FAIRFIELD
06416	6261	349	0.0557	80	13%	81	87%	CROMWELL	MIDDLESEX
06268	4188	231	0.0552	81	18%	58	82%	STORRS MANSFIELD	TOLLAND
06088	2540	139	0.0547	82	19%	55	81%	EAST WINDSOR	HARTFORD
06781	110	6	0.0547	83		240			
06375	1520	81	0.0533	84	8%	124	92%	QUAKER HILL	NEW LONDON
06403	2587	137	0.053	85	5%	167	95%	BEACON FALLS	NEW HAVEN
06016	2848	150	0.0527	86	20%	48	80%	BROAD BROOK	HARTFORD
06063	1411	74	0.0525	87	5%	168	95%	BARKHAMSTED	LITCHFIELD
06489	13767	715	0.0519	88	8%	125	92%	SOUTHINGTON	HARTFORD
06795	5604	289	0.0516	89	8%	126	92%	WATERTOWN	LITCHFIELD
06111	13211	681	0.0515	90	19%	56	81%	NEWINGTON	HARTFORD
06905	8655	445	0.0514	91	27%	33	73%	STAMFORD	FAIRFIELD
06377	1405	72	0.0512	92	4%	184	96%	STERLING	WINDHAM
06255	1631	83	0.0509	93	3%	196	97%	ORTH GROSVENORDAL	WINDHAM
06233	119	6	0.0506	94		241			
06374	3154	159	0.0504	95	9%	115	91%	PLAINFIELD	WINDHAM
06716	6320	316	0.05	96	7%	139	93%	WOLCOTT	NEW HAVEN
06243	521	26	0.0499	97	0%	230	100%	EAST KILLINGLY	WINDHAM
06804	7191	356	0.0495	98	12%	88	88%	BROOKFIELD	FAIRFIELD
06089	1364	67	0.0491	99	5%	169	95%	WEATOGUE	HARTFORD
06385	7224	350	0.0485	100	13%	82	87%	WATERFORD	NEW LONDON
06019	4382	208	0.0475	101	10%	108	90%	CANTON	HARTFORD

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Involuntary Residential Service Disconnections by Zip Code and Race:
January 2019 - February 2021 - Eversource Service Territory

Zip	Total Accounts	Total Disconnections for Non-payment - January 2019 -	Disconnections to Accounts Ratio	Disconntions to Accounts Ratio Rank	Non-white Percent of Population	NonWhite Population Rank	White Population	City	County
06109	11565	546	0.0472	102	14%	76	86%	WETHERSFIELD	HARTFORD
06415	6595	311	0.0472	103	7%	140	93%	COLCHESTER	NEW LONDON
06266	279	13	0.0466	104	6%	155	94%	SOUTH WINDHAM	WINDHAM
06470	6229	290	0.0466	105	9%	116	91%	NEWTOWN	FAIRFIELD
06414	151	7	0.0464	106	0%	231	100%	COBALT	MIDDLESEX
06413	6225	288	0.0463	107	5%	170	95%	CLINTON	MIDDLESEX
06280	1432	66	0.0461	108	20%	49	80%	WINDHAM	WINDHAM
06067	8956	412	0.046	109	27%	34	73%	ROCKY HILL	HARTFORD
06074	10585	487	0.046	110	20%	50	80%	SOUTH WINDSOR	HARTFORD
06798	4555	207	0.0454	111	5%	171	95%	WOODBURY	LITCHFIELD
06379	4127	186	0.0451	112	9%	117	91%	PAWCATUCK	NEW LONDON
06424	5565	249	0.0447	113	7%	141	93%	EAST HAMPTON	MIDDLESEX
06339	3382	151	0.0446	114	17%	61	83%	LEDYARD	NEW LONDON
06750	717	32	0.0446	115	4%	185	96%	BANTAM	LITCHFIELD
06279	2633	117	0.0444	116	13%	83	87%	WILLINGTON	TOLLAND
06359	2305	102	0.0443	117	11%	100	89%	NORTH STONINGTON	NEW LONDON
06468	6947	308	0.0443	118	10%	109	90%	MONROE	FAIRFIELD
06763	1157	51	0.0441	119	2%	210	98%	MORRIS	LITCHFIELD
06069	1859	81	0.0436	120	7%	142	93%	SHARON	LITCHFIELD
06235	1010	44	0.0436	121	11%	101	89%	CHAPLIN	WINDHAM
06758	116	5	0.043	122	0%	232	100%	LAKESIDE	LITCHFIELD
06076	5893	251	0.0426	123	5%	172	95%	STAFFORD SPRINGS	TOLLAND
06234	3154	134	0.0425	124	8%	127	92%	BROOKLYN	WINDHAM
06117	5539	230	0.0415	125	21%	46	79%	WEST HARTFORD	HARTFORD
06712	3741	153	0.0409	126	10%	110	90%	PROSPECT	NEW HAVEN
06417	2136	86	0.0403	127	7%	143	93%	DEEP RIVER	MIDDLESEX
06237	2318	93	0.0401	128	4%	186	96%	COLUMBIA	TOLLAND
06057	2923	116	0.0397	129	1%	221	99%	NEW HARTFORD	LITCHFIELD
06455	1718	68	0.0396	130	3%	197	97%	MIDDLEFIELD	MIDDLESEX
06880	10750	425	0.0395	131	10%	111	90%	WESTPORT	FAIRFIELD
06782	1348	53	0.0393	132	1%	222	99%	PLYMOUTH	LITCHFIELD
06065	283	11	0.0389	133	10%	112	90%	RIVERTON	LITCHFIELD
06480	4111	160	0.0389	134	3%	198	97%	PORTLAND	MIDDLESEX
06478	5030	195	0.0388	135	7%	144	93%	OXFORD	NEW HAVEN
06757	1374	53	0.0386	136	6%	156	94%	KENT	LITCHFIELD
06277	2212	85	0.0384	137	5%	173	95%	THOMPSON	WINDHAM
06250	2414	92	0.0381	138	12%	89	88%	MANSFIELD CENTER	TOLLAND
06039	1294	49	0.0379	139	2%	211	98%	LAKEVILLE	LITCHFIELD
06370	2651	100	0.0377	140	12%	90	88%	OAKDALE	NEW LONDON
06231	803	30	0.0374	141	4%	187	96%	AMSTON	TOLLAND
06488	8563	320	0.0374	142	7%	145	93%	SOUTHBURY	NEW HAVEN
06333	2982	111	0.0372	143	17%	62	83%	EAST LYME	NEW LONDON
06753	296	11	0.0372	144		242			
06794	592	22	0.0371	145	13%	84	87%	WASHINGTON DEPOT	LITCHFIELD
06469	1478	54	0.0365	146	5%	174	95%	MOODUS	MIDDLESEX
06438	1192	43	0.0361	147	1%	223	99%	HADDAM	MIDDLESEX
06812	5671	205	0.0361	148	8%	128	92%	NEW FAIRFIELD	FAIRFIELD
06412	1723	62	0.036	149	3%	199	97%	CHESTER	MIDDLESEX
06524	2089	75	0.0359	150	12%	91	88%	BETHANY	NEW HAVEN
06840	7597	273	0.0359	151	9%	118	91%	NEW CANAAN	FAIRFIELD
06754	850	30	0.0353	152	6%	157	94%	CORNWALL BRIDGE	LITCHFIELD
06410	10197	358	0.0351	153	16%	68	84%	CHESHIRE	NEW HAVEN
06282	515	18	0.035	154	0%	233	100%	WOODSTOCK VALLEY	WINDHAM

Exhibit JH-2

Involuntary Residential Service Disconnections by Zip Code and Race:
January 2019 - February 2021 - Eversource Service Territory

Zip	Total Accounts	Total Disconnections for Non-payment - January 2019 -	Disconnections to Accounts Ratio	Disconntions to Accounts Ratio Rank	Non-white Percent of Population	NonWhite Population Rank	White Population	City	County
06264	633	22	0.0348	155	29%	29	71%	SCOTLAND	WINDHAM
06043	2051	71	0.0346	156	6%	158	94%	BOLTON	TOLLAND
06853	1532	53	0.0346	157	6%	159	94%	NORWALK	FAIRFIELD
06068	1277	44	0.0345	158	11%	102	89%	SALISBURY	LITCHFIELD
06033	12455	429	0.0344	159	16%	69	84%	GLASTONBURY	HARTFORD
06238	5318	183	0.0344	160	5%	175	95%	COVENTRY	TOLLAND
06755	443	15	0.0339	161	3%	200	97%	GAYLORDSVILLE	LITCHFIELD
06026	2182	73	0.0334	162	11%	103	89%	EAST GRANBY	HARTFORD
06094	120	4	0.0333	163		243			
06498	4060	135	0.0333	164	7%	146	93%	WESTBROOK	MIDDLESEX
06877	9623	320	0.0333	165	8%	129	92%	RIDGEFIELD	FAIRFIELD
06759	2738	90	0.0329	166	4%	188	96%	LITCHFIELD	LITCHFIELD
06441	2233	73	0.0327	167	10%	113	90%	HIGGANUM	MIDDLESEX
06107	7961	259	0.0325	168	9%	119	91%	WEST HARTFORD	HARTFORD
06335	2683	87	0.0324	169	11%	104	89%	GALES FERRY	NEW LONDON
06883	3698	120	0.0324	170	12%	92	88%	WESTON	FAIRFIELD
06439	125	4	0.032	171		244			
06357	6151	196	0.0319	172	16%	70	84%	NIANTIC	NEW LONDON
06084	5617	178	0.0317	173	7%	147	93%	TOLLAND	TOLLAND
06751	1707	54	0.0316	174	7%	148	93%	BETHLEHEM	LITCHFIELD
06371	6031	190	0.0315	175	4%	189	96%	OLD LYME	NEW LONDON
06830	10772	339	0.0315	176	20%	51	80%	GREENWICH	FAIRFIELD
06437	9706	304	0.0313	177	8%	130	92%	GUILFORD	NEW HAVEN
06071	3700	115	0.0311	178	12%	93	88%	SOMERS	TOLLAND
06793	813	25	0.0307	179	3%	201	97%	WASHINGTON	LITCHFIELD
06070	6613	202	0.0305	180	10%	114	90%	SIMSBURY	HARTFORD
06037	7987	243	0.0304	181	7%	149	93%	BERLIN	HARTFORD
06029	7129	216	0.0303	182	13%	85	87%	ELLINGTON	TOLLAND
06777	1058	32	0.0302	183	8%	131	92%	W PRESTON MARBLE DA	LITCHFIELD
06831	5928	177	0.0299	184	12%	94	88%	GREENWICH	FAIRFIELD
06278	1977	59	0.0298	185	5%	176	95%	ASHFORD	WINDHAM
06897	6581	196	0.0298	186	12%	95	88%	WILTON	FAIRFIELD
06791	2364	70	0.0296	187	3%	202	97%	HARWINTON	LITCHFIELD
06242	816	24	0.0294	188	2%	212	98%	EASTFORD	WINDHAM
06085	2658	78	0.0293	189	16%	71	84%	UNIONVILLE	HARTFORD
06355	6045	177	0.0293	190	8%	132	92%	MYSTIC	NEW LONDON
06756	1749	51	0.0292	191	5%	177	95%	GOSHEN	LITCHFIELD
06447	2417	70	0.029	192	3%	203	97%	MARLBOROUGH	HARTFORD
06481	207	6	0.029	193	2%	213	98%	ROCKFALL	MIDDLESEX
06365	2039	59	0.0289	194	13%	86	87%	PRESTON	NEW LONDON
06443	8049	232	0.0288	195	6%	160	94%	MADISON	NEW HAVEN
06752	903	26	0.0288	196	8%	133	92%	BRIDGEWATER	LITCHFIELD
06903	5235	150	0.0287	197	14%	77	86%	STAMFORD	FAIRFIELD
06031	670	19	0.0284	198	6%	161	94%	FALLS VILLAGE	LITCHFIELD
06249	2041	58	0.0284	199	3%	204	97%	LEBANON	NEW LONDON
06258	600	17	0.0283	200		245			
06444	212	6	0.0283	201	0%	234	100%	MARION	HARTFORD
06778	529	15	0.0283	202	7%	150	93%	NORTHFIELD	LITCHFIELD
06384	1218	34	0.0279	203	11%	105	89%	VOLUNTOWN	NEW LONDON
06420	1830	51	0.0279	204	11%	106	89%	SALEM	NEW LONDON
06027	578	16	0.0277	205	9%	120	91%	EAST HARTLAND	HARTFORD
06281	3301	91	0.0276	206	2%	214	98%	WOODSTOCK	WINDHAM
06001	7673	207	0.027	207	18%	59	82%	AVON	HARTFORD
06032	8607	232	0.027	208	20%	52	80%	FARMINGTON	HARTFORD

Exhibit JH-2

Involuntary Residential Service Disconnections by Zip Code and Race:
January 2019 - February 2021 - Eversource Service Territory

Zip	Total Accounts	Total Disconnections for Non-payment - January 2019 -	Disconnections to Accounts Ratio	Disconntions to Accounts Ratio Rank	Non-white Percent of Population	NonWhite Population Rank	White Population	City	County
06423	3033	81	0.0267	209	2%	215	98%	EAST HADDAM	MIDDLESEX
06796	449	12	0.0267	210	2%	216	98%	WEST CORNWALL	LITCHFIELD
06422	2753	72	0.0262	211	2%	217	98%	DURHAM	MIDDLESEX
06783	1258	33	0.0262	212	3%	205	97%	ROXBURY	LITCHFIELD
06896	3397	89	0.0262	213	4%	190	96%	REDDING	FAIRFIELD
06232	1340	35	0.0261	214	5%	178	95%	ANDOVER	TOLLAND
06784	1870	48	0.0257	215	5%	179	95%	SHERMAN	FAIRFIELD
06078	4337	111	0.0256	216	21%	47	79%	SUFFIELD	HARTFORD
06035	3193	80	0.0251	217	6%	162	94%	GRANBY	HARTFORD
06409	328	8	0.0244	218	17%	63	83%	CENTERBROOK	MIDDLESEX
06021	740	18	0.0243	219	4%	191	96%	COLEBROOK	LITCHFIELD
06442	1139	27	0.0237	220	2%	218	98%	IVORYTON	MIDDLESEX
06419	2674	63	0.0236	221	3%	206	97%	KILLINGWORTH	MIDDLESEX
06762	3049	71	0.0233	222	9%	121	91%	MIDDLEBURY	NEW HAVEN
06248	2888	67	0.0232	223	3%	207	97%	HEBRON	TOLLAND
06331	2105	48	0.0228	224	3%	208	97%	CANTERBURY	WINDHAM
06475	5882	134	0.0228	225	5%	180	95%	OLD SAYBROOK	MIDDLESEX
06090	444	10	0.0225	226	2%	219	98%	WEST GRANBY	HARTFORD
06351	4882	108	0.0221	227	9%	122	91%	JEWETT CITY	NEW LONDON
06247	819	18	0.022	228	4%	192	96%	HAMPTON	WINDHAM
06378	3148	69	0.0219	229	5%	181	95%	STONINGTON	NEW LONDON
06259	1013	22	0.0217	230	4%	193	96%	POMFRET CENTER	WINDHAM
06013	3658	78	0.0213	231	6%	163	94%	BURLINGTON	HARTFORD
06073	1979	42	0.0212	232	8%	134	92%	SOUTH GLASTONBURY	HARTFORD
06230	49	1	0.0204	233		246			
06340	1031	21	0.0204	234	27%	35	73%	GROTON	NEW LONDON
06820	7185	145	0.0202	235	9%	123	91%	DARIEN	FAIRFIELD
06023	509	10	0.0196	236	14%	78	86%	EAST BERLIN	HARTFORD
06807	2883	56	0.0194	237	16%	72	84%	COS COB	FAIRFIELD
06426	1700	30	0.0176	238	15%	74	85%	ESSEX	MIDDLESEX
06870	2778	48	0.0173	239	12%	96	88%	OLD GREENWICH	FAIRFIELD
06093	1468	25	0.017	240	5%	182	95%	WEST SUFFIELD	HARTFORD
06350	123	2	0.0163	241	0%	235	100%	HANOVER	NEW LONDON
06092	1406	22	0.0156	242	7%	151	93%	WEST SIMSBURY	HARTFORD
06254	789	12	0.0152	243	4%	194	96%	NORTH FRANKLIN	NEW LONDON
06878	2767	42	0.0152	244	18%	60	82%	RIVERSIDE	FAIRFIELD
06060	892	12	0.0134	245	2%	220	98%	NORTH GRANBY	HARTFORD
06091	168	2	0.0119	246	0%	236	100%	WEST HARTLAND	HARTFORD
06829	131	1	0.0077	247		247			
06251	11	0	0	248		248			

Exhibit JH-3

				Eversource 2019 FF1 p. 304								
sched_num_ttl	MWH Sales	Revenue	Average # Customers	kWh Sales per Customer	Revenue per kWh		Annual Residential Expenditure	Monthly Residential Expenditure	Monthly Bill Impact: Tiered Discount	Monthly Bill Impact: Straight Discount	Annual Revenue From Program Assessment: Tiered Discount	Annual Revenue From Program Assessment: Straight Discount
Residential (Account 440)												
1 Residential	7,990,244	$1,532,850,270	1,004,740	7,953	$0.1918		**$1,525**	**$127**	**$2.58**	**$2.39**	$31,134,063	$28,780,538
5 Res. Electric Heating	1,680,962	$299,002,707	136,237	12,339	$0.1779		**$2,195**	**$183**	**$3.72**	**$3.44**	$6,075,101	$5,615,864
7 Time of Day	5,758	$1,024,805	480	11,996	$0.1780		**$2,135**	**$178**	**$3.61**	**$3.34**	$20,821	$19,247
18 Controlled Water Heating	24	$5,283	10	2,400	$0.2201		**$528**	**$44**	**$0.89**	**$0.83**	$107	$99
30 Small Gen Service	11,499	$1,322,118	230	49,996	$0.1150		**$5,750**	**$479**	**$9.73**	**$9.00**	$26,864	$24,833
35 Intermediate Gen Service	2,051	$158,685	6	341,833	$0.0774		**$26,458**	**$2,205**	**$44.79**	**$41.40**	$3,225	$2,981
37 Intermediate T-O-D	5,607	$384,240	7	801,000	$0.0685		**$54,869**	**$4,572**	**$92.88**	**$85.86**	$7,802	$7,213
56 Intermediate T-O-D	2,570	$170,796	2	1,285,000	$0.0665		**$85,453**	**$7,121**	**$144.66**	**$133.72**	$3,472	$3,209
115 Unmetered	28	$5,355	22	1,273	$0.1913		**$244**	**$20**	**$0.41**	**$0.38**	$109	$101
116 Street Lighting and Security	4,101	$1,523,479	2,707	1,515	$0.3715		**$563**	**$47**	**$0.95**	**$0.88**	$30,950	$28,610
Unbilled Revenue	3,466	$627,771			$0.1811							
Less: Duplicate Customers col d			-2,718									
Total	9,706,310	$1,837,075,509	1,141,723	8,501	$0.1893		**$1,609**	**$134**	**$2.72**	**$2.52**	**$37,323,633**	**$34,502,218**

Exhibit JH-3

				Eversource 2019 FF1 p. 304							
sched_num_ttl	MWH Sales	Revenue	Average # Customers	kWh Sales per Customer	Revenue per kWh	Annual Residential Expenditure	Monthly Residential Expenditure	Monthly Bill Impact: Tiered Discount	Monthly Bill Impact: Straight Discount	Annual Revenue From Program Assessment: Tiered Discount	Annual Revenue From Program Assessment: Straight Discount
Commercial (Account 442)											
1 Residential	18,943	$3,130,553	987	19,193	$0.1653	**$3,173**	**$264**	**$5.37**	**$4.96**	$63,611	$58,803
5 Com. Electric Heating	8	$1,081	1	8,000	$0.1351	**$1,081**	**$90**	**$1.83**	**$1.69**	$22	$20
7 Time of Day	461	$58,053	8	57,625	$0.1259	**$7,255**	**$605**	**$12.28**	**$11.35**	$1,179	$1,090
18 Water Heating	640	$105,152	142	4,507	$0.1643	**$741**	**$62**	**$1.25**	**$1.16**	$2,136	$1,975
21 Interruptible											
27 Time of Day	138,253	$14,700,348	277	499,108	$0.1063	**$53,055**	**$4,421**	**$89.82**	**$83.03**	$298,545	$275,977
29 Outdoor Recreational	2,637	$602,759	211	12,498	$0.2286	**$2,857**	**$238**	**$4.84**	**$4.47**	$12,246	$11,320
30 Small Gen. Service	3,448,900	$479,037,502	98,387	35,054	$0.1389	**$4,869**	**$406**	**$8.24**	**$7.62**	$9,731,506	$8,995,870
35 Intermediate Gen. Service	424,373	$38,949,986	1,088	390,049	$0.0918	**$35,806**	**$2,984**	**$60.62**	**$56.03**	$791,395	$731,571
37 Intermediate T-O-D Electric	1,028,325	$86,009,657	1,147	896,534	$0.0836						
39 Large Interruptible Service											
40 Church & School	91,868	$11,762,199	1,876	48,970	$0.1280	**$6,268**	**$522**	**$10.61**	**$9.81**	$238,878	$220,820
41 Large Church & School	14,187	$1,368,545	12	1,182,250	$0.0965	**$114,087**	**$9,507**	**$193.13**	**$178.53**	$27,811	$25,709
55 Intermediate T-O-D Manuf.	255,097	$17,236,557	108	2,362,009	$0.0676	**$159,672**	**$13,306**	**$270.30**	**$249.87**	$350,312	$323,830
56 Intermediate TOD Non-Man.	1,860,324	$132,920,974	666	2,793,279	$0.0715	**$199,719**	**$16,643**	**$338.10**	**$312.54**	$2,702,073	$2,497,815
57 Large T-O-D Manufacturers	103,403	$7,306,872	13	7,954,077	$0.0707	**$562,353**	**$46,863**	**$951.99**	**$880.02**	$148,510	$137,283
58 Large T-O-D Non-Man.	1,326,349	$91,684,769	91	14,575,264	$0.0691	**$1,007,151**	**$83,929**	**$1,704.97**	**$1,576.08**	$1,861,823	$1,721,082
115 Unmetered	45,794	$4,312,180	1,602	28,586	$0.0942	**$2,693**	**$224**	**$4.56**	**$4.21**	$87,633	$81,009
116 Street & Security Lighting	21,248	$4,454,862	8,572	2,479	$0.2097	**$520**	**$43**	**$0.88**	**$0.81**	$90,523	$83,680
119 Standby & Auxillary Power	256	$16,754			$0.0654						
Unbilled Revenue	11,150	-$1,104,107			-$0.0990						
Less: Duplicate Customers col d			-8,713								
Total	8,792,216	$892,554,696	106,475	82,575	$0.1015	**$8,381**	**$698**	**$14.19**	**$13.12**	$18,128,622	$16,758,221

Exhibit JH-3

Eversource 2019 FF1 p. 304												
sched_num_ttl	MWH Sales	Revenue	Average # Customers	kWh Sales per Customer	Revenue per kWh		Annual Residential Expenditure	Monthly Residential Expenditure	Monthly Bill Impact: Tiered Discount	Monthly Bill Impact: Straight Discount	Annual Revenue From Program Assessment: Tiered Discount	Annual Revenue From Program Assessment: Straight Discount
Industrial (Account 442)												
27 Time of Day	22,820	$2,464,752	69	330,725	$0.1080		**$35,718**	**$2,977**	**$60.47**	**$55.90**	$50,066	$46,281
30 Small Gen. Service	128,273	$18,805,885	2,212	57,990	$0.1466		**$8,501**	**$708**	**$14.39**	**$13.30**	$382,010	$353,133
35 Intermediate Gen. Serv	48,130	$5,623,603	129	373,101	$0.1168		**$43,578**	**$3,632**	**$73.77**	**$68.20**	$114,199	$105,566
37 Intermediate T-O-D	171,832	$15,538,422	237	725,030	$0.0904		**$65,543**	**$5,462**	**$110.95**	**$102.57**	$315,555	$291,701
39 Interruptible Service	159,426	$4,469,249	4	39,856,500	$0.0280		**$1,115,982**	**$92,999**	**$1,889.20**	**$1,746.39**	$90,682	$83,827
55 Inter. T-O-D Man.	450,392	$30,066,621	193	2,333,637	$0.0668		**$155,887**	**$12,991**	**$263.89**	**$243.95**	$611,181	$564,980
56 Inter. T-O-D Non-Man.	118,826	$10,022,132	53	2,242,000	$0.0843		**$189,001**	**$15,750**	**$319.95**	**$295.77**	$203,489	$188,107
57 Large TOD Manufacturer	841,925	$44,678,831	75	11,225,667	$0.0531		**$596,083**	**$49,674**	**$1,009.09**	**$932.81**	$908,177	$839,525
58 Large T-O-D Non-Manu.	42,715	$5,751,533	9	4,746,111	$0.1346		**$638,827**	**$53,236**	**$1,081.44**	**$999.69**	$116,796	$107,967
115 Unmetered		-$123	1									
116 Street & Security Light	784	$142,882	290	2,703	$0.1822							
119 Standby & Auxillary Pwr	3,825	$676,391	2	1,912,500	$0.1768		**$338,130**	**$28,178**	**$572.41**	**$529.14**	$13,738	$12,699
Unbilled Revenue	9,185	-$6,436			-$0.0007							
Less: Duplicate Customers col d			-290									
Total	1,998,133	$138,233,742	2,984	669,616	$0.0692		**$46,337**	**$3,861**	**$78.44**	**$72.51**	$2,808,881	$2,596,548

Exhibit JH-3

Eversource 2019 FF1 p. 304												
sched_num_ttl	MWH Sales	Revenue	Average # Customers	kWh Sales per Customer	Revenue per kWh		Annual Residential Expenditure	Monthly Residential Expenditure	Monthly Bill Impact: Tiered Discount	Monthly Bill Impact: Straight Discount	Annual Revenue From Program Assessment: Tiered Discount	Annual Revenue From Program Assessment: Straight Discount
Street Lighting (Account 444)												
115 Unmetered	8,515	$886,891			$0.1042							
116 Street & Security Lighting	24,116	$7,965,172	1,703	14,161	$0.3303		**$4,677**	**$390**	**$7.92**	**$7.32**	$161,815	$149,583
117 Partial Street Lighting	27,729	$2,376,607	2,465	11,249	$0.0857		**$964**	**$80**	**$1.63**	**$1.51**	$48,274	$44,625
Unbilled Revenue	-229	-$2,676	798	-287	$0.0117		**-$3**	**$0**	**-$0.01**	**-$0.01**	-$54	-$50
Total	60,131	$11,225,994	4,966	12,109	$0.1867		**$2,261**	**$188**	**$3.83**	**$3.54**	$228,067	$210,826
Railroads and Railways												
(Account 446)												
58 Large T-O-D Non-Mfg	163,782	$19,169,747	2	81,891,000	$0.1170		**$9,581,247**	**$798,437**	**$16,219.72**	**$14,993.62**	$389,273	$359,847
Unbilled Revenue	-884	-$21,286			$0.0241							
Total	162,898	$19,148,461	2	81,449,000	$0.1175		**$9,570,258**	**$797,521**	**$16,201.12**	**$14,976.42**	$388,827	$359,434
Total Sales (MWH) and Revenue From Sales ($)	***20,719,688***	***$2,898,238,402***									***58,878,029***	***54,427,247***
Tiered Discount Program Cost as Percent of Revenues From Sales		2.03%										

Exhibit JH-4

United Illuminating 2019 FF1 p. 304													
sched_num_ttl	MWH Sales (Delivery + Generation)	Revenue	Revenue (Delivery + Generation)*	Average # Customers (Delivery + Generation)	kWh Sales per Customer (Weighted Average: Delivery & Generation)	Revenue per kWh		Annual Residential Expenditure	Monthly Residential Expenditure	Monthly Bill Impact: Tiered Discount	Monthly Bill Impact: Straight Discount	Annual Revenue From Program Assessment: Tiered Discount	Annual Revenue From Program Assessment: Straight Discount
Residential - Delivery													
(R) Residential	2,086,127	$210,360,654	$356,936,330	395,980	5,268	$0.1711		**$912**	**$76**	**$1.56**	**$1.29**	$4,325,837	$3,572,434
(RT) Optional	1,274,704	$106,176,869	$173,359,744	119,434	10,673	$0.1360		**$1,478**	**$123**	**$2.53**	**$2.09**	$2,183,831	$1,803,487
(GS) General Service	31,259	$2,766,077	$4,404,393	3,175	9,845	$0.1409		**$1,512**	**$126**	**$2.59**	**$2.14**	$56,869	$46,964
(GST) TOD Commercial	36,489	$2,598,899	$3,189,139	423	86,262	$0.0874		**$9,549**	**$796**	**$16.36**	**$13.51**	$53,404	$44,103
(LPT) Large Power Session	13,238	$664,056	$749,271	18	735,444	$0.0566		**$47,447**	**$3,954**	**$81.29**	**$67.14**	$13,657	$11,279
(M) Street and Security Lighting	1,526	$279,853	$407,137			$0.2668							
(MH) Metal Halide	1,760	$318,870	$469,216			$0.2666							
(LED) Outdoor	269	$64,045	$71,796			$0.2669							
TOTAL RESIDENTIAL	**3,445,372**	**$323,229,323**	**$536,788,958**	**519,030**	**6,638**	**$0.1558**		**$1,061**	**$88**	**$1.82**	**$1.50**	**$6,644,229**	**$5,487,046**

United Illuminating 2019 FF1 p. 304													
sched_num_ttl	MWH Sales (Delivery + Generation)	Revenue	Revenue (Delivery + Generation)*	Average # Customers (Delivery + Generation)	kWh Sales per Customer (Weighted Average: Delivery & Generation)	Revenue per kWh		Annual Residential Expenditure	Monthly Residential Expenditure	Monthly Bill Impact: Tiered Discount	Monthly Bill Impact: Straight Discount	Annual Revenue From Program Assessment: Tiered Discount	Annual Revenue From Program Assessment: Straight Discount
Commercial - Delivery													
(R) Residential	1,128	$122,145	$225,826	485	2,326	$0.2002		**$477**	**$40**	**$0.82**	**$0.68**	$2,511	$2,074
(RT) Optional	2,868	$229,981	$375,134	200	14,340	$0.1308		**$2,035**	**$170**	**$3.49**	**$2.88**	$4,728	$3,904
(GS) General Service	632,061	$54,269,280	$80,082,129	34,164	18,501	$0.1267		**$2,453**	**$204**	**$4.20**	**$3.47**	**$1,115,681**	**$921,370**
(GST) TOD Commercial	1,412,653	$102,924,876	$122,900,811	10,848	130,222	$0.0870		**$12,435**	**$1,036**	**$21.31**	**$17.59**	$2,116,377	$1,747,781
(LPT) Large Power Session	849,037	$53,065,423	$55,866,635	363	2,338,945	$0.0658		**$168,038**	**$14,003**	**$287.91**	**$237.76**	$1,091,746	$901,603
(M) Street and Security Lighting	6,094	$1,175,258	$1,583,221			$0.2598							
(MH) Metal Halide	13,122	$2,242,643	$3,409,096			$0.2598							
(LED) Outdoor	822	$190,327	$213,720			$0.2600							
TOTAL COMMERCIAL	**2,917,785**	**$214,219,933**	**$256,765,080**	**46,060**	**63,347**	**$0.0880**		**$6,893**	**$574**	**$11.81**	**$9.75**	**$4,405,103**	**$3,637,895**

Exhibit JH-4

United Illuminating 2019 FF1 p. 304													
sched_num_ttl	MWH Sales (Delivery + Generation)	Revenue	Revenue (Delivery + Generation)*	Average # Customers (Delivery + Generation)	kWh Sales per Customer (Weighted Average: Delivery & Generation)	Revenue per kWh		Annual Residential Expenditure	Monthly Residential Expenditure	Monthly Bill Impact: Tiered Discount	Monthly Bill Impact: Straight Discount	Annual Revenue From Program Assessment: Tiered Discount	Annual Revenue From Program Assessment: Straight Discount
Industrial - Delivery													
(R) Residential													
(GS) General Service	19,347	$2,023,996	$2,652,474	606	31,926	$0.1371		**$4,509**	**$376**	**$7.73**	**$6.38**	$41,628	$34,378
(GST) TOD Commercial	281,314	$22,674,119	$25,683,968	526	534,817	$0.0913		**$50,866**	**$4,239**	**$87.15**	**$71.97**	$466,436	$385,199
(LPT) Large Power Session	160,095	$9,422,750	$9,541,662	42	3,811,786	$0.0596		**$235,696**	**$19,641**	**$403.83**	**$333.50**	$193,838	$160,079
(M) Street and Security Lighting	147	$29,507	$34,427			$0.2342							
(MH) Metal Halide	180	$33,014	$42,444			$0.2358							
(LED) Outdoor	4	$776	$1,035			$0.2587							
TOTAL INDUSTRIAL	**461,087**	**$34,184,162**	**$37,394,156**	**1,174**	**392,749**	**$0.0811**		**$36,578**	**$3,048**	**$62.67**	**$51.76**	**$703,162**	**$580,697**
Street Lighting - Delivery													
(GS) General Service	3,052	$782,676	$845,404	973	3,137	$0.2770		**$845**	**$70**	**$1.45**	**$1.20**	$16,097	$13,293
(GST) TOD Commercial	5,925	$693,149	$694,410	187	31,684	$0.1172		**$3,809**	**$317**	**$6.53**	**$5.39**	$14,253	$11,771
(R) Residential		$9,679				$0.2305		**$1,614**	**$134**	**$2.76**	**$2.28**	$199	$164
(M) Street and Security Lighting	4,193	$1,269,214	$1,603,403	162	25,883	$0.3824		**$50,767**	**$4,231**	**$86.98**	**$71.83**	$26,095	$21,550
(MH) Metal Halide		$637,781				$0.3824		**$91,121**	**$7,593**	**$156.12**	**$128.93**	$13,114	$10,830
(LED) Outdoor	16,525	$5,236,016	$6,319,160	60	275,417	$0.3824		**$113,814**	**$9,484**	**$195.00**	**$161.04**	$107,642	$88,894
(U) Unmetered Municipal	4,264	$707,600	$711,235	5	852,800	$0.1668		**$176,891**	**$14,741**	**$303.08**	**$250.29**	$14,548	$12,014
TOTAL STREET LIGHTING	**37,391**	**$9,336,115**	**$11,011,650**	**1,409**	**26,537**	**$0.2945**		**$7,800**	**$650**	**$13.36**	**$11.04**	**$191,958**	**$158,526**
Total Sales (MWH) and Bills ($)	***6,861,635***		***$841,959,843***										
Tiered Discount Program Cost as Percent of Bills	2.06%												
Straight Discount Program Cost as Percent of Bills	1.70%												
* Assumes power supply charges paid by generation and delivery customers are equal.													