

A Way Forward:

A MADE-IN-NOVA SCOTIA HOME ENERGY AFFORDABILITY PROGRAM



Prepared by:
Roger D. Colton

for the **Nova Scotia
Energy Poverty Task Force**

April 2024

Companion Report:

This report is a companion report to the following report prepared
for Nova Scotia Power:

End Use and Energy Poverty Report

Narrative Research

(February 2024)

This report was commissioned by the Energy Poverty Task Force (EPTF), a coalition of representatives from 13 different organizations spanning the public, private, and not-for-profit sectors.

Roger Colton is a principal in the firm Fisher, Sheehan & Colton of Belmont, Massachusetts. He has been involved with evaluating energy and water affordability issues throughout the United States and Canada for more than 40 years, working for industry and public sector clients, as well as non-government organizations (NGOs).

Table of Contents

Executive Summary	1
Introduction	7
Part 1. A Review of Nova Scotia Home Energy Prices Over Time.....	9
Five Critical Findings.....	9
Home Energy Affordability Over Time in Nova Scotia	10
Changes in Nova Scotia Incomes During the Same Time Period for which Energy Prices Examined	15
Part 2. A Base Case Assessment of Current Home Energy Affordability in Nova Scotia.....	20
Seven Critical Findings.....	21
Home Energy Affordability in Nova Scotia Using CUSP Data.....	22
Nova Scotia: Provincial Data as a Whole:	22
Home Energy Unaffordability in Nova Scotia: Disaggregated by Census Divisions:	27
Home Energy Unaffordability in Nova Scotia: Disaggregated by Census Sub-Divisions:.....	31
Home Energy Affordability in Nova Scotia Using EfficiencyOne Data.....	33
The Distribution of Home Heating Fuels in Nova Scotia:.....	34
Energy Poverty as Identified through the EfficiencyOne Energy Poverty Visualization Tool:	37
Energy Poverty as Differentiated between FSA Urban/Rural Characterizations:.....	42
Part 3. The Impact on NSPI of Home Energy Unaffordability	44
Seven Critical Findings.....	44
The NSPI Data Underlying the Empirical Inquiry.....	45
The Base NSPI Data.....	47
The Impacts of Home Energy Unaffordability on NSPI.....	47
The Completeness of Payments:	47
The Timeliness of Payments:.....	48
The Non-Collection of Revenue:.....	50
The Ease of Collection:.....	51
Some Concluding NSPI Observations.....	53
Part 4. An Overview of How One Might Define “Low-Income” or “Poverty” in Nova Scotia	54
Five Critical Findings.....	54
Defining Poverty Status in Canada	55
The Low-Income Cutoffs (LICO).....	56
The Low-Income Measure (LIM).....	57
The Market Basket Measure (MBM).....	57
The “Housing Income Limits” (HILs).....	58
Defining Poverty: Some Concluding Observations	59
Part 5. The Need to Go Beyond Existing Nova Scotia Programming.....	61

Seven Critical Findings.....	61
Nova Scotia’s Heating Assistance Rebate Program (HARP).....	62
A brief history of HARP:.....	62
An overview of HARP’s advantages:.....	63
An overview of the need for assistance beyond HARP:.....	63
Energy Efficiency Programs in Nova Scotia.....	68
Emergency Assistance Programs in Nova Scotia.....	69
Part 6. A Nova Scotia Response to Home Energy Unaffordability.....	70
Summary of Recommendations.....	70
ELEMENT #1: A Bill Affordability Component.....	71
Selecting a maximum income eligibility for receiving Universal Service Program discounts:.....	71
Selecting a discount to achieve an Affordable Bill-to-Income Ratio:.....	73
Selecting an intake mechanism for a Nova Scotia Universal Service Program:.....	76
Applying the Universal Service Program benefit:.....	77
Estimating the cost of a Nova Scotia Universal Service Program:.....	78
Periodic recertification of income eligibility for program participants:.....	80
The Ontario Electricity Support Program (OESP) as a Practical Example:.....	80
ELEMENT #2: An Arrearage Management Component.....	81
ELEMENT #3: A Crisis Intervention Component.....	83
ELEMENT #4: An Energy Efficiency and Electrification Component.....	84
The Limits of Energy Efficiency as an Affordability Strategy:.....	86
Determining Eligibility for Low-Income Efficiency Programs:.....	87
Establishing Funding Targets for Low-Income Energy Efficiency:.....	89
A Separate Look at Electrification and Clean Energy Initiatives:.....	90
Part 7. Some Concluding Observations.....	93
Appendix A: Base Case Scenario: Energy Poverty EfficiencyOne’s Energy Poverty Visualization Tool.....	95

Executive Summary

The burden of unaffordable home energy is a challenge faced by nearly half of Nova Scotians.

This report presents both a detailed local analysis of energy unaffordability and a comprehensive policy strategy that builds on existing programming to form a coordinated, Made-in-Nova Scotia program capable of slashing energy poverty rates for low-income households.

Energy underpins all facets of daily life and thus bill unaffordability can easily become an issue relating to housing, health, and/or food security as households are pressured to make decisions between essential needs. This report defines energy poverty and high energy burden as any low- or moderate-income household that spends 6% or more of after-tax income on home energy. This measure is a common means test used in several jurisdictions. It suggests that **Nova Scotia has one of the highest rates of energy poverty in Canada** (43% of households). As the province pursues increased electrification and a green energy transition, this report finds that an immediate and comprehensive policy intervention is necessary to reverse Nova Scotia's high rate of energy poverty.

The impacts of unaffordable home energy are compelling.

A companion study highlights that 23% of respondents have recently experienced issues keeping their home heated, 17% of respondents had issues keeping electricity on with 13% of respondents experiencing both challenges. For these respondents experiencing challenges, the consequences are serious: 72% had to delay spending on other essential items, 61% built up debt, 46% experienced late payments, 40% missed payments, 17% received a notice of disconnection from an energy company and 8% reported their electricity was disconnected. Energy poverty has a profound impact on the lives of Nova Scotians and there is tremendous benefit in helping Nova Scotians with their energy burdens.

This report aims to significantly reduce energy poverty by direct financial assistance now to low-income households while reducing energy bills permanently for low- and moderate-income Nova Scotians through energy efficiency measures such as insulation and heat pumps in the longer-term. Permanent savings measures take time to install in all low and moderate-income homes. Nova Scotia is already a leader in low-income energy programming. **This report examines how we can do better.**



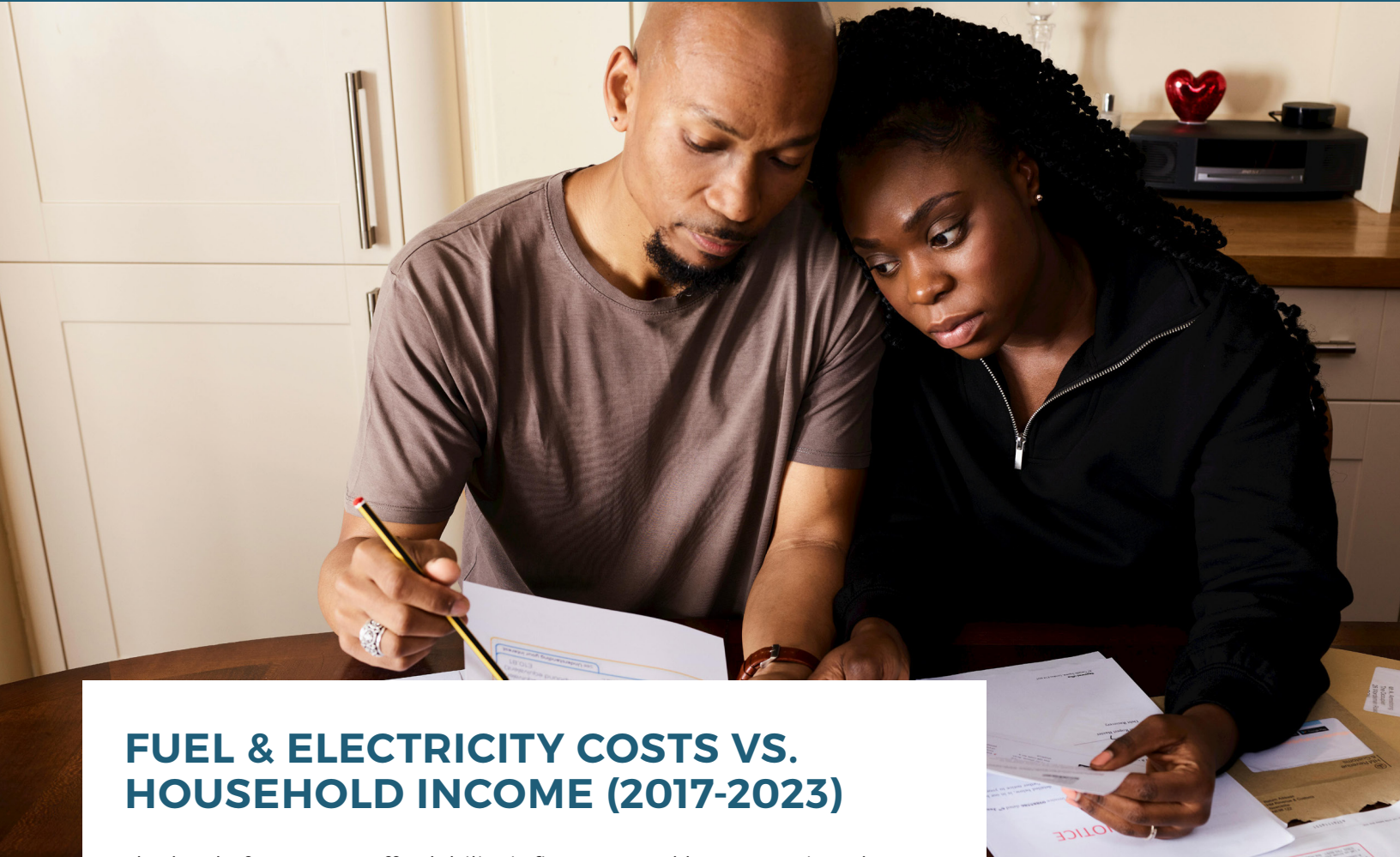
of households in Nova Scotia experience energy poverty.

NOVA SCOTIA'S ENERGY POVERTY TASK FORCE

This report was commissioned by the Energy Poverty Task Force (EPTF), a coalition of representatives from 13 different organizations spanning the public, private, and not-for-profit sectors.

The EPTF commissioned a companion study by Narrative Research and Nova Scotia Power Inc that provides additional insight and more in-depth statistics on the lived experience of Nova Scotians with high energy burdens.

Findings



FUEL & ELECTRICITY COSTS VS. HOUSEHOLD INCOME (2017-2023)

The level of energy unaffordability is first assessed by comparing changes in individual fuel costs and household income over time. Statistics Canada data reveals that water, fuel, and electricity costs accounted for approximately 20% of total shelter costs for Nova Scotian households in 2021. Despite overall increases in income for Nova Scotians, energy and heating costs were generally found to become a greater proportion of shelter costs for lower income households in the same year. In recent years, home heating fuel oil experienced a drastic fly-up in price after years of relative stability. Notably, the cost of fuel oil in October 2023 was nearly 100% higher than the price of fuel oil in October 2017. Electricity rates also increased as the price escalation in April 2023, caused in large part by electric utility fuel costs, was greater than the total increase in cost over the previous six years. The cost of home heating can be volatile and is subject to upward spikes, especially in times of international social and economic upheaval.





GEOGRAPHIC DISTRIBUTION

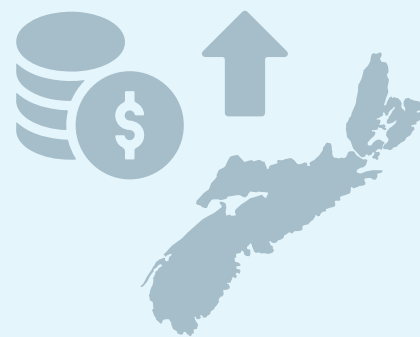
This report finds that **energy unaffordability in Nova Scotia is broad and deep**. The spatial distribution of energy poverty is analyzed using three different geographic sorting methods: by Census Division, by Census Subdivision, and by Forward Sortation Area (FSA), the first three characters of a postal code. This last method compares three different degrees of energy burden (high: paying more than six percent of after-tax income on energy bills, very high: paying more than ten percent of after-tax income on energy bills, and extremely high: paying more than fifteen percent of after-tax income on energy bills).

Of Nova Scotia's 18 Census Divisions, the same seven rank high in degree of energy burden. All seven have 55% or more households experiencing a high energy burden. More than one-of-four households across Nova Scotia experience very high energy burdens.

At the Census Subdivision level, only Halifax and Kentville were found to have less than 40% of households facing unaffordable energy burdens.

FSA code analysis further details that, despite Halifax having a lower percentage of households living in energy poverty, the region is home to 21% of all Nova Scotians facing high energy burdens as it is the largest metropolitan area in the province. This more granular analysis also revealed that of the 77 FSA code regions analyzed, 8 had more than 75% of homes facing unaffordable energy bills with Eskasoni First Nation having the highest rate (87%).

While all areas of the province experience high levels of energy poverty, it is more pronounced in rural areas mainly due to lower incomes. Oil-heated households spend 80% more on home energy than electrically heated households in general. In spite of this, both oil and electricity are each the primary source of heat for about 40% of households experiencing energy poverty.



EXISTING PROGRAMS

In an assessment of existing local programs designed to address energy poverty, this report examined the **Heating Assistance Rebate Program (HARP)**. While HARP has made a significant dent in energy poverty in the last two years, the program has problems. HARP provided payments up to \$200 per household for years but jumped to \$1,000 in 2022 - 2023 and then dropped to \$600/household in 2023 - 2024. These wide swings mean its impact on energy poverty has varied widely, reducing it slightly from 43% to above 38% or to as low as somewhat over 23%.

The degree of energy poverty is related to income as well as the type of energy used with oil bills being much higher. A more targeted approach, which would vary benefits by type of energy used and by income, is essential to alleviating the energy burden.

There are three kinds of existing emergency programs in Nova Scotia. **The Home Energy Assistance Top Up (HEAT)** fund is underfunded, limited to once every two years, and is seasonal, while energy bills are a year-round problem. Income Assistance provides aid that is limited and sometimes repayable. Community organizations fill the gaps as best they can.

Nova Scotia has some of the best low-income energy efficiency programming in the country. More than 24,000 homes have already been upgraded under **HomeWarming**, saving participants about \$860/year in electrically heated homes and \$1,700/year in non-electrically heated homes. With the recent addition of heat pumps, savings are expected to be even greater. **The Affordable Multifamily Housing program** continues to provide energy savings in buildings with low-income tenants, but does not have funding for buildings with moderate-income tenants.



Recommendations

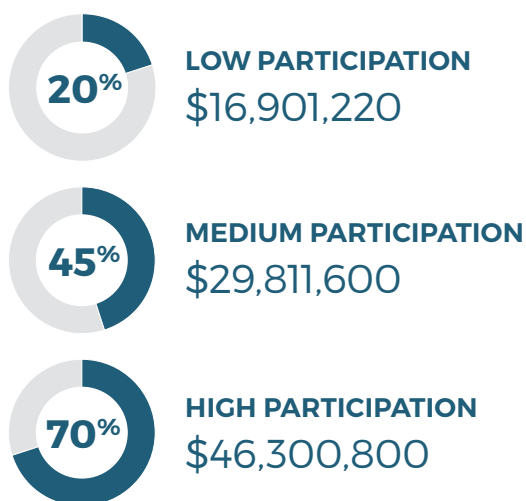
PROPOSED MADE-IN-NOVA SCOTIA PLAN TO SIGNIFICANTLY REDUCE ENERGY POVERTY

This report recommends a **four-pronged strategy** that is rooted in the unique needs of Nova Scotians and will help households facing energy poverty through the following components:

- 1 Bill Affordability** (where income-qualified households receive a discount on their bills to create an affordable bill-to-income ratio);
- 2 Arrearage management** (where forgiveness is matched to reduced bill payments that the household can afford);
- 3 A crisis intervention fund** (provided on a limited-time basis and equal in total cost to 10% of the total Bill Affordability assistance. This fund gives administrators flexibility to provide funding on an as-needed basis, rather than be bound by income thresholds);
- 4 Continue to expand targeted energy efficiency and electrification supports for low- and moderate-income households.** Programs could prioritize the highest energy users, and where additional prioritization is necessary, those with the highest arrears, to advance the resolution of payment troubles, improve affordability, and reduce consumption.



This report recommends the Bill Affordability element of a Nova Scotia Universal Service program apply a **50% bill discount that is calculated annually** with an income eligibility capped at the Low-Income Measure (LIM), which varies by size of household. Paired with a 5% administrative cost, the estimated cost of the bill affordability element for Nova Scotia given the following levels of participation, are:



This report recommends a **10-year timeline be established** to ensure efficiency-program funding is intentional and serves as a means to an identified end. Electrification and efficiency programming should be implemented with specific Key Performance Indicators (KPIs) to track and measure the progress of efficiency interventions and prevent any low-to-moderate-income households from falling through the cracks. Specific attention is also required to address barriers (e.g. “the split incentive”) faced by low- and moderate-income renters who may not directly benefit from efficiency investments.

The recommendation is that the proposed program would be government funded except that the Arrears program would be funded by home energy vendors, through savings the program will create in bill collection.

Concluding Thoughts

Nova Scotians have experienced **real difficulties** in their daily lives for over two decades due to energy affordability challenges. As energy prices have spiked in recent years, energy affordability has reached **crisis levels for many households**. Existing programs have helped in significant ways. This report proposes changes that would further **reduce energy poverty** in Nova Scotia through a coordinated effort.



Introduction

The problem of unaffordable home energy that faces many Nova Scotians is not only a current concern but will be a growing concern in the near- to mid-term as well. The information discussed in this report documents the extent to which home energy is, or should be, a major focus of the province. Home energy unaffordability broadly affects all areas of the province, both urban and rural, both north and south, both east and west.

Not only is the problem of home energy unaffordability broad, it is also deep. A sizable portion of Nova Scotians face not merely high home energy burdens (defined as burdens exceeding 6% of household income), but face extreme home energy burdens (defined as burdens exceeding 15% of household income). When energy burdens become this unaffordable, the problem transcends energy. Unaffordable home energy also becomes a housing affordability problem, a public health problem, a food insecurity problem, even a public education problem.¹

The unaffordability of home energy is a future crisis-in-waiting as well. It is not possible to reasonably plan for a clean energy future without first resolving, or simultaneously resolving, the problems of home energy unaffordability.

Nova Scotia's move to a clean energy future will not come without substantial cost, both direct and indirect. In direct costs, for example, the installation of solar panels involves not only the cost of installation itself, but also the cost of upgrading the housing structure to ensure its capacity to handle the panels. Likewise, the implementation of energy efficiency investments sometimes requires upgrades in electric systems, as well as remediation of other housing quality issues such as the presence of mold.

Families who live in rental units not only lack the financial capacity to invest in these clean energy strategies, but also lack the authority to make investment decisions. To the extent that low-income households cannot afford to make these clean energy investments, or otherwise lack the capacity to participate in clean energy strategies, they are left behind, not only paying the costs of utility programs in which they cannot participate, but also paying the higher rates as a utility's embedded fixed capital investment is spread over fewer and fewer units of energy sold.

In addition to the financial cost of home energy unaffordability, there is a public health cost as well. The common advice to gain protection from climate change-induced extreme heat events, for example, is to "stay indoors." When unaffordable home energy bills impede the

¹ Colton (1996). "The Road Oft Taken: Unaffordable Home Energy Bills, Forced Mobility And Childhood Education in Missouri." *2 Journal on Children and Poverty* 23.

ownership and/or use of air conditioning, however, being indoors can be as deadly as being outdoors. The same would be true for climate change-induced extreme cold events. Unaffordable home heating bills result in unhealthy, if not outright dangerous, conditions facing low-income households.

Finally, unaffordable home energy bills result in a direct economic impact on Nova Scotia's economy. Substantial academic research has drawn the connection between financial stress at home and poor performance on the job. Financial stress has been found to generate adverse health outcomes, causing employees to frequently be absent from their jobs.² Even if not absent, however, financial stress contributes to "presenteeism," where an employee is on the job but less productive due to the distractions caused by their ongoing domestic financial problems.³

In sum, unaffordable home energy in Nova Scotia is a serious problem. It is a problem that affects all Nova Scotians in one form or another whether they are low-income or not. Developing a reasonable response to the unaffordability of home energy in Nova Scotia is the objective of this report. Before addressing the remedy, however, the discussion below seeks to outline the nature and scope of the problem.

² ". . .16% of employees reported spending more than 20 working hours each month worrying about money. The average across those surveyed was 13 hours per month. For an individual employee, that is equal to 7.8% of their annual work time spent being distracted as a result of their financial situation. Other estimates are even higher. Garman and colleagues peg financial presenteeism and absenteeism costs at 15-20% of total compensation paid to all employees in the businesses studied." Brown and Menard (June 2017). Improving Employees' Financial Wellness: Why it Matters and What Employers Can Do About It." Available at https://papers.ssrn.com/sol3/papers.cfm?abstract_id=3011461

³ "Presenteeism" has long been recognized in both the industry and academic literature. See, e.g., Hemp (October 2004). Presenteeism: At Work but Out of It, Harvard Business Review. Available at <https://hbr.org/2004/10/presenteeism-at-work-but-out-of-it>

Part 1. A Review of Nova Scotia Home Energy Prices Over Time

The first step in assessing current energy affordability in Nova Scotia is to examine the historic changes in the cost of energy compared to changes in income over time. The question to be assessed in this examination is whether incomes have “kept up” with changes in home energy prices.

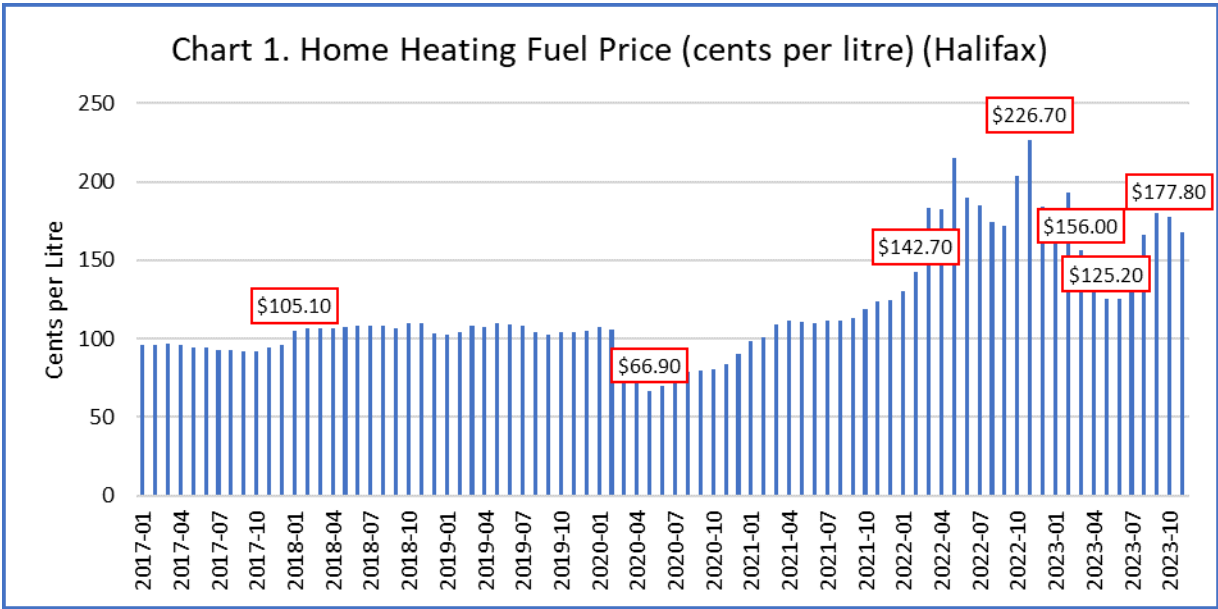
Five Critical Findings

- Home heating fuel oil prices in Halifax were reasonably constant for the period January 2017 through October 2021. However, beginning in November 2021 the price began to escalate, with sharp increases through the end of 2022. As of October 2023, heating fuel oil prices were 70% higher than the January 2018 price, and nearly 100% higher than the corresponding price in October 2017.
- Nova Scotia experienced a period of relatively consistent electricity prices during the period January 2017 through March 2023. In April 2023, however, electricity prices in Nova Scotia escalated by a percentage that exceeded the total increase in the prior six years. In November 2023, electricity prices in Nova Scotia were nearly 80% higher than they were in 2002.
- In contrast to the increases in home energy prices, median incomes of all types increased much less in Nova Scotia from 2017 through 2021. On a percentage basis, “total income” increased the greatest extent (11%), while “market income” increased the least (8%). The story is somewhat different when incomes are disaggregated into income deciles. Not surprisingly, the growth in average income from 2017 to 2021 was the least in the lowest decile.
- It is not reasonable to assume that average incomes in each income decile will increase in every year. For the lowest decile of income, for example, average income declined from 2019 to 2020.
- Nova Scotia households who live with income in the bottom decile tend to stay in the bottom decile over time. On a year-over-year basis (i.e. one-year), for the two most recent years, nearly 60% of tax filers with income in the lowest decile stayed in the lowest decile the following year. In the three years prior to 2020, the rate of tax filers staying in the lowest decile was two-thirds or more.

Home Energy Affordability Over Time in Nova Scotia

The discussion below considers changes in fuel oil prices, in electricity prices, in natural gas prices, and in home energy (and water) overall. This examination is limited to the period 2017 to 2023.⁴

Home heating fuel prices in Halifax were reasonably constant for the period January 2017 through October 2021. Beginning in November 2021, however, the price began to escalate, with sharp increases through the end of 2022. After a brief dip in early 2023, home heating fuel prices in Halifax have again seen increases. While prices have abated from the high reached in November 2022 (226.70 cents per litre), the October 2023 price (177.8 cents per litre) is 70% higher than the January 2018 price, and nearly 100% higher than the corresponding price in October 2017 (92.1 cents per litre).

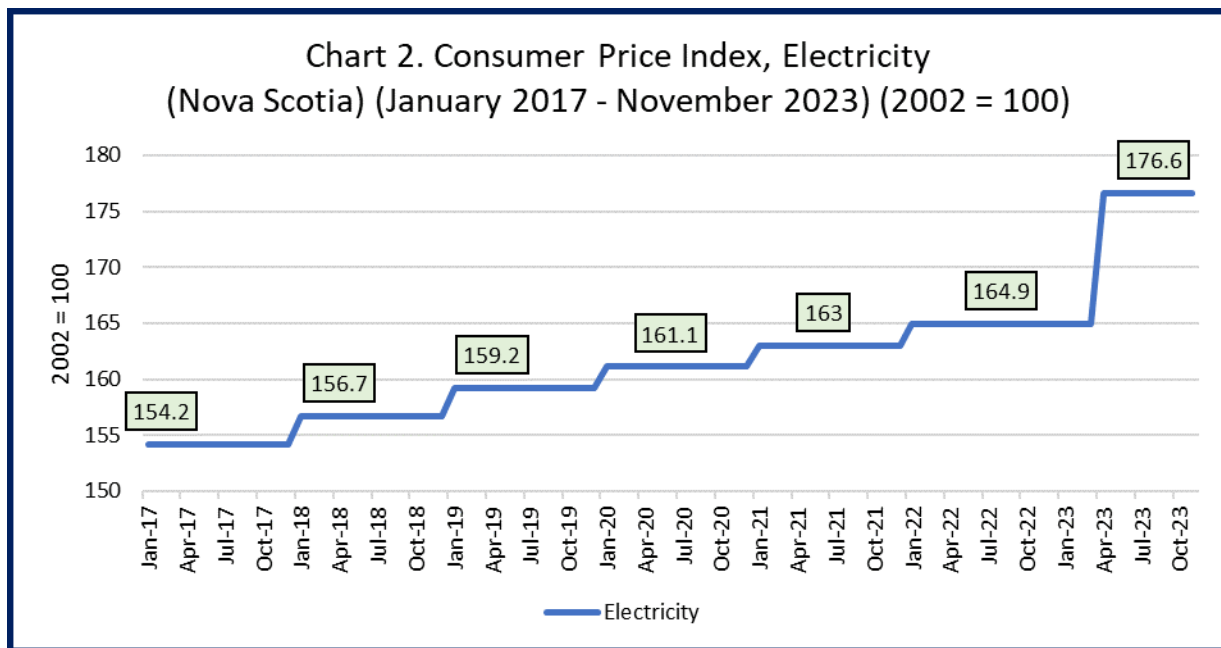


In contrast to fuel oil prices for Halifax, the data below presents the Consumer Price Index for electricity, as well as for “fuel oil and other fuels,” for Nova Scotia as a whole (not limited to Halifax) as reported by Statistics Canada (StatCan). This data, too, is for January 2017 through November 2023. The Consumer Price Index does not present actual prices, but nonetheless allows the reader to track the change in prices over time. Prices in 2002 are set equal to “100.”

⁴ Much of the data, however, is not available for the time period subsequent to 2021.

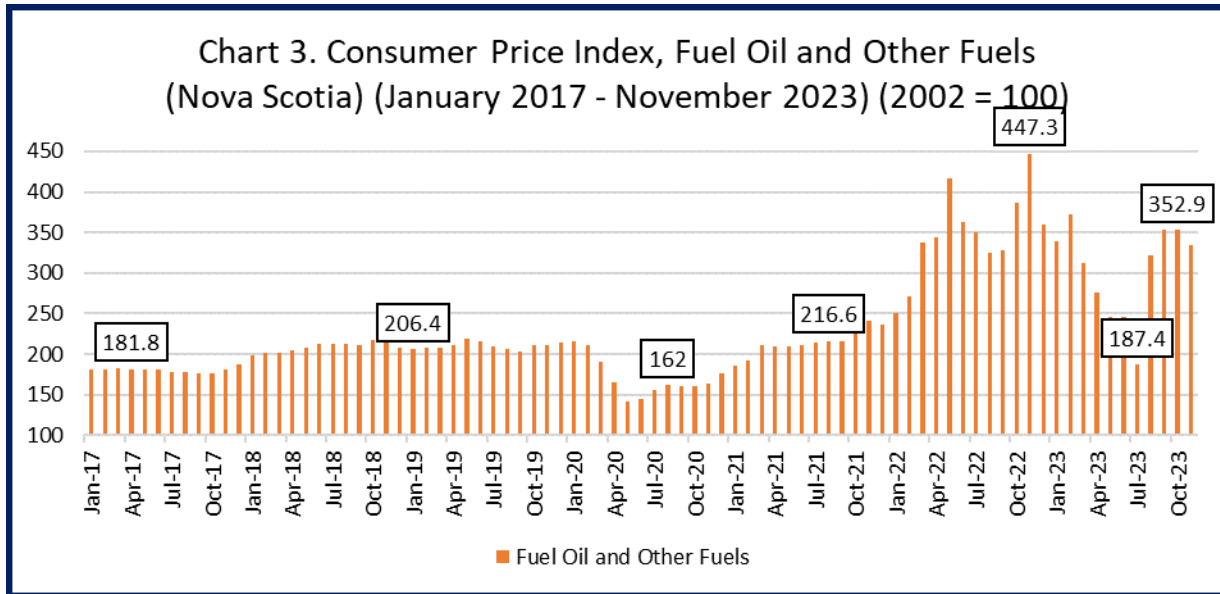
Accordingly, if the Consumer Price Index for electricity is “150” in July 2020 (hypothetically), that means that electricity in July 2020 is 150% what the price of electricity was in 2002. If the Consumer Price Index for fuel oil (and other fuels) (again, hypothetically) is “400” in November 2022, that means that the price of fuel oil (and other fuels) was four times what the price of fuel oil (and other fuels) was in 2002.

The Consumer Price Index provides two different messages for an assessment of home energy affordability in Nova Scotia. First, the shaded data labels provide periodic Consumer Price Index levels for electricity in Nova Scotia. As can be seen, during the six-year period January 2017 through March 2023, the price of electricity experienced an increase of just over 10% (from a Consumer Price Index of 154.2 in January 2017 to a Consumer Price Index of 164.9 in March 2023). Nova Scotia had, in other words, seen a period of relatively consistent electricity prices during the period January 2017 through March 2023. In April 2023, however, electricity prices in Nova Scotia escalated by a percentage (11.7%) that exceeded the total increase in the prior six years (10.7%). The April increase was the result of price increases in February that showed up on bills 2 months later. Remember, the Consumer Price Index uses 2002 as a base, so the percentage increase is relative to the 2002 electricity prices (not relative to the prior year). In November 2023, electricity prices in Nova Scotia were 76.6% higher than they were in 2002.



In contrast to these changes in electricity prices, the Consumer Price Index for fuel oil and other fuels for Nova Scotia as a whole reflects the price of fuel oil presented above for Halifax for the same time period. Beginning in February 2022, there was a sharp fly-up in prices for fuel oil and

other fuels in Nova Scotia.⁵ While the historically high price reached in November 2022 quickly abated (the Consumer Price Index falling from a high of 447.3 in November 2022 to a low of 187.4 in July 2023, the prices have again escalated, and appear to have reached a continuing level that is well in excess of the pre-fly-up months. In October 2023, the Consumer Price Index for fuel oil and other fuels reached 352.9, indicating that the price was more than 3½ times the price of fuel oil and other fuels in 2002.



StatCan data does not report separate Consumer Price Index data for natural gas in Nova Scotia. Natural gas Consumer Price Index data for Canada as a whole is not presented here given uncertainty as to whether it would be representative of circumstances in Nova Scotia in particular.

Finally, in addition to reviewing the change in the prices of individual fuels over time, it is important to consider total energy bills, in absolute dollar terms, over time. Data is not available exclusively for home energy. Accordingly, the Table below provides data for household expenditures on “water, fuel and electricity” (hereafter referred to as “WFE Expenditures”) by year disaggregated by selected quintiles of income.⁶ Data is presented for the population as a whole

⁵ While the StatCan data does not report this, it would be reasonable to conclude that the fly-up in the total Consumer Price Index for “fuel oil and other fuels” is largely driven by the fly-up in fuel oil prices. The price of fuel oil, standing alone, is not reported.

⁶ StatCan rank orders all households from lowest to highest income. It then divides that rank ordering into fifths. Each one-fifth of the population is known as a “quintile.” The portion of the population with the lowest one-fifth of income is known as the “First Quintile” (Q1) (or sometimes referred to as the “lowest” quintile. The Second Quintile (Q2) includes that portion of the population with income at the 21st through the 40th percentiles (i.e., 20% of the population has lower incomes while 60% of the population has higher income). The Third Quintile (Q3) includes that

(i.e., “all income quintiles”) as well as for the Q1, Q2 and Q3 populations. Data is provided for Nova Scotia for the years 2015 through 2021.⁷

Looking at changes in the total WFE Costs in absolute dollar terms allows one to consider those costs relative to other household expenditures.

Several important observations are evident from the StatCan data for Nova Scotia. First, WFE Expenditures decline as income declines. In 2021, for example, WFE Expenditures were: (1) \$1,862 for Q1 incomes; (2) \$2,724 for Q2 incomes; and (3) \$2,996 for Q3 incomes. WFE Expenditures for “All Quintiles” reached \$3,168 in 2021.

Even while WFE Expenditures increase in absolute dollar terms as incomes increase, they remain relatively constant over the different income quintiles as a percentage of total shelter costs in 2021. WFE Expenditures represented roughly 20% (give or take a small amount) of total shelter costs in 2021. At the same time, as incomes decrease, WFE Expenditures appear to represent a higher proportion of total household expenditures. While WFE Expenditures represent roughly 6% of total household expenditures for the Q1 and Q2 populations, they represent only 5.4% and 5.3% of total household “current consumption” respectively for the Q3 population as well as for the population as a whole (“all quintiles”).⁸

In all four populations, WFE Expenditures as a percentage of total shelter costs were lower in 2021 than they were in 2015. This occurs not because WFE Expenditures declined, but because total shelter costs increased to a greater extent than did WFE Expenditures.

Finally, the Nova Scotia data indicates that, as a point of reference, at all income quintile levels considered (Q1, Q2, Q3, all quintiles), WFE Expenditures in Nova Scotia exceed household expenditures on health care. At all three income quintiles examined, as well as for the total population (“all quintiles”), WFE expenditures are from 20% to 30% higher than household expenditures on health care. In the Q1 population, for example, while WFE Expenditures are substantially lower than WFE Expenditures for the Q2 (\$2,724) and Q3 (\$2,996) populations, so, too, were health care costs lower (\$1,442 for Q1 vs. \$2,325 [Q2] and \$2,277 [Q3]).

portion of the population at the 41st to the 60th percent. The “income” used by StatCan is before-tax household income. The “expenditures” are average expenditure per household.

⁷ StatCan data on income quintiles is not yet available after 2021—since 2017, this data is only reported on a biannual, not an annual, basis—the historical data has been extended back to 2015 to retain the ability to examine five years of data.

⁸ In the StatCan “Survey of Household Spending,” “current consumption” includes “the sum of current expenditures for food, shelter, household operations, household furnishings and equipment, clothing and accessories, transportation, health care, personal care, recreation, education, reading materials and other printed matter, tobacco products, alcoholic beverages and cannabis for non-medical use, games of chance, and miscellaneous expenditures.” This stands in contrast to “total expenditures,” which includes “the sum of total current consumption, income taxes, personal insurance payments, pension contributions, gifts of money, alimony and contributions to charity.”

Table 1. Water, Fuel and Electricity Expenditures vs. Total Shelter and Health Care Costs
(Nova Scotia) (2015 – 2021) (By Income Quintile 1 through Income Quintile 3)

Nova Scotia	2015	2016	2017	2018	2019	2020	2021
All income quintiles							
Total shelter	\$14,172	\$14,034	\$14,029	..	\$16,028	..	\$16,495
Water, fuel and electricity for principal accommodation	\$3,140	\$2,947	\$2,857	..	\$3,064	..	\$3,168
Health care	\$2,282	\$2,224	\$2,338	..	\$2,619	..	\$2,601
Water, fuel & electricity as pct of shelter	22.2%	21.0%	20.4%	..	19.1%	..	19.2%
Water, fuel & electricity as pct of current consumption	6.0%	5.4%	5.3%	..	5.1%	..	5.3%
First Quintile Income							
Total shelter	\$8,517	\$8,524	\$8,307	..	\$9,370	..	\$10,255
Water, fuel and electricity for principal accommodation	\$1,737	\$1,682	\$1,756	..	\$1,954	..	\$1,862
Health care	\$904	\$1,020	\$1,138	..	\$1,678	..	\$1,442
Water, fuel & electricity as pct of shelter	20.4%	19.7%	21.1%	..	20.9%	..	18.2%
Water, fuel & electricity as pct of current consumption	6.9%	5.9%	6.2%	..	5.8%	..	5.9%
Second Quintile Income							
Total shelter	\$10,314	\$10,463	\$10,257	..	\$11,880	..	\$13,159
Water, fuel and electricity for principal accommodation	\$2,416	\$2,473	\$2,245	..	\$2,325	..	\$2,724
Health care	\$1,844	\$1,799	\$1,737	..	\$2,112	..	\$2,325
Water, fuel & electricity as pct of shelter	23.4%	23.6%	21.9%	..	19.6%	..	20.7%
Water, fuel & electricity as pct of current consumption	6.8%	6.3%	5.9%	..	5.6%	..	6.1%
Third Quintile Income							
Total shelter	\$12,244	\$12,886	\$12,283	..	\$16,272	..	\$15,283
Water, fuel and electricity for principal accommodation	\$3,313	\$2,835	\$2,877	..	\$2,844	..	\$2,996
Health care	\$2,351	\$2,175	\$2,567	..	\$2,638	..	\$2,277
Water, fuel & electricity as pct of shelter	27.1%	22.0%	23.4%	..	17.5%	..	19.6%
Water, fuel & electricity as pct of current consumption	6.7%	5.9%	5.9%	..	4.9%	..	5.4%

Changes in the WFE Expenditures that are reported above should not necessarily be construed to represent changes in prices for fuels. Changes in WFE Expenditures—up or down—may occur for reasons other than changes in the underlying fuel prices. Nonetheless, in reviewing the data, it should be noted that the StatCan data does not include the months and/or years of the substantial fly-up in fuel oil prices in Nova Scotia beginning in late 2021.

Changes in Nova Scotia Incomes During the Same Time Period for which Energy Prices Examined

In contrast to the historical look at home energy prices and expenditures presented above, this section presents data providing an historical look at various aspects of income in Nova Scotia over the same time period. The information examined below alternatively examines both market income⁹ and total income¹⁰ for economic families.¹¹ To the extent that the discussion varies from these attributes, it will be explicitly noted. The most recent StatCan data available is from 2021.

We begin with the change in median income over the years 2017 through 2021.¹² Median incomes of all types increased in Nova Scotia from 2017 through 2021. On a percentage basis, “total income” increased the greatest extent (11%), while “market income” increased the least (8%).¹³ In overall financial terms, Nova Scotia households in the middle (i.e. median) have become better off each year since 2017. The changes in market and total income in 2020 are likely due to the unusual circumstances of the Pandemic when many jobs were curtailed and special Canada Emergency Response Benefits (CERB) helped people out.

⁹ Market income is equivalent to total income minus government transfers. It is also referred to as income before transfers and taxes.

¹⁰ Total income refers to the sum of certain incomes (in cash and, in some circumstances, in kind) of the economic family. In the context of economic families, total income refers to receipts from certain sources of all of its family members, before income taxes and deductions, during a specified reference period. The monetary receipts included are those that tend to be of a regular and recurring nature.

¹¹ Economic family refers to a group of two or more persons who live in the same dwelling and are related to each other by blood, marriage, common-law union, adoption or a foster relationship. By definition, all persons who are members of a census family are also members of an economic family.

¹² The “median” is the middle, that point where half of all families have more and half of all families have less. The median is often, if not generally, considered to be a point of central tendency that is superior to the “mean.” The mean is an arithmetic average, with the total income divided by the total number of families. A large percentage of families with very high, or very low, incomes may thus disproportionately affect what that average is.

¹³ Remember, however, that the data is presented in 2021 constant dollars.

Income concept	2017	2018	2019	2020	2021
Median market income	\$71,700	\$72,000	\$76,600	\$73,600	\$77,500
Median total income	\$87,700	\$88,200	\$91,900	\$97,300	\$97,800
Median after-tax income	\$76,000	\$76,300	\$78,200	\$84,000	\$83,500

The story is somewhat different, however, when incomes are disaggregated into income deciles.¹⁴ The Table below presents the average after-tax income for economic families for the years 2017 through 2021 by income decile. Not surprisingly, the growth in average income from 2017 to 2021 was the least in the lowest decile. In the period from 2017 to 2021, income in the lowest decile grew by only \$2,900 (in 2021 constant dollars). The two deciles with the next two smallest levels of growth were the two highest income deciles (9th decile: \$5,300; 10th decile: \$3,300). This slight growth in income for the lowest decile is one reason that the gap in 2021 average incomes between the lowest decile (\$29,200) and the next higher decile (the 2nd decile) (\$48,500) – a gap of \$19,300 in 2021 – is greater than the gap between any other decile and the next higher decile (with the exception of the two deciles with the very highest incomes).

One other noteworthy observation from this data is that it is not reasonable to assume that average incomes in each decile will increase (in inflation-adjusted dollars) in every year. For the lowest decile of income, for example, average income declined from 2019 to 2020 (from \$28,600 to \$28,400). Fourth decile average incomes declined from 2020 to 2021 (from \$69,900 to \$68,200), while fifth decile incomes also declined in 2021 (from \$79,700 in 2020 to \$78,200).

¹⁴ As discussed above, when the population is rank-ordered from top to bottom and divided into five equal parts, each part is referred to as a “quintile.” When that rank-ordering is divided into ten equal parts, each part is referred to as a “decile.” The division into parts is performed by StatCan. The data presented here is that data as presented by StatCan.

Income decile	2017	2018	2019	2020	2021	Change (2017 – 2021)
Lowest decile	\$26,300	\$26,700	\$28,600	\$28,400	\$29,200	\$2,900
Second decile	\$40,900	\$42,900	\$45,000	\$48,400	\$48,500	\$7,600
Third decile	\$51,200	\$52,700	\$55,200	\$59,700	\$59,800	\$8,600
Fourth decile	\$61,400	\$61,900	\$63,900	\$69,900	\$68,200	\$6,800
Fifth decile	\$71,500	\$71,300	\$73,000	\$79,700	\$78,200	\$6,700
Sixth decile	\$80,900	\$81,300	\$83,700	\$88,600	\$88,900	\$8,000
Seventh decile	\$92,800	\$94,400	\$95,300	\$98,700	\$100,200	\$7,400
Eighth decile	\$108,600	\$109,300	\$109,400	\$113,000	\$114,900	\$6,300
Ninth decile	\$129,900	\$132,100	\$129,700	\$134,900	\$135,200	\$5,300
Highest decile	\$191,900	\$195,800	\$191,800	\$199,900	\$195,200	\$3,300

Finally, the data from Nova Scotia shows that households who live with income in the bottom decile tend to stay in the bottom decile over time. The extent to which households move from one decile to another is called “income mobility.” For households in the bottom decile, by definition, the only possible mobility is upward. To the extent that there is income mobility in the bottom decile the financial circumstances of those households has improved.

The “income mobility” of households over time can be directly tracked in Nova Scotia. The Table below presents both one-year mobility and five-year mobility for the lowest income decile. The data shows that Nova Scotia tax filers who fall in the lowest decile of income tend to stay in the lowest decile of income over time. On a year-over-year basis (i.e. one-year), for the two most recent years, nearly 60% of tax filers with income in the lowest decile stayed in the lowest decile the following year. In the three years prior to 2020, the rate of tax filers staying in the lowest decile was two-thirds or more.

One-Year Income Mobility	2016 to 2017	2017 to 2018	2018 to 2019	2019 to 2020	2020 to 2021
Percent of tax filers who stayed in the same income decile	66.4%	67.3%	64.6%	59.1%	59.6%
Percent of tax filers who changed income decile ^{15,16}	33.6%	32.7%	35.4%	40.9%	40.4%
Five Year Income Mobility	2012 to 2017	2013 to 2018	2014 to 2019	2015 to 2020	2016 to 2021
Percent of tax filers who stayed in the same income decile	45.7%	45.7%	45%	46.4%	44.4%
Percent of tax filers who changed income decile ^{17,18}	54.3%	54.3%	55%	53.6%	55.6%

The five-year income mobility reported in the Table above shows greater mobility than the one-year data does. From one year to the next, the five-year mobility reports a both higher level of tax filers who changed deciles—remember, given that this data is for tax filers in the lowest decile, if they “change” deciles, they can only increase—and, correspondingly, a smaller proportion who stayed in the same decile. In 2021, for example, while 55.6% of tax filers in the bottom decile changed deciles—they can only go up—on a five year basis, only 40.4% did so on a one-year basis.

For purposes of home energy affordability, however, it would seem that the stability of the population with income falling into the lowest decile is more important than the upward changes in income over time. There certainly seems to be a hard-core irreducible percentage of Nova Scotia’s population of economic families who consistently over time have incomes placing them in the bottom tier of income.

What cannot be determined from the StatCan data on income mobility is the extent to which economic families in the lowest income tier have a sufficient increase in income to substantially increase their income tier. When a family in the lowest income decile moves up, StatCan data does not indicate whether that move is from Decile 1 (the lowest decile) to Decile 2, from Decile 1 to Decile 3, or to some other level. An economic family who moves only from the first decile to the second decile of income, in other words, may well be considered to remain in a “low-income” status despite their improved situation.

¹⁵ Since this data is for the lowest decile, it is not possible for tax filers to move to a lower decile.

¹⁶ Since this data is for the lowest decile, if a tax filer changed deciles, that tax filer could only have changed to a higher decile.

¹⁷ Since this data is for the lowest decile, it is not possible for tax filers to move to a lower decile.

¹⁸ Since this data is for the lowest decile, if a tax filer changed deciles, that tax filer could only have changed to a higher decile.

In the discussion below, the CUSP data is based on the 2016 Census, while the EfficiencyOne data is based on current income and prices. This demonstrates that energy poverty in Nova Scotia has persisted over a long time, starting before the changes in income and sharp increases in fuel prices occurred as described below.

Part 2. A Base Case Assessment of Current Home Energy Affordability in Nova Scotia

It comes as no surprise that home energy is largely found to be unaffordable throughout the province of Nova Scotia. The discussion below considers current home energy affordability from two perspectives. First, using data from the “Energy Poverty and Equity Explorer” published online by the Canadian Urban Sustainability Practitioners (CUSP), the discussion below examines home energy affordability not only for Nova Scotia as a whole, but also for Nova Scotia’s Census Divisions¹⁹ and Census Subdivisions.²⁰ Second, using data from EfficiencyOne’s “Energy Poverty Data Visualization Tool,” the discussion next examines energy poverty both for the province as a whole and for each FSA Code.²¹

¹⁹ Nova Scotia’s census divisions correspond to counties. Nova Scotia has eighteen (18) counties (and, accordingly, 18 census divisions).

²⁰ The census geographic units of Canada exist on four levels, three of which are used in this discussions. The first level division includes Canada’s provinces and territories. The second-level are “census divisions,” which in turn are divided into third-level “census subdivisions.” The census subdivisions often correspond to municipalities.

²¹ An “FSA Code” is the portion of a postal code indicating a “forward sortation area.” An FSA “is a way to designate a geographical unit based on the first three characters in a Canadian postal code. All postal codes that start with the same three characters—for example, K1A—are together considered an FSA.” “Forward Sortation Area—Definition,” <https://ised-isde.canada.ca/site/office-superintendent-bankruptcy/en/statistics-and-research/forward-sortation-area-fsa-and-north-american-industry-classification-naics-reports/forward-sortation-area-definition> Each character in an FSA code provides specific information:

- The first character is a letter that identifies the province or territory. Nova Scotia is represented by the letter “B.” Accordingly, all FSAs in Nova Scotia begin with the letter “B” (and, correspondingly, any FSA beginning with the letter “B” is known to be in Nova Scotia).
- The second character is a numeral that identifies whether the area is urban or rural. An urban area uses a number “1” through “9.” A rural area uses the number “0.”
- The third character, in combination with the first two characters, identifies an “exact area” of a city, town, or other geographic area.

Canada Post, “Postal Codes,” available at <https://www.canadapost-postescanada.ca/cpc/en/support/articles/addressing-guidelines/postal-codes.page>

Seven Critical Findings

1. The percentage of households with unaffordable burdens will be referred to below as the Nova Scotia Unaffordability Index (NSUI). Using CUSP data, for the province as a whole, Nova Scotia has an NSUI of 0.41. Of Nova Scotia's 358,065 households, 147,110 have home energy burdens of 6% or more (an NSUI of 0.41).
2. Using CUSP data, for Nova Scotia as a whole, the unaffordability of home energy is not limited to "low-income" households (defining "low-income" as after-tax low-income measure ["LIM"]). In Nova Scotia, 17.8% of all households have income below LIM. Roughly four-fifths (79%) of low-income households have high energy burdens (i.e., burdens exceeding 6%).
3. It is not merely the "high burden" households that are a problem in Nova Scotia. Using CUSP data, of Nova Scotia's total population, 18.3% have "very high burdens" (i.e., at or above 10% of income), while 8.5% have "extremely high burdens" (i.e., at or above 15% of income).
4. Using CUSP data, Queens County has by far the broadest and deepest home energy affordability in the province. Queens has the highest percentage of households both with "high" energy burdens and with "very high" energy burdens of Nova Scotia's 18 Census Divisions, and has the second highest percentage of households with "extremely high" energy burdens. Similarly, Guysborough County is ranked #2 of those with very high burdens, and #1 with extremely high burdens; it is ranked the fifth highest with respect to the percentage of households with high energy burdens. Other Census Divisions ranked amongst those with the highest percentage of high/very high/extremely high burdens include Digby, Cumberland, Annapolis, Richmond and Cape Breton.
5. The EfficiencyOne Energy Poverty Visualization Tool estimates that 43% of Nova Scotia's 435,000 homes are in "energy poverty" (i.e., with home energy burdens at or above 6% of "take home" income). Of the 77 FSA postal codes examined by the Energy Poverty Tool, only six had fewer than 25% of their households in energy poverty.
6. FSAs with higher rates of energy poverty have noticeably lower median (after tax) incomes than do FSAs with lower rates. In contrast, the average home energy costs by FSA, with the exception of those FSAs with fewer than 25% of homes in energy poverty, do not vary widely based on the percentage of homes in energy poverty in each FSA.
7. All of the rural FSAs in Nova Scotia have relatively high percentages of households living in energy poverty. Indeed, the penetration of energy poverty in Nova Scotia's rural areas is considerably higher than it is in the province's urban areas.

Home Energy Affordability in Nova Scotia Using CUSP Data

The examination of home energy unaffordability using CUSP data will consider two different perspectives: (1) the breadth of unaffordability; and (2) the depth of unaffordability. The breadth of unaffordability examines the number (and percent) of the population who face unaffordable burden. A population of 50,000 households with unaffordable bills is a “broader” degree of unaffordability than a population of only 10,000 households with unaffordable bills. In contrast, the depth of unaffordability examines how unaffordable bills are. Home energy burdens of 15% of income represent a deeper level of unaffordability than home energy burdens of 6% of income.

Where applicable, the second character in the FSA code will be used to separate rural Nova Scotia areas from urban areas. To this extent, while the CUSP data identifies certain metropolitan areas through its use of census subdivisions, the EfficiencyOne data can distinguish rural areas from urban areas through use of the second character of the FSA code.

The discussion below will first examine data for the province as a whole. It will next turn to a discussion of data disaggregated by geographic sub-divisions (Census Divisions and Census Sub-divisions).

Nova Scotia: Provincial Data as a Whole:

The percentage of households with unaffordable burdens –the “breadth” of unaffordability-- will be referred to below as the Nova Scotia Unaffordability Index (NSUI). If the province (or other geographic area, such as Census Division or Census Subdivision) (hypothetically) has 65% of its households facing unaffordable home energy bills, for example, its NSUI is 0.65. A geographic area with all of its households facing unaffordable burdens has an NSUI of 1.0, while a geographic area with none of its households facing unaffordable burdens has an NSUI of 0.0. For the province as a whole, Nova Scotia has an NSUI of 0.41. Of Nova Scotia’s 358,065 households, 147,110 have home energy burdens of 6% or more (an NSUI of 0.41).

For Nova Scotia as a whole, the unaffordability of home energy is not limited to “low-income” households, defining “low-income” as after-tax low-income measure (“LIM”) income.²² In Nova

²² “Low income measures (LIMs), are relative measures of low income, set at 50% of adjusted median household income. These measures are categorized according to the number of persons present in the household, reflecting the economies of scale inherent in household size.” Low-Income Measure (LIM) Thresholds by Income Source and Household Size, available at <https://www150.statcan.gc.ca/t1/tb11/en/tv.action?pid=1110023201> Three different LIMs are calculated each year: (1) before-tax (LIM-BT); (2) after-tax (LIM-AT); and (3) market-income (LMI-MI). CUSP uses LIM-AT. LIMs are set at a national level. There is, in other words, one uniform

Scotia, there are 63,695 households with after-tax income below LIM, 17.8% of all households. Of those, 50,625 had energy burdens at or above 6% of income. Roughly four-fifths (79%) of low-income households have high energy burdens. This figure makes up 34% of all households with high energy burdens in the province.

In contrast, to calculating the NSUI, the “depth” of unaffordability is measured by reference to three different metrics: (1) “high burdens” (discussed above), involving burdens at or above 6% of income; (2) “very high burdens,” involving burdens at or above 10% of income; and (3) “extremely high burdens,” involving burdens at or above 15% of income.

It is not merely the “high burden” households that are a problem in Nova Scotia. Of Nova Scotia’s total population (identified above), 18.3% (65,465) have “very high burdens” (i.e., at or above 10% of income), while 8.5% (30,545) have “extremely high burdens” (i.e., at or above 15% of income).

According to the CUSP data, Nova Scotia has tens of thousands of households with “extremely high” home energy burdens. More than one-in-five households who face unaffordable home energy burdens (30,545 of 147,110) (21%) have bills that do not merely exceed 6% of income, but exceed 15% of income.

The geographic sub-divisions used to assess home energy unaffordability in Nova Scotia include both Census Divisions (which are defined to be “counties” in Nova Scotia) and Census Sub-Divisions (which are limited to metropolitan areas in Nova Scotia). Information on home energy affordability in Nova Scotia will be discussed with respect to 18 Census Divisions and 14 Census Sub-Divisions.²³ The Table below presents the specific geographic areas considered.

national standard for poverty status using LIM. LIMs vary based on household size, but not on geography. Statistics Canada, “Low-Income Lines: What They Are and How they Are Created,” available at <https://www150.statcan.gc.ca/n1/pub/75f0002m/75f0002m2016002-eng.htm>

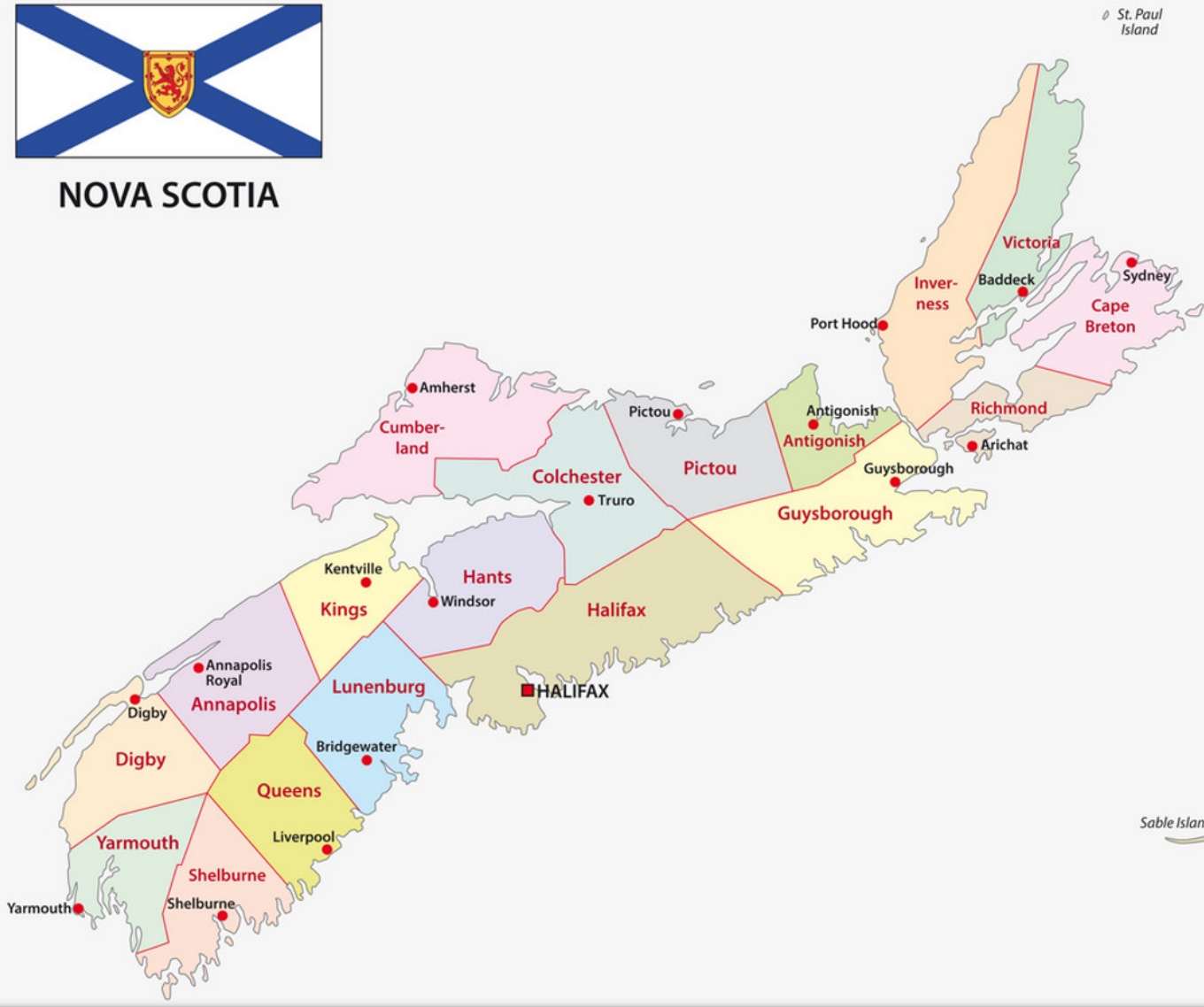
²³ While the Cape Breton Census Division and the Cape Breton Census Sub-division are considered separately below, the data reported by CUSP is identical for these two geographic designations.

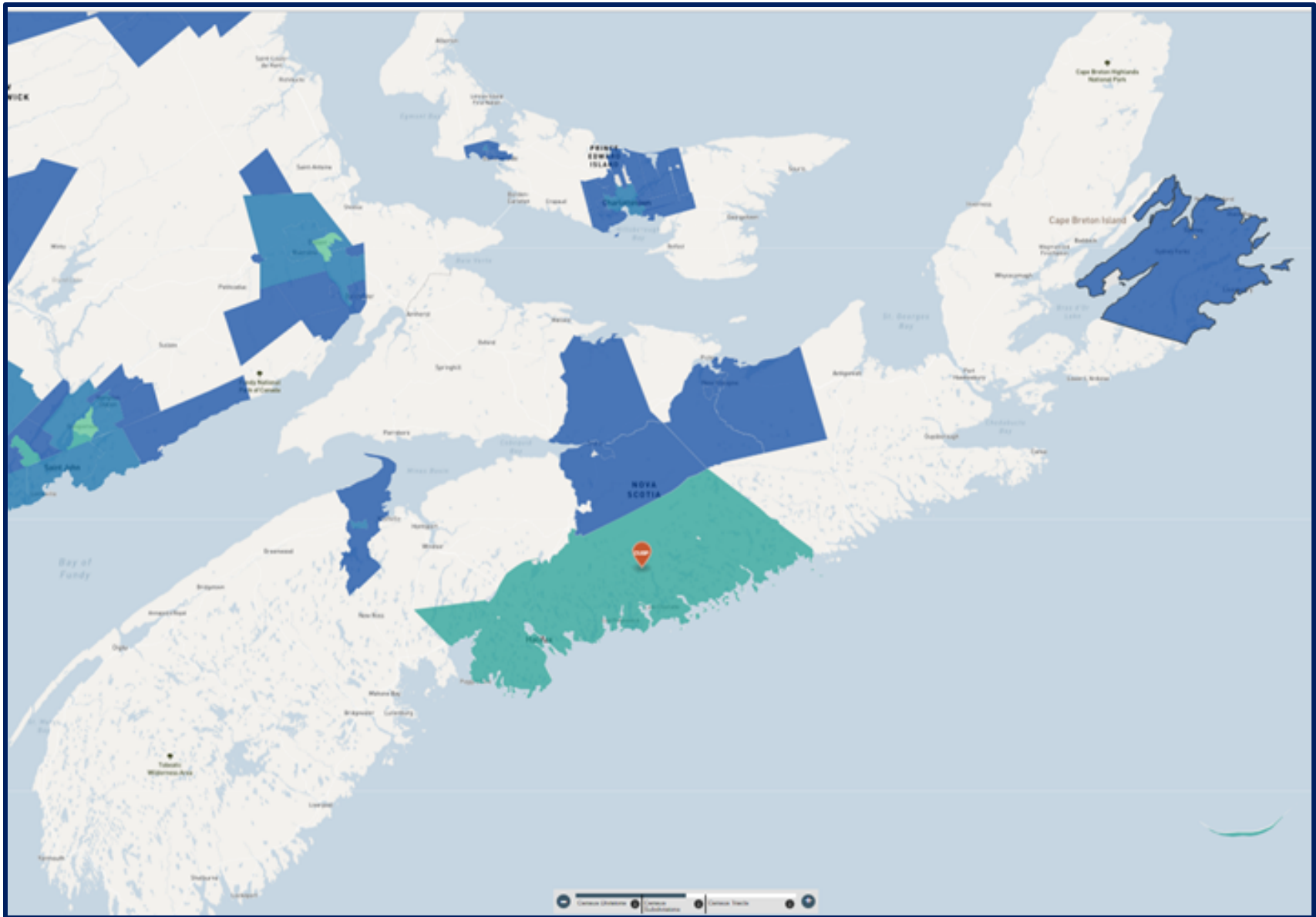
Geographic Type	Geographic Area	Geographic Type	Subdivision Grouping	Geographic Area
Census Division	Annapolis	Census Subdivision	C	Colchester--Subd B
Census Division	Antigonish	Census Subdivision	C	Colchester--Subd C
Census Division	Cape Breton	Census Subdivision	B	Halifax Subd
Census Division	Colchester	Census Subdivision	A	Kentville Subd
Census Division	Cumberland	Census Subdivision	A	Kings--Subd B
Census Division	Digby	Census Subdivision	A	Kings--Subd C
Census Division	Guysborough	Census Subdivision	D	New Glasgow Subd
Census Division	Halifax	Census Subdivision	D	Pictou--Subd B
Census Division	Hants	Census Subdivision	D	Pictou--Subd C
Census Division	Inverness	Census Subdivision	D	Stellarton Subd
Census Division	Kings	Census Subdivision	D	Trenton Subd
Census Division	Lunenburg	Census Subdivision	C	Truro Subd
Census Division	Pictou	Census Subdivision	D	Westville Subd
Census Division	Queens	Census Subdivision	E	Cape Breton
Census Division	Richmond			
Census Division	Shelburne			
Census Division	Victoria			
Census Division	Yarmouth			

Map 1 below identifies the Nova Scotia Census Divisions. Map 2 below is focused on the Nova Scotia Census Sub-Divisions.



NOVA SCOTIA





Home Energy Unaffordability in Nova Scotia: Disaggregated by Census Divisions:

This examination of home energy unaffordability by county focuses more on the depth, than on the breadth, of unaffordability in the various areas of the province. A substantial number of Nova Scotia's Census Divisions (defined to be Nova Scotia's counties) have a high percentage of households with unaffordable bills.

Table 6. Nova Scotia Census Divisions Ranked by Levels of Home Energy Unaffordability
(CUSP Data)

High Energy Burdens (6%+)	Very High Energy Burdens (10%+)	Extreme Energy Burdens (15%+)	Households with Income Below After-Tax LIM
Queens (62%)	Queens (32%)	Guysborough (15%)	Queens (27%)
Digby (58%)	Guysborough (30%)	Queens (14%)	Annapolis (25%)
Cumberland (56%)	Digby (29%)	Cumberland (14%)	Digby (25%)
Annapolis (56%)	Cumberland (28%)	Cape Breton (13%)	Guysborough (25%)
Guysborough (56%)	Cape Breton (27%)	Digby (13%)	Shelburne (23%)
Richmond (55%)	Annapolis (27%)	Annapolis (12%)	Cumberland (22%)
Cape Breton (55%)	Richmond (26%)	Richmond (11%)	Lunenburg (21%)
Shelburne (52%)	Shelburne (24%)	Yarmouth (11%)	Richmond (20%)
Pictou (51%)	Yarmouth (24%)	Shelburne (11%)	Yarmouth (20%)
Yarmouth (51%)	Pictou (23%)	Lunenburg (11%)	Cape Breton (20%)
Inverness (51%)	Inverness (23%)	Pictou (11%)	Kings (19%)
Victoria (50%)	Lunenburg (22%)	Inverness (11%)	Pictou (19%)
Lunenburg (49%)	Victoria (22%)	Colchester (9.2%)	Inverness (18%)
Colchester (48%)	Colchester (21%)	Victoria (8.8%)	Colchester (17%)
Kings (46%)	Kings (20%)	Hants (8.6%)	Victoria (17%)
Hants (45%)	Hants (19%)	Kings (8.6%)	Hants (17%)
Antigonish (41%)	Antigonish (17%)	Antigonish (7.1%)	Halifax (15%)
Halifax (28%)	Halifax (11%)	Halifax (5.6%)	Antigonish (15%)

By far, Queens has both the broadest and deepest home energy affordability in the province. Queens has the highest percentage of households both with “high” energy burdens and with

“very high” energy burdens of Nova Scotia’s 18 Census Divisions, and has the second highest percentage of households with “extremely high” energy burdens. Similarly, Guysborough is ranked in the top two (#2 of those with very high burdens; #1 with extremely high burdens) and is ranked the fifth highest with respect to the percentage of households with high energy burdens. Other Census Divisions ranked amongst those with the highest percentage of high/very high/extremely high burdens include Digby, Cumberland, Annapolis, Richmond and Cape Breton.

As in the discussion of the data for the province as a whole, it is striking that the percentage of households with unaffordable home energy burdens exceeds the percentage of households that are “low-income” (as defined by CUSP) by such a great degree. In Queens, for example, while 27% of households have after-tax income lower than LIM, 62% of households have high energy burdens and 32% have very high burdens. Digby is similarly notable, with 25% of its households having after-tax income less than LIM, but 58% of its households with high energy burdens and 29% of its households with very high burdens. Even Halifax, which has the lowest percentage of households with high energy burdens in Nova Scotia (28%), has a percentage of low-income households that is roughly half that number (15%). In contrast, Antigonish, which has the lowest percentage of households that are low-income, and the second lowest percentage of households with unaffordable bills (lower than all Census Divisions except Halifax), has a penetration of high energy burdens three times higher than its percentage of households with after-tax income less than LIM (41% of households with high energy burdens vs. 15% of households with after-tax income less than LIM).²⁴

The number of Census Divisions with high penetrations of households with unaffordable bills in Nova Scotia is sobering. It is, however, not merely the geographic distribution of home energy unaffordability that is striking in Nova Scotia. It is the depth of unaffordability as well. Of Nova Scotia’s 18 Census Divisions, the same seven (7) rank with the highest percentage of households with high, very high, and extremely high burdens. Each of those seven not only have 55% or more of their households with high burdens, but also have more than one-in-four households with very high energy burdens, and one-in-ten households with energy burdens exceeding 15% of income (“extremely high”). As the Table above demonstrates, according to the CUSP data, the presence of unaffordable home energy burdens is not merely “a few households here and there.” Only six of Nova Scotia’s Census Divisions have fewer than half of their households facing unaffordable burdens, and of those six, four (Lunenburg [49%], Colchester [48%], Kings [46%], and Hants [45%]) have between 45% and 50% of their households with burdens exceeding 6%.

²⁴ Having noted this, however, it is important to remember that it cannot be assumed that the population of low-income households is an exact subset of the population of households with unaffordable burdens. For example, while Shelburne has 23% of its households identified by CUSP as being “low-income,” and 52% of its households as having high energy burdens, it cannot be concluded that the entire 23% falls within the population of high energy burden households with the remaining 29% (52% - 23%) being non-low-income. All that can be concluded is that no more than 23% of the households with high energy burdens represent low-income households.

Likewise, of the 18 Census Divisions, only six have fewer than one-in-nine households facing home energy bills greater than 15% of their household income, with the same four Census Divisions (Colchester [9.2%], Victoria [8.8%], Hants [8.6%], and Kings [8.6%]) having roughly nine percent of their total households facing these extremely high burdens.

Finally, the Table below demonstrates that high levels of unaffordable home energy burdens are not necessarily co-existent with high home energy bills. For example, Queens (which is in the top two Census Divisions with high percentages of high burdens, very high burdens, and extremely high burdens) has the third lowest income (higher than only Digby and Shelburne), but is ranked 10th in the size of the “median home energy expenditure.” Similarly, Digby (which is in the top five of high energy burdens [58%], very high burdens [29%], and extremely high burdens [13%]) has only the ninth 9th highest home energy bill. Both, however, have amongst the three lowest median after-tax household income.

In contrast, Shelburne has the lowest median after-tax household income (\$18,622), but the fourth lowest median home energy expenditure (ranking it 8th in the percentage of households with high and very high burdens, and 9th in the percentage of households with extremely high burdens). Census Divisions such as Halifax, Hants, Colchester, and Kings combine relatively high median after-tax incomes with relatively low median home energy expenditures to result in lower penetrations of percentages of households with high, very high, or extremely high home energy burdens.

Table 7. Nova Scotia Census Divisions Ranked by Median After-Tax Household Income and Median Home Energy Expenditures (CUSP Data)

Median Household After-Tax Income	Median Home Energy Expenditures
Shelburne (\$18,622)	Halifax (\$1,404)
Digby (\$19,257)	Antigonish (\$2,688)
Queens (\$19,341)	Kings (\$2,760)
Inverness (\$19,741)	Shelburne (\$2,904)
Guysborough (\$20,048)	Yarmouth (\$2,909)
Richmond (\$20,982)	Hants (\$2,997)
Cape Breton (\$22,059)	Lunenburg (\$2,998)
Lunenburg (\$22,643)	Victoria (\$3,000)
Cumberland (\$22,683)	Digby (\$3,003)
Pictou (\$22,729)	Queens (\$3,006)
Yarmouth (\$22,834)	Annapolis (\$3,007)
Victoria (\$22,852)	Pictou (\$3,102)
Annapolis (\$22,896)	Colchester (\$3,255)
Kings (\$23,535)	Inverness (\$3,299)
Antigonish (\$23,836)	Cape Breton (\$3,392)
Colchester (\$24,294)	Richmond (\$3,396)
Hants (\$25,095)	Guysborough (\$3,407)
Halifax (\$25,918)	Cumberland (\$3,497)

In sum, the CUSP data broken down by Nova Scotia Census Division counsels that conclusions regarding either the breadth or the depth of home energy unaffordability in Nova Scotia cannot be based on a one-dimensional inquiry (e.g., level of income, level of home energy cost). The assessment of home energy unaffordability must instead consider both the level of income and the level of home energy bills as they interact with each other. In other words, energy poverty is created by low incomes as much as by high energy bills.

Home Energy Unaffordability in Nova Scotia: Disaggregated by Census Sub-Divisions:

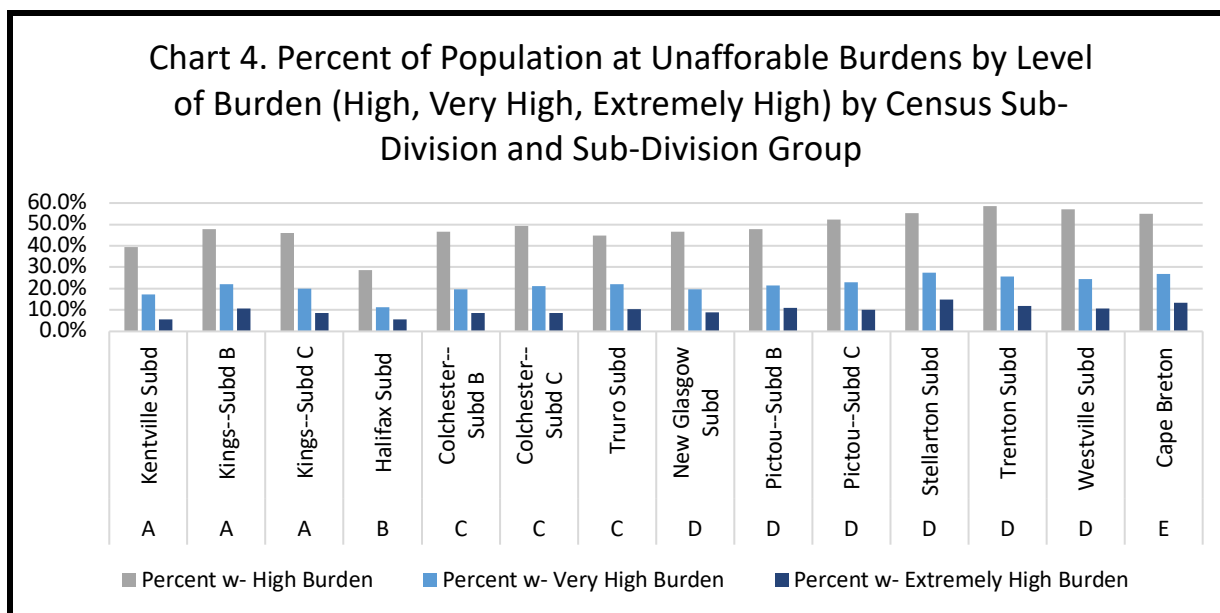
The discussion below considers home energy unaffordability disaggregated by Census Sub-Divisions (i.e., metropolitan areas) rather than by Census Divisions. CUSP reports affordability data for 14 Nova Scotia Census Sub-Divisions. Overall, the primary lesson to be learned from an examination of Nova Scotia Sub-Divisions is that these population centers contribute a disproportionately small percentage of households to that population with unaffordable bills. The CUSP data documents that while Nova Scotia's Sub-Divisions have 65% of the total population of the province (232,980 of 358,065), they have only 57% of the households with high energy burdens (83,700 of 147,110); only 55% of the households with very high energy burdens (36,040 of 65,465); and only 57% of the households with extremely high energy burdens (17,460 of 30,545).

Five of Nova Scotia's Sub-Divisions have noticeably higher levels of home energy unaffordability. Trenton has the highest percent (58.6%) of households with high energy burdens, with Westville (56.9%), Stellarton (55.4%), Cape Breton (54.9%), and Pictou (Subdivision C) (52.4%) all also having more than half of their households with energy burdens exceeding 6% of income. Colchester (Subd. C) approaches half of its total number of households (49.2%) having high energy burdens. Every other Nova Scotia Sub-Division except Halifax and Kentville have more than 40% but fewer than 50% of their households with unaffordable burdens (with Kentville, with 39.5%, nearly joining that grouping).

Geo Grp	Geographic Area	Total # of HHs	High Energy Burdens (>6%)		Very High Energy Burdens (>10%)		Extremely High Energy Burdens (>15%)	
			Number	Percent	Number	Percent	Number	Percent
A	Kentville Subd	2,330	920	39.5%	400	17.2%	130	5.6%
A	Kings--Subd B	4,545	2,170	47.7%	1,010	22.2%	490	10.8%
A	Kings--Subd C	3,235	1,490	46.1%	650	20.1%	275	8.5%
B	Halifax Subd	156,940	44,660	28.5%	17,765	11.3%	8,805	5.6%
C	Colchester--Subd B	7,190	3,345	46.5%	1,415	19.7%	615	8.6%
C	Colchester--Subd C	4,820	2,375	49.2%	1,025	21.2%	410	8.5%
C	Truro Subd	3,825	1,715	44.8%	845	22.1%	400	10.5%
D	New Glasgow Subd	3,475	1,625	46.7%	690	19.8%	310	8.9%
D	Pictou--Subd B	2,420	1,160	47.8%	520	21.4%	235	11.1%
D	Pictou--Subd C	3,455	1,810	52.4%	790	22.9%	350	10.1%
D	Stellarton Subd	1,625	900	55.4%	445	27.4%	245	15.0%
D	Trenton Subd	930	545	58.6%	240	25.8%	110	11.8%
D	Westville Subd	1,405	800	56.9%	345	24.6%	150	10.7%
E	Cape Breton	36,785	20,185	54.9%	9,900	26.9%	4,940	13.4%

Halifax has noticeably lower percentages of households in energy poverty, yet it has far more households with unaffordable burdens in absolute numbers simply because it is the largest metropolitan area in Nova Scotia. Despite the lower percentage of its own households with unaffordable burdens, Halifax has one-of-five of all Nova Scotians with high energy burdens (21%), very high burdens (19%), or extremely high burdens (20%).

The Table above groups Nova Scotia's various Census Sub-Divisions into geographic areas. As Map 2 demonstrates, while Halifax stands alone, Kentville can be grouped with the two Kings Subdivisions. Similarly, Truro can be grouped with the two Colchester Subdivisions. Finally, three smaller subdivisions (Stellarton, Trenton, Westville) are grouped with New Glasgow and the two Pictou subdivisions. Cape Breton is grouped by itself.



The Chart above demonstrates that at all three levels of energy unaffordability (high burdens, very high burdens, extremely high burdens), the metropolitan areas with the somewhat larger populations (Group B, Group C) have lower percentages of their populations facing unaffordable bills. The very high percentages of population with unaffordable burdens (again, at all three levels of unaffordability) can be found in the smaller population nodes in Group D and Group E.²⁵

Home Energy Affordability in Nova Scotia Using EfficiencyOne Data

Using home energy affordability data from EfficiencyOne’s “Energy Poverty Data Visualization Tool” provides different insights into the nature and extent of unaffordable home energy bills in Nova Scotia.²⁶ As discussed above, the EfficiencyOne “Visualization Tool” is based on the use of the first three characters of postal codes throughout the province, what is known as the Forward Sortation Area Code (FSA Code). The first character of the FSA code (which will always be “B” in this data) indicates the province. The second character indicates whether the area is

²⁵ No effort is made in this report to determine *why* these differences exist, not because the question is unimportant but simply because it is beyond the scope of this inquiry.

²⁶ A detailed explanation of the EfficiencyOne tool is available at <https://www.efficiencycanada.org/nova-scotia-energy-poverty-data-visualization-tool-developed-by-efficiencyone/>

urban or rural (a “0” indicates a rural area while all other numbers “1” through “9” are urban areas).

Aside from the specific areas identified by each FSA Code, the discussion below will focus on this urban/rural differentiation.

The Distribution of Home Heating Fuels in Nova Scotia:

Before turning to a deeper examination of affordability in Nova Scotia, disaggregated by home heating fuels, a brief overview of the penetration of home heating fuels throughout Nova Scotia is appropriate. As the Table below demonstrates, the distribution of home heating fuels is roughly consistent throughout the province when viewed from an urban/rural perspective. The penetration of natural gas, wood and propane is nearly identical in the rural and urban FSA codes of Nova Scotia. In contrast, the rural areas of Nova Scotia have somewhat less fuel oil heating than do their urban counterparts (37.8% vs. 40.0%) and somewhat more electricity used for home heating (44.2% vs. 42.2%).

	Electricity	Fuel Oil	Natural Gas	Wood	Propane	Total(s)
Rural	67,992	58,194	8,083	16,166	3,561	153,995
Urban	118,691	112,336	14,703	28,592	6,696	281,005
Grand Total	186,683	170,530	22,786	44,758	10,257	435,000
Rural	44.2%	37.8%	5.2%	10.5%	2.3%	100.0%
Urban	42.2%	40.0%	5.2%	10.2%	2.4%	100.0%

A closer look at the penetration of home heating fuels considers those heating fuels as distributed over areas with greater and lesser degrees of unaffordability. In considering the extent of unaffordability, Nova Scotia’s 77 FSA codes were ranked from the area with the lowest percentage of homes having a high energy burden (i.e., an energy burden exceeding 6% of income) to the area with the highest percentage. FSA Code B1S (representing West Halifax) had the lowest of the 77 total (14%), while FSA Code B1W (representing Eskasoni) had the highest percentage of its households with high energy burdens (87%). That ranking was then divided into five equal parts, with each one-fifth being a “quintile.”²⁷

²⁷ Since 77 is not divisible by five, the middle three quintiles each had 15 FSA codes, while the lowest and highest quintiles each had an “extra” FSA code (16 each). The FSA codes were not population weighted. For example, Loch Lomond (with 117 homes) and Fourchu (with 111 homes)

These quintiles were then examined from two perspectives. First, the Table below presents the distribution of each heating fuel (both in the number and in the percent of households) over the five different quintiles. The Table demonstrates, for example, that of the 186,683 households using electricity as their home heating fuel, 36,243 (19.4%) of those electricity-using households lived in the FSA codes ranked in the First Quintile (i.e., the lowest quintile) as measured by the percentage of homes with high energy burdens. In contrast, only 12.6% of the Nova Scotia homes heating with electricity live in the FSA codes with the highest percentage of homes in energy poverty. Similarly, while 21.0% of households heating with fuel oil live in the First Quintile of FSAs by percentage of homes in energy poverty, only 13.5% of homes heating with fuel oil live in the highest (Fifth) quintile. Overall, the percentage of homes using each home heating fuel does not dramatically differ for any given quintile of unaffordability from the penetration of homes using each heating fuel for Nova Scotia as a whole. For example, while the penetration of homes for Nova Scotia as a whole is 19.7% (Q1), 13.7% (Q2), and 26.7% (Q3), the penetration of only those homes using electricity is 19.4% (Q1), 13.6% (Q2), and 27.6% (Q3).

each received the same weight as Mainland East Shore (Lunenburg) (with 21,331 homes) and Southern Northumberland Strait (Pictou) (with 20,554 homes).

Estimated Number of Homes by Home Heating Fuel						
FSA Quintile of Unaffordability	Electricity	Fuel Oil	Natural Gas	Wood	Propane	Total
First Quintile (Q1)	36,243	35,731	4,095	7,686	2,011	85,764
Second Quintile (Q2)	25,434	23,533	3,103	5,950	1,395	59,413
Third Quintile (Q3)	51,568	43,958	6,033	12,011	2,654	116,221
Fourth Quintile (Q4)	49,946	44,285	6,201	12,422	2,718	115,567
Fifth Quintile (Q5)	23,492	23,023	3,354	6,689	1,479	58,035
Nova Scotia	186,683	170,530	22,786	44,758	10,257	435,000

Estimated Percent of Homes by Heating Fuel						
FSA Quintile of Unaffordability	Electricity	Fuel Oil	Natural Gas	Wood	Propane	Total
First Quintile	19.4%	21.0%	18.0%	17.2%	19.6%	19.7%
Second Quintile	13.6%	13.8%	13.6%	13.3%	13.6%	13.7%
Third Quintile	27.6%	25.8%	26.5%	26.8%	25.9%	26.7%
Fourth Quintile	26.8%	26.0%	27.2%	27.8%	26.5%	26.6%
Fifth Quintile	12.6%	13.5%	14.7%	14.9%	14.4%	13.3%
Nova Scotia	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%

The data in the Table above supports the conclusion that the Nova Scotia areas with the highest penetration of homes in energy poverty tend to be the lesser populated rural areas. The FSAs in the Fifth Quintile (the 20% of FSAs with the highest percentage of homes in energy poverty) represent consistently less than 20% of the number of homes heating with each heating fuel. Overall, the one-fifth of FSAs having the highest percentage of homes living in energy poverty represent only 13.3% of the total number of Nova Scotia homes.

The Table below presents the same data in a somewhat different way. Rather than looking at how homes with each heating fuel are distributed over the FSAs by the FSA ranking of the penetration of unaffordability (i.e., “100%” equals the total population heating with a particular fuel), the Table below shows the penetration of home heating fuels within each quintile of FSAs ranked by the penetration of energy poverty (i.e., “100%” equals the total number of homes in a given quintile). This Table shows, for example, that within the one-fifth of FSAs with the highest percentage of homes in energy poverty, a roughly equal percentage of the homes in that quintile use electricity (40.5%) and fuel oil (39.7%) as their home heating fuels. In contrast,

within the three quintiles of FSAs with the second, third, and fourth percentages of homes in energy poverty, somewhat more home use electricity than use fuel oil (42.8% electricity vs. 39.6% fuel oil in the Second Quintile; 44.4% electricity vs. 37.8% fuel oil in the Third Quintile; and 43.2% electricity vs. 38.3% fuel oil in the Fourth Quintile).

Estimated Number of Homes by Home Heating Fuel						
FSA Quintile of Unaffordability	Electricity	Fuel Oil	Natural Gas	Wood	Propane	Total
First Quintile (Q1)	36,243	35,731	4,095	7,686	2,011	85,764
Second Quintile (Q2)	25,434	23,533	3,103	5,950	1,395	59,413
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Fourth Quintile (Q4)	49,946	44,285	6,201	12,422	2,718	115,567
Fifth Quintile (Q5)	23,492	23,023	3,354	6,689	1,479	58,035
Nova Scotia	186,683	170,530	22,786	44,758	10,257	435,000

Estimated Percent of Homes by Heating Fuel						
FSA Quintile of Unaffordability	Electricity	Fuel Oil	Natural Gas	Wood	Propane	Total
First Quintile	42.3%	41.7%	4.8%	9.0%	2.3%	100%
Second Quintile	42.8%	39.6%	5.2%	10.0%	2.3%	100%
Third Quintile	44.4%	37.8%	5.2%	10.3%	2.3%	100%
Fourth Quintile	43.2%	38.3%	5.4%	10.7%	2.4%	100%
Fifth Quintile	40.5%	39.7%	5.8%	11.5%	2.5%	100%
Nova Scotia	42.9%	39.2%	5.2%	10.3%	2.4%	100%

Having examined this data on the penetration of homes using different fuels for home heating, the discussion below next turns to an examination of the distribution of energy poverty.

Energy Poverty as Identified through the EfficiencyOne Energy Poverty Visualization Tool:

The EfficiencyOne Energy Poverty Visualization Tool (Energy Poverty Tool) estimates that, of Nova Scotia’s 435,000 homes, 185,024 (43%) are in “energy poverty” (i.e., with home energy

burdens at or above 6% of “take home” income) in a “base case” scenario.²⁸ Of the 77 FSA codes examined by the Energy Poverty Tool, only six had fewer than 25% of their households in energy poverty. In contrast, 52 had from 25% to 50% of their households in energy poverty (with an average percentage of 39.5%); 11 had from 50% to 75% of their households in energy poverty (with an average percentage of 53.6%); and 8 had more than 75% of their households in energy poverty (with an average percentage of 67.6%). As the Table below indicates, the vast majority of households in energy poverty (132,498) fall in FSAs with between 25% and 50% of the total number of households in energy poverty.²⁹

The Table further documents that FSAs with higher rates of energy poverty have noticeably lower median (after tax) incomes than do FSAs with lower rates. The FSAs with fewer than 25% of their homes in energy poverty, for example, have an average median (after tax) income of \$74,567 while the FSAs with more than 75% of their homes in energy poverty have a median after-tax income of only \$39,580.

In contrast, the average home energy costs by FSA, with the exception of those FSAs with fewer than 25% of homes in energy poverty (home energy cost of \$3,755), do not vary widely based on the percentage of homes in energy poverty in each FSA. While the FSAs with between 25% and 50% of their homes in energy poverty have an average home energy cost of \$3,132, those FSAs with more than 75% of their homes in energy poverty have an average home energy cost of only \$3,138. Those FSAs with between 50% and 75% of their homes in energy poverty have a home energy cost slightly lower (\$3,012).

A complete listing of the base case data on energy poverty, disaggregated by FSA code, is provided in Appendix A to this report.

²⁸ The “base case” scenario incorporates the following assumptions: (1) prices of oil (\$1.440/litre), electricity (\$0.172/kWh), wood \$392/cord), propane (\$1.09/litre), and natural gas (\$24.65/gigajoule); (2) a Bill-to-Income Ratio of 6%; (3) multi-unit residential buildings (MURBS) and tenants not excluded. These are the same base case assumptions used by EfficiencyOne in its December 2023 report “Energy Poverty and an Equitable Transition to a Net-Zero Carbon Future in Nova Scotia.”

²⁹ Note that the percentage reported here is the average percentage of homes in energy poverty in the FSAs falling into each range, *not* the average energy burden of those households.

Table 12. Number (and percent) of Homes in Energy Poverty by FSA (and related attributes)
(Nova Scotia) (EfficiencyOne Energy Poverty Visualization Tool)
(energy poverty = Bill-to-Income Ratio >6%)

<25 percent of homes in Energy Poverty	
Number of FSAs	6
Sum of Homes in Energy Poverty	5,275
Average of % of Homes in Energy Poverty	21.1%
Average of Est. Average Annual Home Energy Costs (ALL)	\$3,755
Average of Median Household Income (After Tax)	\$74,567
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25 - 50 percent of homes in Energy Poverty	
Number of FSAs	52
Sum of Homes in Energy Poverty	132,498
Average of % of Homes in Energy Poverty	39.5%
Average of Est. Average Annual Home Energy Costs (ALL)	\$3,132
Average of Median Household Income (After Tax)	\$56,023
<hr/>	
50 - 75 percent of homes in Energy Poverty	
Number of FSAs	11
Sum of Homes in Energy Poverty	27,913
Average of % of Homes in Energy Poverty	53.6%
Average of Est. Average Annual Home Energy Costs (ALL)	\$3,012
Average of Median Household Income (After Tax)	\$46,648
<hr/>	
>75 percent of homes in Energy Poverty	
Number of FSAs	8
Sum of Homes in Energy Poverty	19,338
Average of % of Homes in Energy Poverty	67.6%
Average of Est. Average Annual Home Energy Costs (ALL)	\$3,138
Average of Median Household Income (After Tax)	\$39,580
<hr/>	
Total Count of FSAs	77
Total Sum of Homes in Energy Poverty	185,024
Total Average of % of Homes in Energy Poverty	43.0%
Total Average of Est. Average Annual Home Energy Costs (ALL)	\$3,164
Total Average of Median Household Income (After Tax)	\$54,420

The Table below examines the differences in those two heating fuels for FSAs differentiated by the percentage of households in the FSA that live in energy poverty. Table shows that there is a noticeable difference in the percentage of homes heating with fuel oil in the FSAs with higher percentages of home in energy poverty. On a province wide basis, 39% of homes heat with fuel oil, while 43% of homes heat with electricity.

<25 Percent of Homes in FSA in Energy Poverty			
Avg Energy Poverty Threshold Amt	\$4,474	Avg Energy Poverty Threshold Amt	\$4,474
Average Pct of Homes--Fuel Oil Heating	48.0%	Average Pct of Homes—Electricity Heating	37.7%
Average Est Annual Cost of Energy: Oil-Heated Homes	\$4,060	Average Est Annual Cost of Energy: Electric-Heated Homes	\$3,521
25 - 50 Percent of Homes in FSA in Energy Poverty			
Avg Energy Poverty Threshold Amt	\$3,361	Avg Energy Poverty Threshold Amt	\$3,361
Average Pct of Homes--Fuel Oil Heating	40.1%	Average Pct of Homes—Electricity Heating	42.4%
Average Est Annual Cost of Energy: Oil-Heated Homes	\$3,922	Average Est Annual Cost of Energy: Electric-Heated Homes	\$2,339
50 - 75 Percent of Homes in FSA in Energy Poverty			
Avg Energy Poverty Threshold Amt	\$2,799	Avg Energy Poverty Threshold Amt	\$2,799
Average Pct of Homes--Fuel Oil Heating	40.2%	Average Pct of Homes—Electricity Heating	40.5%
Average Est Annual Cost of Energy: Oil-Heated Homes	\$3,970	Average Est Annual Cost of Energy: Electric-Heated Homes	\$1,959
>75 Percent of Homes in FSA in Energy Poverty			
Avg Energy Poverty Threshold Amt	\$2,375	Avg of Energy Poverty Threshold Amt	\$2,375
Average Pct of Homes--Fuel Oil Heating	39.2%	Average Pct of Homes—Electricity Heating	39.9%
Average Est Annual Cost of Energy: Oil-Heated Homes	\$4,042	Average Est Annual Cost of Energy: Electric-Heated Homes	\$2,113
Total Nova Scotia homes			
Avg Energy Poverty Threshold Amt	\$3,265	Avg Energy Poverty Threshold Amt	\$3,265
Average Pct of Homes--Fuel Oil Heating	40.6%	Average Pct of Homes—Electricity Heating	41.5%
Average Est Annual Cost of Energy: Oil-Heated Homes	\$3,952	Average Est Annual Cost of Energy: Electric-Heated Homes	\$2,353

The Table above then presents the percentage of homes in FSAs heated with fuel oil and heated with electricity. It finally presents the average cost of energy for homes heated with fuel oil along with the average cost of energy for homes heated with electricity. Several observations are evident in the Table above.

- First, the percentage of homes heating with electricity does not substantially vary between the tiers of FSAs demarcated by the percentage of homes in energy poverty. While 41.5% of all homes in Nova Scotia heat with electricity, the percentage of homes heating with electricity ranges from a low of 38% (FSAs in which 25% of homes are in energy poverty) to a high of 42% (from 25% to 50% of homes in FSAs are in energy poverty). The other two groupings of FSAs have 40% of their homes heating with electricity.
- Second, in each grouping of FSAs, as well as for the province as a whole, the average estimated annual cost of energy for homes heated with electricity is lower than the average Energy Poverty Threshold for that grouping of FSA. As a general rule, there is a substantial gap between the Energy Poverty Threshold and the average cost of energy for homes heating with electricity. The exception involves those FSAs where 75% or more of the homes are in energy poverty, where the average Energy Poverty Threshold is \$2,375 while the average energy cost for homes heating with electricity is nearly that same amount (\$2,113).
- Third, with the exception of those FSAs with 25% or fewer of their homes in energy poverty, the percentage of homes heating with fuel oil is nearly the same for all ranges of FSAs. In contrast to the 48% of homes heating with fuel oil in the FSAs with the lowest percentage of homes in energy poverty, the proportion of homes heating with fuel oil ranges around 40%.
- Fourth, in contrast to electricity, again with the exception of the FSAs with 25% or fewer of their homes in energy poverty, the average cost of energy in a fuel-oil heated home is greater than the average Energy Poverty Threshold in every other range of FSAs. In those FSAs with 75% or more of their homes in energy poverty, for example, the average energy cost in a fuel-oil heated home is \$4,042, compared to an average Energy Poverty Threshold of \$2,375. Remember, however, that the “average energy cost” is the average total home energy cost, not merely the average cost of fuel oil.³⁰

Overall, in every range of FSAs, the average total home energy cost for fuel-oil heated homes is substantially more than the average total home energy cost of homes heating with electricity.³¹ This difference varies widely by the percentage of homes in FSAs in energy poverty. For Nova Scotia as a whole, the average annual home energy cost for fuel-oil heated homes is \$1,593

³⁰ The “total cost of home energy” does not take into account multiple heating fuels. For example, the total cost of homes heating with fuel oil consider fuel oil costs plus electricity costs. If a home also uses another fuel, that third fuel is not considered.

³¹ It is beyond the scope of this inquiry to determine why this result arises.

more than the average energy cost in homes heating with electricity. However, in those FSAs with fewer than 25% of their homes in energy poverty, the difference is only \$539. In FSAs with between 25% and 50% of their homes in energy poverty, the difference is \$1,583; and with between 50% and 75% of homes in energy poverty, the difference is \$2,011. In FSAs with more than 75% of homes in energy poverty, the average cost of home energy in homes heating with fuel oil is \$1,929 more than the average cost of home energy in homes heating with electricity.

Energy Poverty as Differentiated between FSA Urban/Rural Characterizations:

The second character in an FSA code designates whether the geographic area being described is a “rural” or an “urban” area. If the character is a “1” through “9,” the area is considered to be “urban.” In contrast, if it is a “0,” the area is considered to be “rural.” Using these characters, the discussion below briefly considers the differences between home energy unaffordability in rural and non-rural areas of Nova Scotia.³² Of Nova Scotia’s 77 FSA codes, 14 are rural while the remaining 63 are urban. Table 14 below presents the data.

Several observations are clear from the data in the Table below. First, all of the rural FSAs in Nova Scotia have relatively high percentages of households living in energy poverty. Indeed, the penetration of energy poverty in Nova Scotia’s rural areas is considerably higher than it is in the province’s urban areas. While no rural FSA has fewer than 40% of its households living in energy poverty, 31 of the 77 urban FSAs do, representing more than one-half (51.7%) of the urban population (145,177 of 281,005). This data does *not* report the number of homes in energy poverty, but rather the total number of homes in the FSAs with high percentages of energy poverty. Overall, while rural homes represent 35% of all homes in Nova Scotia (153,995 of 435,000), they represent 39% (72,241 of 185,024) of all homes estimated to live in energy poverty.

It seems evident, too, that rural homes do not consistently have higher home energy bills than their urban counterparts. According to the EfficiencyOne data, the average home energy bill in Nova Scotia’s rural areas is \$300 *lower* than the average home energy bill in the province’s urban areas (\$2,918 for rural areas vs. \$3,219 for urban areas). The average of estimated home energy bills in both tiers of rural FSAs by percentage of homes in energy poverty (40% - 50%, 50% - 60%) are both less than \$3,000, while in only one of the urban tiers (10% to 20% of homes in energy poverty) does the average energy bill fall below \$3,000. Accordingly, as can be seen, the average rural home energy bill is noticeably lower than the average home energy bill for the province as a whole (\$2,918 in rural FSAs vs. \$3,164 for the province as a whole).

³² The FSA codes were converted to a binary indicator. A “0” indicates a rural area. A “1” indicates a non-rural area. A complete listing of the full FSA codes, and their associated communities, can be found in Appendix A.

The big difference between urban and rural FSAs in Nova Scotia lies with the median after-tax income, with rural incomes being consistently less than their urban counterparts. In those urban FSAs where the percentage of homes in energy poverty is substantially lower than elsewhere, the average of the median after-tax household income is noticeably higher. For urban FSAs with fewer than 40% of homes in energy poverty, for example, the average of the median after-tax income exceeds \$60,000. In contrast, all rural FSAs have median after-tax incomes of less than \$50,000.

Table 14. Energy Poverty in Nova Scotia By Rural/Urban FSA Designation
(EfficiencyOne Energy Poverty Visualization Tool)

Pct of HHs in Energy Poverty	Count of FSAs	Sum of Estimated # of Homes	Average of % of Homes in Energy Poverty	Estimated # of Homes in Energy Poverty	Average of Median Household Income (After Tax)	Average of Energy Poverty Threshold Amount	Average of Est. Average Annual Home Energy Costs (ALL)
Rural	14	153,995	47.8%	72,241	\$47,998	\$2,880	\$2,918
40 - 50%	10	125,694	46.3%	57,649	\$49,442	\$2,967	\$2,947
50 – 60%	4	28,301	51.6%	14,592	\$44,386	\$2,663	\$2,844
Urban	63	281,005	42.0%	112,783	\$55,848	\$3,351	\$3,219
10 – 20%	2	9,805	15.8%	1,519	\$60,048	\$3,603	\$2,697
20 - 30%	11	53,756	26.1%	14,093	\$69,627	\$4,178	\$3,590
30 – 40%	18	81,616	35.0%	27,723	\$60,343	\$3,621	\$3,244
40 – 50%	17	80,587	45.4%	36,789	\$52,589	\$3,155	\$3,098
50 – 60%	7	25,379	54.8%	13,321	\$47,940	\$2,876	\$3,108
60 – 70%	7	28,978	64.9%	18,571	\$41,653	\$2,499	\$3,119
>80%	1	884	86.8%	767	\$25,069	\$1,504	\$3,271
Grand Total	77	435,000	43.0%	185,024	\$54,420	\$3,265	\$3,164

As previously discussed, while the Energy Poverty Threshold amount—that dollar amount at which the energy bill equals or exceeds 6% of income—is lower in Nova Scotia’s rural areas than in its urban areas, that result occurs because of the lower rural incomes rather than because of the level of energy bills.

Part 3. The Impact on NSPI of Home Energy Unaffordability

The unaffordability of home energy adversely affects not only the households that are receiving unaffordable bills, but also adversely affects the vendors who are charged with providing energy services to those households.

The unaffordability of home energy is generally considered to present serious social problems. Not only do unaffordable bills threaten the ability of households to retain access to an essential life service in today's world, that unaffordability threatens the ability of households to have access to other essential services. It is not unusual for a low-income household to be forced into making tradeoffs between paying for food, medical care, dental care, and other life necessities in order to have sufficient money to pay their home energy bills when they become due.

Having said that, the unaffordability of home energy is not exclusively a social problem. Rendering electricity bills to households that simply cannot afford to pay them is also a business problem to the utility providing the service. Issuing unaffordable bills not only threatens the generation of revenue for a utility such as Nova Scotia Power, Inc. (NSPI), it also increases the expenses that that utility will incur. To the extent that NSPI receives less revenue than it bills, and incurs greater expenses than it need incur, not only will the utility suffer financially, but the utility's remaining ratepayers (who must make-up the foregone revenue and cover the increased expenses) will pay as well.

Seven Critical Findings

- To the extent that NSPI can reduce its costs to customers facing unaffordable energy burdens, that cost reduction helps the Company to control the rates it charges all other customers.
- The impacts of home energy affordability on NSPI can be measured by reference to the following business metrics: (1) the completeness of payments; (2) the timeliness of payments; (3) the regularity of payments; and (4) the unsolicited nature of payments. Improving the affordability of electricity to low-income Nova Scotia electric consumers will benefit NSPI through improvements in each of these metrics.
- To establish a base case for comparison purposes, the ratio of the number of bills in High Energy Poverty FSAs in the NSPI service territory to the service territory as a whole is roughly one-to-one. The same observation is made about the average dollar level of bills.

- NSPI waits longer for payments from its customers in its High Energy Poverty FSAs. One way that NSPI finds itself “waiting” for payments is when customers enter into Deferred Payment Arrangements (DPAs) through which they agree to retire unpaid bills over time. In its High Energy Poverty FSAs, NSPI not only enters into more DPAs, but it also enters into a higher proportion of DPAs that are 24-months in length rather than 12-months in length.
- Moreover, simply entering into a DPA with customers who have unpaid balances does not ensure that NSPI will receive the payments represented by the DPAs. In fact, not only do more DPAs default in High Energy Poverty FSAs (than in Low Energy Poverty FSAs), but more accounts that have entered into DPAs result in having their service disconnected before the end of the term of their DPA.
- NSPI loses more revenue to disconnections for nonpayment (DNPs) in its High Energy Poverty geographic areas. The High Energy Poverty FSAs have between two and three times more non-payment disconnections than do the Low Poverty FSAs.
- NSPI must work considerably harder to collect bills in its High Energy Poverty geographic regions even aside from disconnections for nonpayment. The number of collection activities in which NSPI engages per \$1,000 in bills rendered in Low Poverty areas is half the number of collection activities which NSPI pursues in the High Energy Poverty areas of its service territory. Conversely, but telling the same story, the level of payment that NSPI generates for each collection activity that it pursues is twice as high in the Low Energy Poverty FSAs than in the High Poverty FSAs.

The NSPI Data Underlying the Empirical Inquiry

The business impacts of home energy unaffordability on a public utility can be quantitatively measured. Standard metrics used to measure the impacts on a utility when customers cannot afford to pay their bills include looking at data on: (1) the completeness of payments; (2) the timeliness of payments; (3) the regularity of payments; and (4) the extent to which the utility must “work” in order to receive its payments. Measuring these impacts is not intended to focus on what NSPI might be “doing wrong” in its treatment of low-income customer. Instead, each of the metrics above has financial consequences. To the extent that a Universal Service Program can improve the ability of customers to pay, NSPI will be able to reduce its overall cost of doing business. In turn, to the extent that NSPI can reduce its overall cost of doing business, it can pass those benefits on to all ratepayers.

The data provided by NSPI supports the notion that improving the affordability of electricity to low-income Nova Scotia electric consumers will benefit all NSPI ratepayers through improvements in each of the metrics identified immediately above. While the distribution of Universal Service Program benefits are targeted to income-eligible customers, the benefits

arising from that distribution are not limited to those income-eligible customers. Instead, the implementation of the Universal Service Program proposed below will generate benefits for all customers.

The discussion below begins by identifying geographic areas with a particularly high incidence of energy poverty. It then considers certain aspects of NSPI bills and payments in those high energy poverty areas. The discussion is primarily based on a consideration of FSA codes. Of the 77 FSA codes that comprise Nova Scotia, there are nineteen (19) which EfficiencyOne has identified as having 50% or more of their homes as being in energy poverty (i.e., energy burden exceeding 6% of income). According to the EfficiencyOne data, those 19 FSAs have 83,542 homes, of which 47,251 (57%) are in energy poverty. Moreover, of the 83,542 homes in those FSAs, EfficiencyOne estimates that 35,077 (42%) heat with electricity.

Within the 19 FSAs, one (B1W: Eskasoni) has 87% of its homes in energy poverty, while four more (B1G: Dominion; B1H: New Waterford; B1N: Sydney North; B3R: Spryfield)³³ have 65% or more of their homes in energy poverty. Finally, an additional three FSAs (B1D: Glace Bay; B1R: Sydney North Central; B1V: North Sydney North) have more than 60% but less than 65% of their homes in energy poverty.

In contrast to these pockets of high energy poverty, are the geographic areas with relatively lower levels of energy poverty. Of Nova Scotia's 77 FSAs, 14 have been identified as having 35% or less of their homes in energy poverty. According to EfficiencyOne's data, these 14 FSAs have 125,569 homes, of which 35,961 (28.3%) are in energy poverty. Two of these FSAs (B3S: Halifax West [14%]; B3C: Eastern Passage) [17%]) have fewer than 20% of their homes in energy poverty, while an additional five (B2V: Dartmouth Morris Lake [23%]; B4E: Lower Sackville West [23%]; B4B: Bedford Northwest [24%], B3Z: Tantallon [25%]; and B3T: Lakeside [25%]) have more than 20% but fewer than 25% of their homes in energy poverty.

The discussion below combines these penetrations of energy poverty with data provided by NSPI to assess whether these pockets of high energy poverty result in discernibly higher impacts on the collection of revenue by the utility (or in the efforts NSPI takes to make those collections). NSPI data is available for October 2021 through October 2023 (25 months). The three calendar years are examined separately. Monthly data is discussed where it appears to present additional insights.

³³ FSA is named "Halifax South. The actual geographic area, however, is Spryfield. Any reference to "Halifax South" is simply a function of the imprecision of the FSA naming conventions.

The Base NSPI Data

In assessing the impacts that unaffordable bills have on NSPI, we begin first by establishing the baseline relationships of the FSA codes identified as those with “High Energy Poverty (i.e., those with more than 50% of homes in energy poverty) and those with “Low Energy Poverty” (i.e., those with fewer than 35% of homes in energy poverty). Over the three time periods, the number of bills issued in the two sets of FSAs were nearly equal over the three time periods while the dollar amount of bills in the High Energy Poverty FSAs was somewhat lower. This conclusion is based on an examination of a simple ratio with the High Energy Poverty FSAs in the numerator and the Low Energy Poverty FSAs in the denominator.

	2021 (Oct-Dec)	2022	2023 (Jan – Oct)	Total
Ratio: #s of bills	1.03	0.98	0.98	0.99
Ratio: \$s of bills	0.96	0.93	0.95	0.94

This nearly equal division of both the number and dollars of bills will be of considerable significance below.

The Impacts of Home Energy Unaffordability on NSPI

A first look at NSPI data might appear to support the conclusion that NSPI experiences no difference in collections between its High Energy Poverty FSAs and its Low Energy Poverty FSAs. A more detailed examination, however, demonstrates the contrary.

The Completeness of Payments:

The Table below provides the average bill and the average payment for each population, along with the percentage of bill which the average payment represents (called the Payment Coverage Ratio below).³⁴ The data shows that for the three periods individually (October – December 2021; Calendar Year 2022; Calendar Year 2023 YTD [January – October]), as well as for the time period as a whole (25 months), customers in the Low Energy Poverty FSAs have somewhat higher average bills and somewhat higher average payments. The resulting Bill

³⁴ The Payment Coverage Ratio is a simple calculation, with the average payment placed in the numerator and the average bill placed in the denominator.

Payment Coverage (i.e., the ratio of the average payment to the average bill) is very similar for each time period, as well as for the 25 months as a whole.

Table 16. Average NSPI Bills and Average Payments for High Energy Poverty FSAs and Low Energy Poverty FSAs				
	Oct- Dec 2021	CY 2022	CY 2023 (YTD) (Jan – Oct)	Period as a Whole
Low Energy Poverty FSAs				
Avg Bill	\$223.61	\$273.77	\$289.71	\$274.22
Avg Payment	\$205.78	\$243.77	\$267.08	\$247.82
Payment Coverage Ratio	0.92	0.89	0.92	0.90
High Energy Poverty FSA				
Avg Bill	\$209.78	\$258.25	\$281.74	\$261.55
Avg Payment	\$196.57	\$233.93	\$258.75	\$238.77
Payment Coverage Ratio	0.94	0.91	0.92	0.91

It is striking, however, that throughout both the High and Low Energy Poverty FSAs, NSPI has a collection rate of roughly 90%.³⁵

A deeper dive into the NSPI data, however, reveals that any conclusion that High Energy Poverty FSAs and Low Energy Poverty FSAs present similar collection issues to NSPI is far from accurate.

The Timeliness of Payments:

The data demonstrates, for example, that NSPI waits longer for payments from its customers in its High Energy Poverty FSAs. One way that NSPI finds itself “waiting” for payments is when customers enter into Deferred Payment Arrangements (DPAs) through which they agree to retire unpaid bills over time. Even within those DPAs, NSPI will wait for different periods of time depending on the length, and success, of the payment plan.

The Table below shows the ratio of longer-term Deferred Payment Arrangements (DPAs) to the number of shorter-term DPAs in both the High and Low Energy Poverty DPAs. For example,

³⁵ This is not to say that NSPI has an uncollectible rate of 10%. The collection rate is determined given the bills issued, and payments received, during the time period being considered.

hypothetically, and for illustrative purposes only, if there are 40 24-month DPAs in the High Energy Poverty FSAs and 80 12-month DPAs in the High Energy Poverty FSAs, the ratio would be 0.33 ($40 / [40 + 80] = 0.33$). A comparison is made between the ratio for High Energy Poverty FSAs and Low Energy Poverty FSAs. The data is again disaggregated into three distinct time periods (October – December 2021; Calendar Year 2022; Calendar Year 2023-YTD [January – October]), along with the total 25-month period.

Two observations are evident in the Table below. First, the data documents that in its High Energy Poverty FSAs, a higher proportion of the DPAs that NSPI enters into are 24-months in length rather than 12-months in length. In every time period, the percentage of total DPAs that are 24-months long rather than 12-months long is higher in the High Energy Poverty FSAs. Second, in its High Energy Poverty FSAs, NSPI enters into a disproportionately high number of DPAs overall. NSPI enters into between three (3) and four (4) times more 24-month DPAs in its High Energy Poverty FSAs, while entering into roughly twice as many 12-month DPAs.

High Energy Poverty FSAs	Oct – Dec 2021	CY 2022	CY 2023 (YTD)	Total
24-month DPAs	43	214	254	511
12-month DPAs	108	534	364	1,006
Ratio (24-mo to 12-mo DPAs)	28.5%	28.6%	41.1%	33.7%
Low Energy Poverty FSAs	Oct – Dec 2021	CY 2022	CY 2023 (YTD)	Total
24-month DPAs	13	75	71	159
12-month DPAs	50	249	185	484
Ratio (24-mo to 12-mo DPAs)	20.6%	23.1%	27.7%	24.7%
Ratio: High FSA to Low FSA	Oct – Dec 2021	CY 2022	CY 2023 (YTD)	Total
24-month DPAs	3.3	2.9	3.6	3.2
12-month DPAs	2.2	2.1	2.0	2.1

The conclusion that the proportions of DPAs in the High Energy Poverty FSAs is based on the observation that the disparity in DPA numbers exists despite the fact that, as established above, the ratio of bills in the High Energy Poverty FSAs versus Low Energy Poverty FSAs was close to 1.0.

Simply entering into a DPA with customers who have unpaid balances does not ensure that NSPI will receive the payments represented by the DPAs. In fact, NSPI data documents that not only do more DPAs default in High Energy Poverty FSAs (than in Low Energy Poverty FSAs), but more accounts that have entered into DPAs result in having their service disconnected before the end of the term of their DPA.

Table 18. Number of DPAs Closed and Number Disconnected for Nonpayment (DNP) By Length of DPA High Energy Poverty and Low-Income Poverty FSA								
	24-Month DPAs					12-Month DPAs		
	Oct-Dec 2021	CY 2022	CY 2023 (YTD)	Total		Oct-Dec 2021	CY 2022	CY 2023 (YTD)
High Energy Poverty FSAs								
# Closed	40	131	66	237	104	524	185	813
# DNP'd	11	25	5	41	13	52	20	85
Low Energy Poverty FSAs								
# Closed	13	57	39	109	48	247	95	390
# DNP'd	3	14	9	26	8	33	15	56
Ratio: High /Energy Poverty FSAs to Low Energy Poverty FSAs								
# Closed	3.1	2.3	1.7	2.2	2.2	2.1	1.9	2.1
# DNP'd	3.7	1.8	0.6	1.6	1.6	1.6	1.3	1.5

The high ratio of accounts that had initiated a DPA, but which either experienced a “closed” plan, or experienced a nonpayment disconnection prior to the end of the term of their DPA, shows the impact of home energy unaffordability in the High Energy Poverty FSAs. In the period October through December 2021, more than three times the number of accounts initiating a DPA closed their 24-month DPA prior to its completion, while nearly four times more accounts initiating 24-month DPAs in the High Energy Poverty FSAs experienced a nonpayment disconnection prior to the completion of their DPA. In the subsequent time periods, the differences were lesser, to be expected since 24 months had not elapsed prior to the time data was reported. For 12-month DPAs, between one-and-a-half and two times more customers entering into DPAs in High Energy Poverty FSAs either had their DPAs closed, or their accounts disconnected, prior to the completion of their DPAs.

The Non-Collection of Revenue:

Ultimately, NSPI loses more revenue to disconnections for nonpayment (DNPs) in its High Energy Poverty geographic areas. The Table below documents the extent to which NSPI pursues DNPs more frequently in those High Energy Poverty FSAs. The data shows that even though the number of bills issued, and the dollars of bills rendered, is virtually identical between High Energy Poverty and Low Energy Poverty FSAs (as demonstrated above), and even though the High and Low Energy Poverty FSAs have very similar levels of average payments, the

High Energy Poverty FSAs have between two and three times more non-payment disconnections. The highest difference occurred in the last three months of 2021 (with High Energy Poverty FSAs having 3.2 times more non-payment disconnections) with the first ten months of 2023 having a lower, but still high, difference (1.8 times more disconnections).

	Oct – Dec 2021	CY 2022	CY 2023 (YTD)	Total
# High Energy Poverty FSA DNPs	165	474	842	1,481
# Low Energy Poverty FSA DNPs	52	180	465	697
Ratio: High to Low Energy Poverty FSAs	3.17	2.63	1.81	2.12

The Ease of Collection:

It is not merely the non-payment of bills that distinguishes the payment difficulties in NSPI's High Energy Poverty FSAs. Aside from the actual disconnection of service for nonpayment, NSPI must work considerably harder to collect bills in its High Energy Poverty geographic regions as well. The data is set forth in the Table below. This information should be read in conjunction with the initial data presented in this section. That data indicated that the Payment Coverage Ratio in High Energy Poverty geographic areas was nearly the same as the Payment Coverage Ratio in Low Energy Poverty areas.

The data in the Table above, however, shows that not all payments are equal. Despite the similarity in payments between the two different types of geographic regions (distinguished by the extent of Energy Poverty), for every collection notice that NSPI generates in a Low Energy Poverty FSA, it is required to generate two (or more) similar notices in the High Energy Poverty areas. As with nonpayment disconnections, the collections performance in the final months leading up to the 2021- 2022 heating season (October through December 2021) appears to have presented greater payment difficulties than either Calendar Year 2022 or Calendar Year 2023 (YTD) (January - October).

	Oct – Dec 2021	CY 2022	CY 2023 (YTD)	Total
1 st Notice	2.00	1.71	1.77	1.76
2 nd Notice	2.10	1.98	1.96	1.98
Final Notice (door knob)	2.37	2.13	2.03	2.13
Final Notice ((verbal)	1.81	1.84	1.88	1.86

Moreover, in the Table below, two different metrics are presented by which to measure the resources NSPI must devote to the process of collecting its residential electric bills in High Poverty FSAs and Low Energy Poverty FSAs. The first metric measures the number of collection activities that NSPI pursues for each \$1,000 in bills it renders. The ratio is relatively simple, with the number of collection activities NSPI reports placed in the numerator and the dollars of residential bills (divided by 1,000) placed in the denominator. The second metric measures the converse: the dollars of payments NSPI receives for each collection activity in which it engages. Again, the ratio is relatively simple, with the dollars of payments placed in the numerator (divided by 1,000) and the number of collection activities which NSPI reports placed in the denominator.

	Oct – Dec 2021	CY 2022	CY 2023 (YTD)	Total
# collection activities per \$1,000 in bills				
High Energy Poverty FSA	0.106	0.146	0.129	0.185
Low Energy Poverty FSA	0.049	0.072	0.065	0.067
\$1,000 in payments per collection activity				
High Energy Poverty FSA	\$10,162	\$7,240	\$7,556	\$7,594
Low Energy Poverty FSA	\$22,672	\$14,424	\$14,651	\$15,090

The data shows that both metrics support the conclusion that it is easier for NSPI to collect its bills (or, stated another way, it is easier for NSPI customers to pay their bills) in NSPI's Low Energy Poverty FSAs. The number of collection activities in which NSPI engages per \$1,000 in bills rendered is half the number of collection activities which NSPI pursues in the High Energy

Poverty areas of its service territory. Conversely, but telling the same story, the level of payment that NSPI generates for each collection activity that it pursues is twice as high in the Low Energy Poverty FSAs.

These results can occur for one of two reasons (or a combination of the two). On the one hand, NSPI customers in the Low Energy Poverty FSAs may be making payments without need for NSPI to engage in collection activities. In such instances, both the number of activities per dollar billed, and the dollars of payments received per each collection activity will be enhanced. On the other hand, NSPI customers in the Low Energy Poverty FSAs may be receiving the same number of collection activities directed toward them, but responding by making greater payments in response.

When the data in this section is read in its entirety, it would appear that the first explanation is more likely to be the accurate one. From the perspective of designing a response to Energy Poverty in Nova Scotia, however, the distinction does not change the ultimate conclusion. Improving home energy affordability in Nova Scotia will, in all probability, not merely positively affect NSPI customers facing unaffordable bills, it will also benefit the utility, as a utility, and thus benefit NSPI's total customer base as well.

Some Concluding NSPI Observations

Quite aside from the impacts that unaffordable home energy has on individual low-income households in Nova Scotia, the unaffordability of home energy has substantial adverse financial and economic impacts on the utilities serving the customers who cannot afford to pay their bills. As the primary public utility charged with serving these low-income customers who cannot afford to pay their bills, NSPI incurs the expenses associated with non-payment, including collection expenses, working capital, and uncollectibles.

Addressing the unaffordability of home energy will thus not merely benefit the customers participating in a Universal Service Program, but will also provide tangible benefits to the investors and nonparticipating customers of the utility that serves them.

Accordingly, while the provincial government of Nova Scotia may seek to bear the primary responsibility for the design and delivery of universal service, it would be inappropriate for public dollars to be the exclusive source of Universal Service Program funding. Placing the entire financial responsibility of a Universal Service Program on the provincial government would allow NSPI to pocket the savings generated by such a program while bearing none of the responsibility for helping to generate those savings.

Part 4. An Overview of How One Might Define “Low-Income” or “Poverty” in Nova Scotia

One of the primary decisions to make with respect to responding to energy unaffordability in Nova Scotia involves articulating an appropriate threshold for who will be eligible for energy bill assistance. In the discussion below, the task undertaken is not to comprehensively review, let alone to determine, what an appropriate measure of “poverty” (or, closely related but not identical, what an appropriate definition of “low-income”) is in Nova Scotia. The purpose here is, instead, simply to acknowledge that there exist substantively different ways to measure low-income status in Canada.

This section undertakes two tasks: (1) to introduce the most commonly used measures of low-income status in Canada in sufficient detail to allow the reader to know their conceptual basis and functional operation; and (2) to introduce some of the commonly identified “pros” and “cons” of each of the measures discussed.

Five Critical Findings

1. There is no generally accepted appropriate measure of what it means to be “low-income” in Canada. In 2018 Canada established the MBM as its Official Poverty Line. Nonetheless other poverty measures remain in use. Use of any one of the commonly used metrics (LIM, LICO, MBM, HILs) would have legitimate advantages and disadvantages over use of the other metrics.
2. Even though Canada’s Official Poverty Line is not consistently used in practice, there exist three specific measures of low-income status that are generally referenced: (1) the Low-Income Cutoffs (LICO); (2) the Low-Income Measure (LIM); and (3) the Market Basket Measure (MBM). In addition, those working on housing affordability issues use a measure referred to as the Household Income Limits (HILs).
3. Conceptually, LICOs are income thresholds below which families would likely have to spend a substantially larger share of their income than average on the necessities of food, shelter and clothing and thus would be living in a difficult economic circumstance.
4. The concept underlying the LIM is that all persons in a household have low income if their adjusted household income falls below half of the median adjusted income.

5. The concept underlying the [Market Basket Measure] is that a family is in low income if they have insufficient income to afford the cost of a pre-determined basket of goods and services appropriate to their family size and area of residence.

Defining Poverty Status in Canada

Even though Canada's Official Poverty Line is not consistently used in practice, there exist three specific measures of low-income status that are generally referenced: (1) the Low-Income Cutoffs (LICO); (2) the Low-Income Measure (LIM); and (3) the Market Basket Measure (MBM). In addition, those working on housing affordability issues use a measure referred to as the Household Income Limits (HILs). Before addressing each of the three primary measures individually, the "conceptual" basis for the three measures has been described by StatCan as follows:

- "Conceptually, LICOs are income thresholds below which families would likely have to spend a substantially larger share of their income than average on the necessities of food, shelter and clothing and thus would be living in a difficult economic circumstance."³⁶
- "...The concept underlying the LIM is that all persons in a household have low income if their adjusted household income falls below half of the median adjusted income."³⁷
- "The concept underlying the [Market Basket Measure] is that a family is in low income if they have insufficient income to afford the cost of a pre-determined basket of goods and services appropriate to their family size and area of residence."³⁸

In noting these three measures, it is important to acknowledge the "increasingly strong disclaimers" that StatCan has issued about the use of LICO in particular (even though equally applicable to the other two). The Fraser Institute quotes StatCan Chief Statistician Ivan Fellegi as cautioning:

For many years, Statistics Canada has published a set of measures called the low-income cut-offs. We regularly and consistently emphasize that these are quite different from measures of poverty. They reflect a well-defined methodology which identifies those who are substantially worse off than the average. Of course, being significantly

³⁶ Statistics Canada (2016). Low Income Lines: What they are and how they are created," at 5.

³⁷ Id.

³⁸ Id.

worse off than the average does not necessarily mean that one is poor . . . Statistics Canada does not and cannot measure the level of poverty in Canada.”³⁹

With this background, the discussion below will briefly outline the structure and operation of each measure, along with acknowledging the commonly observed shortcomings of each.⁴⁰

The Low-Income Cutoffs (LICO)

LICO identifies a family as being low income if the family spends a substantially higher proportion of its income on life’s essentials, and is thus likely to live in “straitened circumstance.” Under this measure of low-income status, it is estimated that, on average, families devote 43% of their after-tax income to expenditures on necessities of food, clothing and shelter. Accordingly, the LICO-AT thresholds⁴¹ were thus set to income levels where 63% of after-tax income would be spent on these necessities.

The LICO thresholds have 35 cut-offs varying by family sizes and different sizes of area of residence (“from unattached individuals to families of seven or more persons – and for five community sizes – from rural areas to urban areas with a population of more than 500,000”).⁴² These distinctions allow for a consideration of economies of scale and potential differences in cost of living in communities of different sizes.⁴³

The current LICO thresholds are based on the 1992 consumption pattern of Canadian households.⁴⁴ However, they are indexed annually using the Consumer Price Index (CPI) to keep their real values.⁴⁵

³⁹ Fellegi. Fraser Institute, *Measuring Poverty in Canada*, at 14 (internal citations omitted).

⁴⁰ A detailed discussion of the strengths and weaknesses of the LICO, LIM, and MBM measures can be found at: Zhang, Murphy, and Michaud (November 2011). *The Various Measures of Low Income in Canada: Strengths, Weaknesses, Impacts*, Statistics Canada; see also, StatCan (October 2016). *A Backgrounder of Poverty in Canada*.

⁴¹ “AT” refers to “after tax.” While a pre-tax measure is sometimes identified, pre-tax measures of poverty are rarely used in Canada.

⁴² Nova Scotia Department of Community Service (2008). *How is Poverty Measured in Canada*, at 1.

⁴³ Statistics Canada (2016). *Low Income Lines: What they are and how they are created*, at 6.

⁴⁴ What this means is that LICO measures “the ability of Canadians to purchase a basic basket of goods at 1992 spending weights.” Jackson (March 2018). *How to Measure and Monitor Poverty?*, at 3, Progressive Economics Forum.

⁴⁵ “The three lines can be also compared in terms of how each threshold is updated. There are two fundamentally different ways—rebasing and indexing. Rebasing refers to the process of making judgments as to the relative level of income required to participate fully in society at a given point in time, while indexing refers to a simple adjustment of the dollar amount of the thresholds to account for inflation. Every low-income line, as such, represents a standard based on relative judgments that have been set at a given point in time. When this standard is not rebased to reflect current living conditions (i.e., making new relative judgments), and the thresholds are merely indexed to the CPI, it allows a comparison of Canadians’ current situation to the distribution of well-being in an earlier time. Of course, at some point the relevance of this comparison becomes questionable as time passes.” Murphy, Zhang and Dionne, “Low Income in Canada: a Multi-line and Multi-index Perspectives,” at 87.

The Low-Income Measure (LIM)

The Low-Income Measure (LIM) identifies a household as being low income if the household's income is below half of the median adjusted income. In this sense, LIM is a relative measure of poverty, by "explicitly defin[ing] low income as being much worse off than average."⁴⁶ LIM "is a purely relative measure with poverty being seen as having an income well below the norm defined as the income of a midpoint Canadian family."⁴⁷

LIM has been criticized as being based on the national median income rather than on the median income specific to an individual province or territory. It seems axiomatic to note that median incomes vary considerably from one province to another.⁴⁸ Moreover, use of LIM can produce "counter-intuitive" results in that it "can suggest that recessions are good for poverty reduction."⁴⁹ During a recession, for example, median incomes can be flat or declining even while economic hardships are increasing.⁵⁰

The Market Basket Measure (MBM)

The Market Basket Measure (MBM) is Canada's "official" poverty line established in 2018⁵¹. The MBM identifies households as being in poverty when they have an "income which is insufficient to meet the basic needs of a low-income family."⁵²

By its nature, the MBM is seen as arbitrary. One critique of the MBM observed that it is comprised of decisions made "by some group of well-meaning individuals, [who] make arbitrary judgments about the specific items to be included in the market basket. The 2010 update required almost 100 pages to describe all the myriad detailed judgments involved." A similar critique notes that:

The consumption-based approach requires many decisions about what goods and services are considered in the measure. For example, should different food baskets be used based on age? should the cost of a haircut be included? should transportation

⁴⁶ Nova Scotia Department of Community Service (2008). How is Poverty Measured in Canada, at 1.

⁴⁷ Jackson, at 4.

⁴⁸ Falvo (2019). "10 Things to Know About Poverty Measurement in Canada," at 3.

⁴⁹ Id,

⁵⁰ Id.

⁵¹ Opportunity for All Canada's First Poverty Reduction Strategy, 2018 p 11; Poverty Reduction Act June 2019- <https://laws-lois.justice.gc.ca/eng/acts/P-16.81/page-1.html>

⁵² Jackson, at 4

costs include having a car or, assuming public transportation is available, should monthly public transportation passes be used in measuring the costs or should a certain number of individual fares be used to determine the cost?⁵³

A different analysis, however, counters that such judgments are inherent in *any* definition of poverty. “Similar problems exist for the mixed and equity-based approach. For example, how many percentage points should be added to average expenditures to set the poverty line? Why use only food, clothing, and shelter rather than food, shelter and transportation, which the Family Expenditure survey shows are the three areas of greatest expenditure for families?”⁵⁴ In short, the fact that poverty measures involve a myriad of judgments cannot be deemed a fatal flaw of the MBM (or either of the other two poverty measures) in their design.

The arbitrariness is embedded in all three low-income lines in Canada. The LIM methodology chooses 50% of the median-adjusted income to determine the low-income thresholds. LICO determines its thresholds as the income of households that spent 20% of their income above the national average on food, clothing and shelter. There is no ‘correct’ answer as to why 50% was used; why not 55% or 45% in the case of LIM? Why 20% and not 19% or 21% in LICO? . . .The arbitrary nature of the low-income lines implies that they are essentially tools to answer hypothetical questions, such as what would be the low-income rate if half of the median income were chosen as the criterion?⁵⁵

In addition to these three basic measures of low-income status in Canada, an additional metric tied to housing costs should be acknowledged as well.

The “Housing Income Limits” (HILs)

“Housing Income Limits” (HILs) address the affordability of housing. In Canada, “housing affordability” is demarcated by application of a two-part test: (1) “shelter does not cost more than 30% of gross household income” and (2) “the household would have to spend more than 30% of its gross household income to pay the median rent of alternative local shelter that meets all three standards.” (emphasis in original).⁵⁶

⁵³ deGroot-Maggetti (March 20220). A measure of poverty in Canada, A guide to the debate about poverty lines, at 6, Citizens for Public Justice.

⁵⁴ DeGroot-Maggetti, at 6.

⁵⁵ Murphy, Zhang, and Dionne, at 93.

⁵⁶ Coll (20150). Rethinking Shelter-Cost-to-Income Ratios in Housing Allowances, at 13, citing Canadian Mortgage and Housing Corporation. (2011). Housing Conditions and Core Housing Needs.

HILs are “actively used” by affordable housing programs through Canada. They “represent the gross household income required to rent an appropriately sized unit in a given region for 30% or less of household income.”⁵⁷ The cost of housing used to establish HILs are “usually taken to be the average or median rent in a given community.”⁵⁸ HILs do *not* consider issues of housing quality in reviewing rents in a local community. They do, however, differ by area and by household size.

HILs are considered to be a “hybrid” of the use of housing affordability standards known as shelter-to-income-ratios (STIRs). The use of STIRs, however, has several recognized problems. These issues are not only common to the use of LICO, LIM, and MBM, but are common to frequently used measures of home energy affordability. While HILs are based on regions and household size, for example, the underlying 30% affordability assumption does not account for regional differences in shelter costs. Even apart from provincial and territorial differences, it is reasonable to assume that households in urban, rural and suburban areas pay different proportions of their income for their shelter costs. Similarly, it is reasonable to assume that renters would pay less than homeowners, and that homeowners without mortgages would pay less than homeowners with mortgages.

Perhaps more important to understand, because of its similarity to measuring home energy affordability, STIRs have been critiqued for confusing what people *do* pay for housing with what they can *afford* to pay. As with home energy, households can appear to purchase housing at an affordable STIR by sacrificing other household necessities.

HILs improve upon a straight use of STIRs in that they consider household size and composition, as well as housing location. However, HILs duplicate the problems of the use of the 30% line of demarcation between what is affordable and what is not. In short, while the use of HILs has its advantages, as with LICO, LIM and MBM, it also has its conceptual and practical shortcomings.

Defining Poverty: Some Concluding Observations

In sum, there is no generally accepted appropriate measure of what it means to be “low-income” in Canada. Use of any one of the commonly used metrics discussed above (LIM, LICO, MBM, HILs) would have legitimate advantages and disadvantages over use of the other metrics. Even in this report, different poverty measures have been used at different points in the

⁵⁷ Id., at 24.

⁵⁸ Id., at note 10.

discussion. A proposed income eligibility guideline for a Universal Service Program is discussed in more detail below.

The measurement of home energy affordability through a Bill-to-Income Ratio (also known as a “bill burden”) of 6% of income combines some of the equity-based and consumption-based attributes of the three, standard metrics by which to measure low-income status. It is equity-based in that the 6% threshold is often justified on the basis of being no more than two times the median bill burden of the typical Canadian household. It is consumption-based in that, wholly apart from the equity implications, 6% is also often seen as the breakpoint where payment difficulties become discernibly more pronounced. It can be critiqued on the grounds that it does not consider how it relates to the overall cost-of-living in an area. It can be applauded in that it is based on actual local data regarding incomes and energy costs. It avoids the problems associated with updating it on an annual basis, being tied to current incomes and current energy costs.

Part 5. The Need to Go Beyond Existing Nova Scotia Programming

This chapter considers the reasons why a new and expanded Universal Service Program in Nova Scotia is needed to extend beyond the existing efforts to achieve home energy affordability. The discussion examines three aspects of existing efforts: (1) the existing energy assistance program, called the Heating Assistance Rebate Program (HARP); (2) the existing energy efficiency programs; and (3) the existing crisis assistance program (going beyond HARP). Each will be examined separately below.

Seven Critical Findings

- The Universal Service Program advanced in the section below will improve upon the delivery of home energy affordability assistance in Nova Scotia.
- Existing fuel assistance in Nova Scotia is delivered through the provincial Heating Assistance Rebate Program (HARP). Through HARP, the province provides \$600 to qualified applicants annually. This represents a decrease from the previous year but an increase from \$200 in years before.
- Despite its advantages, HARP does not, standing alone, adequately serve the affordability needs of Nova Scotia. The \$600 provided in home heating assistance is insufficient to address the energy poverty needs of Nova Scotia residents. The “base case” energy poverty analysis using EfficiencyOne’s Tool establishes that 43% of Nova Scotia’s homes province-wide live in energy poverty (i.e. with an energy burden exceeding 6% of income). Even if each home were provided a \$600 direct energy subsidy to offset home energy costs, a direct subsidy of \$600 would reduce the percentage of homes in energy poverty only to 30%.
- HARP is not a program designed to achieve home energy affordability. Instead, HARP is a seasonal program (directed toward home heating). Much of the unaffordability of Nova Scotia’s home energy bills, however, does not derive from home heating bills. Instead, electricity bill payment difficulties in particular are a year-round phenomenon.
- The primary problem with HARP payments, however, is that these payments do not vary based on need. For example, HARP payments do not vary based on home heating fuel used by a household. Customers who heat with fuel oil receive the same benefits as customers who heat with electricity. In Nova Scotia, different heating fuels impose different burdens on low-income households. Customers who heat with fuel oil receive a home energy bill nearly twice the level of customers who heat with electricity.
- Given that HARP provides a flat across-the-board benefit, there is no targeting based on the degree to which a household may live in energy poverty. In Nova Scotia, a substantial number of households not only live in energy poverty (with a Bill-to-Income Ratio

exceeding 6%) but live in deep energy poverty (with a Bill-to-Income Ratio exceeding 10%).

- The findings above should not be construed as a criticism of the design and operation of the Nova Scotia HARP initiative. HARP provides substantial benefits to be applied to winter home heating bills throughout the province. The findings do, however, support the conclusion that the program should not be seen as doing more than it is intended to do. HARP is not designed to operate as a home energy affordability program and cannot serve that function.

Nova Scotia's Heating Assistance Rebate Program (HARP)

The universal service program advanced in the section below will improve upon the delivery of home energy affordability assistance in Nova Scotia. The primary existing fuel assistance in Nova Scotia is delivered through the provincial Heating Assistance Rebate Program (HARP). The HARP payments provided are insufficient to address the energy poverty needs of Nova Scotia residents. Using the EfficiencyOne Energy Poverty Visualization Tool discussed elsewhere, the analysis below considers the impact which the across-the-board HARP subsidy has on energy poverty. As documented above, the "base case" energy poverty analysis using EfficiencyOne's Energy Poverty Visualization Tool establishes that 43% of Nova Scotia's homes province-wide (185,024 homes) live in energy poverty (i.e. with an energy burden exceeding 6% of income).

A brief history of HARP:

Until recently, HARP payments have been consistent over time. While the program provided payments up to \$200 per household since the 2000's, the program benefits jumped to \$1,000 in 2022 - 2023, but then dropped to \$600/household in 2023 - 2024. These wide swings mean its impact on energy poverty have varied widely. If every household facing energy poverty received \$200, that would reduce Energy Poverty from 43% to 38% or over 165,000 homes. However in the three years before 2022 - 2023, only roughly 45,000 households received the \$200 HARP payment, 24% of the total households in energy poverty. Accordingly, it is likely that the reduction in energy poverty did not drop as far as 38%. The low enrolment rate was largely due to a lower eligible income limit (\$44,000 for households with 2 or more, \$29,000 for single people) but also because of the relatively low value of the rebate.

In 2022 - 2023, HARP provided a flat payment of \$1,000 per household and increased the income eligibility to \$85,000. As a result of the higher income eligibility and increased benefit level, HARP enrollment more than tripled to 155,800 households. If every household in energy poverty received \$1,000 it would have slashed energy poverty from 43% to about 23% or 99,300 homes. The reduction was not quite that high, however, since some households receiving HARP were not in energy poverty to begin with and fewer than 100% of those in energy poverty received the rebate.

In 2023 - 2024, HARP provided a flat payment of \$600 and the income limit was reduced to \$75,000 (for two or more people) and \$55,000 (for single people) to better target households needing help. If all households in energy poverty received \$600 it would reduce the energy poverty rate to about 30% or 129,860 households. But again, since fewer than 100% of households in energy poverty received the rebate, the impact would be less. By early January 126,000 households had applied.

In all three cases discussed above, even if each home in energy poverty were provided a direct energy subsidy to offset home energy costs, a substantial number of homes would remain in energy poverty – the lower the HARP payment, the higher the number of homes that remain in energy poverty.

An overview of HARP's advantages:

HARP has both advantages and disadvantages. On the one hand, HARP offers three advantages in the process of providing energy assistance to Nova Scotia residents:

1. It is simple to explain and understand;
2. Its administrative costs are low. Administrative costs were 5.5% in the years preceding 2022, but dropped considerably in the 2022 – 2023 program year; and
3. The participation rate was high in 2022 - 2023 after the large increase in amount and in income threshold. Participation swings dramatically depending on the amount offered (36% in 2022-3 vs 11% in 2021). This “advantage” of HARP, however, can be seen, in contrast, as one of its primary disadvantages. HARP funding is highly volatile and unpredictable. This leads to household confusion about what benefits to expect and whether those benefits merit the application effort.

An overview of the need for assistance beyond HARP:

Despite these advantages, HARP does not, standing alone, adequately serve the affordability needs of Nova Scotia. The \$600 provided in home heating assistance is insufficient to address the energy poverty needs of Nova Scotia residents. Using the EfficiencyOne Energy Poverty Visualization Tool discussed elsewhere, the analysis below considers the impact which an across-the-board \$600 subsidy has on energy poverty.⁵⁹ As documented above, the “base case” energy poverty analysis using EfficiencyOne’s Tool establishes that 43% of Nova Scotia’s homes province-wide (185,024 homes) live in energy poverty (i.e. with an energy burden exceeding 6%

⁵⁹ While this discussion uses a \$500 subsidy rather than HARP’s \$600 subsidy, the \$100 difference would not substantively change the results of the analysis.

of income). Even if each home were provided a \$600 direct energy subsidy to offset home energy costs, a substantial number of homes would remain in energy poverty. A direct subsidy of \$600 would reduce the percentage of homes in energy poverty only to 30% (129,850 homes). The total annual home energy bill in Nova Scotia, according to the EfficiencyOne Tool, is \$3,032. The \$600 HARP subsidy represents less than 20% of the total home energy bill in Nova Scotia.

Delivering a flat across-the-board subsidy to households, as HARP does, is ineffective throughout the province. Of the province's 77 FSA codes, 17 would continue to have more than 40% of their homes in energy poverty after receipt of a \$600 direct subsidy. Four would have more than half of their homes in energy poverty even *after* receiving a \$600 direct subsidy payment. This is an improvement over the 19 FSAs having more than half of their population in energy poverty with no subsidy (and over the 46 FSAs having more than 40% of their population in energy poverty with no subsidy), but nonetheless reveals the significant unmet need remaining given HARP payments. While 185,024 Nova Scotia households are in energy poverty with no subsidy, 129,850 remain in energy poverty given a flat subsidy of \$600. Providing assistance to households not in need of assistance, of course, does not reduce the extent of energy poverty.

HARP is not a program designed to achieve home energy affordability. Instead, HARP is a seasonal program (directed toward home heating). In the current year (2023 - 2024), for example, HARP opened for applications beginning in October. The program will continue to receive applications through the end of March 2024. Much of the unaffordability of Nova Scotia's home energy bills, however, does not derive from home heating bills. NSPI data presented in the Table below, while not associated with incomes, demonstrates that electricity bill payment difficulties are a year-round phenomenon. Limiting fuel assistance exclusively to home heating bills is a substantial constraint on addressing the unaffordability of home energy bills in Nova Scotia. While average arrears in the non-cold-weather months are lower than in the colder months, they nonetheless remain substantial.

Table 22. NSPI: Average Arrears by Month vs. Average Arrears Exceeding Threshold at which Collections Initiated (February 2023 – October 2023)

	Avg Arrears	Avg Arrears Exceeding Collections Threshold
February	\$285	\$430
March	\$314	\$444
April	\$342	\$510
May	\$332	\$466
June	\$326	\$477
July	\$301	\$454
August	\$269	\$453
September	\$240	\$431
October	\$233	\$380
Total Average of Average Arrears	\$293	\$449

The primary problem with HARP payments, however, is that these payments do not vary based on need. For example, HARP payments do not vary based on home heating fuel used by a household. Customers who heat with fuel oil receive the same benefits as customers who heat with electricity. Customers who heat with natural gas receive the same benefit as customers who heat with propane. It may seem axiomatic, but in Nova Scotia, different heating fuels impose different burdens on low-income households. Customers who heat with fuel oil receive a home energy bill nearly twice the level of customers who heat with electricity. The Table below shows the average home energy bill by heating fuel (including both heating and electricity) along with the percentage of Nova Scotia households heating with that fuel.

Table 23. Average Home Energy Bills by Heating Fuel and Percent of Nova Scotia Households Using Heating Fuel

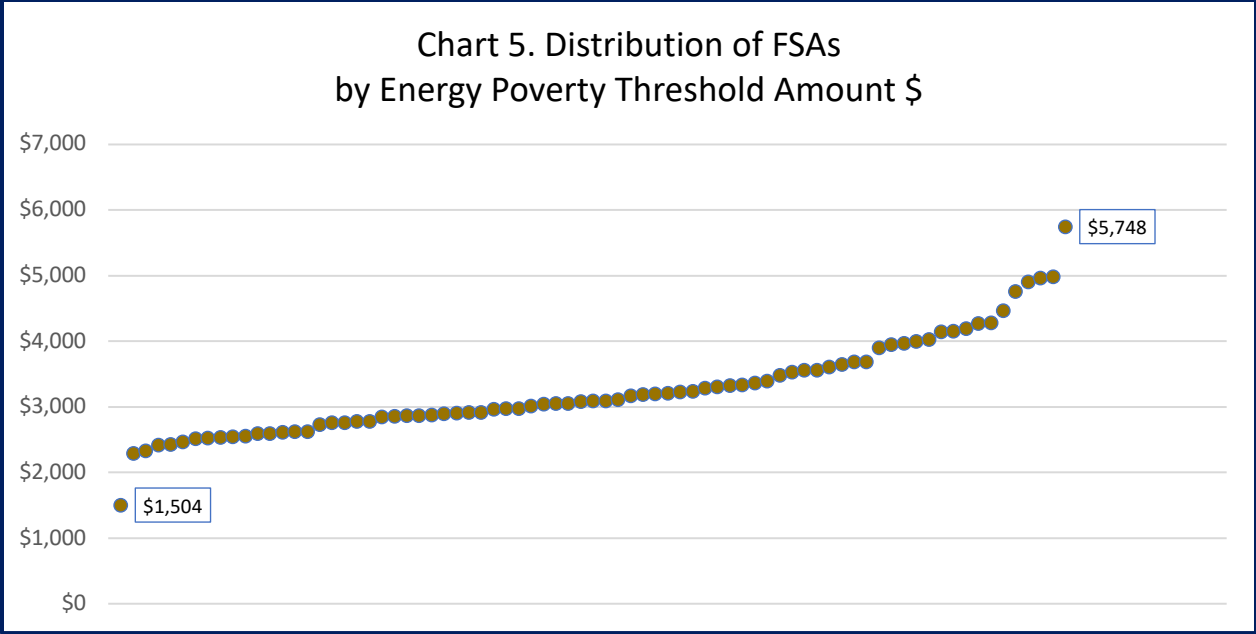
	Energy Poverty Threshold (6%)	Average Home Energy Bill (including electricity)	Percent of Nova Scotia Households Using Fuel
Electricity	\$3,153	\$2,184	42.9%
Natural Gas	\$3,153	\$3,047	5.2%
Fuel Oil	\$3,153	\$3,880	39.2%
Propane	\$3,153	\$4,309	2.4%
Wood	\$3,153	\$3,037	10.3%
Total	\$3,153	\$3,032	100%

As can be seen, in Nova Scotia, total home energy bills reach: (1) \$2,184 for homes heated with electricity; (2) \$3,047 for homes heated with natural gas; (3) \$3,880 for homes heated with fuel oil; and \$4,309 for homes heated with propane. HARP payments, however, remain flat across-the-board irrespective of a household’s home heating fuel.

Given that HARP provides a flat across-the-board benefit, there is no targeting based on the degree to which a household may live in energy poverty. In Nova Scotia, a substantial number of households not only live in energy poverty (with a Bill-to-Income Ratio exceeding 6%) but live in deep energy poverty (with a Bill-to-Income Ratio exceeding 10%). Of Nova Scotia’s 435,000 households, 44,512 experience energy burdens exceeding 10% of income. Amongst Nova Scotia’s FSA postal codes, only Dartmouth Morris Lake has fewer than 1% of its households experiencing a Bill-to-Income Ratio of more than 10%. In contrast, eight communities have more than 20% of their households experiencing a Bill-to-Income Ratio exceeding 10%. The Table below shows the distribution of FSAs by the percentage and number of households with a Bill-to-Income Ratio exceeding 10%. HARP benefits remain constant irrespective of whether a household’s Bill-to-Income Ratio is %, or 10% or 20% of income.

Pct of Households with BTI Ratio >10%	Count of FSAs	Sum of Estimated # of Homes	Sum of Homes in Energy Poverty (BTI Ratio >10%)
Less than 1%	1	2,929	7
1% to <11%	44	225,489	12,809
11% to <21%	24	176,720	23,876
21% to <31%	7	28,978	7,242
31% to <61%	0	0	0
61% or more	1	884	578
Grand Total	77	435,000	44,512

Finally, HARP does not target its benefits based on income to any extent. Chart 5 below documents the Energy Poverty Threshold amounts for Nova Scotia’s 77 FSAs calculated by EfficiencyOne’s Poverty Visualization Tool. These amounts represent median household income (after-tax) multiplied by a Bill-to-Income Ratio of 6% of income. The differences in the dollar threshold amounts, in other words, reflect different levels of income in each FSA. The threshold amounts have been sorted from lowest to highest.



As can be seen, the Energy Poverty Threshold Amount in Nova Scotia ranges from a low of \$1,504 (Eskasoni) to a high of \$5,748 (Bedford Northwest). Even setting aside those two outliers, however, the Energy Poverty Threshold Amount ranges from a low of \$2,299 (Loch Lomond) to a high of \$4,991 (Waverley). While 48 of Nova Scotia's 77 FSAs have Energy Poverty Threshold dollar amounts between \$2,500 and \$3,500 (indicating a relatively narrow range in incomes), 13 have thresholds exceeding \$4,000 (indicating a somewhat higher income), while six (6) have thresholds less than \$2,500 (indicating a somewhat lower income). Despite this wide dispersion of income within the province, HARP provides a flat dollar amount of benefit irrespective of income.

The discussion above should not be construed as a criticism of the design and operation of the Nova Scotia HARP initiative. HARP provides substantial benefits to be applied to winter home heating bills throughout the province. The discussion above, however, *does* support the conclusion that the program should not be seen as doing more than it is intended to do. HARP is not designed to operate as a home energy affordability program and cannot serve that function. The Nova Scotia Universal Service Program recommended below is proposed to address a broader problem than HARP addresses.

Energy Efficiency Programs in Nova Scotia

Efficiency Nova Scotia has a variety of programs targeted specifically to low and moderate-income Nova Scotians:

1. **HomeWarming** – This program covers the full cost of energy efficiency upgrades for low-income homeowners. Eligibility is based on homeownership (renters are not eligible) and income level. Current eligibility requirements are LICO x 135%. Participants first receive a home energy assessment and then designated contractors perform upgrades such as insulation (attics, walls, and floors), draft-proofing, and heat pumps (a recent addition). A follow up energy assessment is then conducted to quantify the extent of energy savings. As of Fall 2023, over 24,250 homes have participated since program inception in 2006. Average annual energy bill savings for program participants are \$1,700 (non-electrically heated homes) and \$860 (electrically heated homes).
2. **Moderate-Income Rebates** – beginning in 2023, Efficiency Nova Scotia's Home Energy Assessment program now offers additional incentives for moderate-income Nova Scotian homeowners (for non-electrically heated homes). This includes top-up rebates over and above existing incentives, free energy efficiency assessments, and additional support to transition homes from oil to electric heat. These extra incentives (up to \$10,000) can be stacked on top of existing incentives (up to \$5,000), for a total of rebates up to \$15,000.
3. **Oil to Heat Pump Affordability Program** – originally offered in 2023 and expanded in early 2024, low-to-median-income homeowners in Nova Scotia that heat their home with oil can receive up to \$30,000 in funding to cover the full cost of switching from oil to a heat pump. This can include electrical panel upgrades, costs to remove the oil tank, and more.
4. **Affordable Multifamily Housing** – assists owners of multi-unit residential buildings that offer affordable rental housing to low-income Nova Scotians. The program focuses on larger buildings but also provides heat pump rebates to buildings with between one and three rental units. Up to 80% of the energy efficiency upgrade costs are covered for cooperatives and property owners of rental units along with other non-profit organizations that provide support services for the community. Shelters and transition houses that provide rent-free housing can have up to 100% of their costs covered. The program begins with an energy assessment of the building, followed by the building owner obtaining quotes for the desired work. After upgrades are completed, a final energy assessment is performed to confirm energy savings. Eligible upgrades typically focus on the building envelope, common area lighting, space heating, and water heating systems. As of Fall 2023, over 380 buildings have participated in this program. Average annual energy bill reductions per building are \$2,950 (non-electrically heated buildings) and \$3,320 (electrically heated buildings).

In Efficiency Canada's 2022 report "Efficiency for All", Efficiency Nova Scotia's HomeWarming program has the highest level of energy savings in low-income energy efficiency programs in

the country, and the second highest level of participation per capita in programs with major energy efficiency upgrades.⁶⁰

As indicated in EfficiencyOne's Energy Poverty and Equitable Transition report,⁶¹ however, there are a couple of notable gaps in existing program offerings. First, there are no top-up rebates for moderate-income homeowners in electrically heated homes. Second, there are no incentives tailored to landlords and building owners who have rental rates intended for moderate-income Nova Scotians.

Emergency Assistance Programs in Nova Scotia

There are three kinds of emergency assistance programs in Nova Scotia. The primary emergency financial assistance program is the Home Energy Assistance Top-up program (HEAT) administered by the Salvation Army. It is funded by \$800,000 from the province and \$200,000 from Nova Scotia Power. HEAT is a big help to those who receive it but it is underfunded. It runs out of money, is limited to once every two years (this was temporarily changed during the Pandemic), and is seasonal while energy bills are a year-round problem. Community Services' Income Assistance program also provides emergency assistance to cover the minimum required for utility arrears or heat to recipients of income assistance. They provided \$221,000 in non repayable grants to 302 households in 2022 - 2023. Any requests beyond the first one are usually repayable. Several community organizations provide assistance using community donations to try to fill the gaps.

⁶⁰Kantamneni[and Haley (2022). Efficiency for All] A review of provincial/territorial low-income energy efficiency programs with lessons for federal policy, at 39, 41, Efficiency Canada, Carleton University, Ottawa, ON.

⁶¹ Energy Poverty and an Equitable Transition to a Net-Zero Carbon Future in Nova Scotia, available at <https://www.encyone.ca/energy-poverty-and-an-equitable-transition-to-a-net-zero-carbon-future-in-nova-scotia/>

Part 6. A Nova Scotia Response to Home Energy Unaffordability

In response to the home energy affordability problems discussed above, this report outlines the essential components comprising an effective and efficient Universal Service Program for Nova Scotia. These components include:

- A rate affordability component;
- An arrearage management component;
- A crisis intervention component; and
- An energy efficiency and electrification component.

Each individual program component is described in more detail below. These four elements of a Universal Service Program are presented as an inter-connected whole. They do not represent a menu from which policymakers may select a limited number of elements. Rather, each element is needed to ensure an effective and efficient program.

Summary of Recommendations

- A Nova Scotia Universal Service Program should be adopted. The program should be comprised of the following elements: (1) a bill affordability component; (2) an arrearage management component; (3) a crisis intervention component; and (4) an energy efficiency and electrification component.
- The Universal Service Program should be income-tested, with the maximum income eligibility set at the Low-Income Measure (LIM).
- The bill affordability component should initially be established to provide a 50% discount on participant electricity and fuel oil bills. Discounts can be expanded to include additional fuels (e.g., natural gas, propane, wood).
- An arrearage management component should be directed toward customers of energy providers, with the cost of this component being shared by those providers in exchange for the business benefits generated by the program as a whole.
- Notwithstanding the bill affordability component, a crisis intervention component will be necessary to account for not only the level of income to households living in poverty, but the fragility of income of such households.

- Nova Scotia’s energy efficiency and electrification component should continue to expand upon previously agreed upon objectives (i.e., reaching all eligible households in ten years) and using previously agreed upon strategies.
- With the exception of the arrearage management component, the costs of the Universal Service Program should be borne by taxpayers rather than by ratepayers.

ELEMENT #1: A Bill Affordability Component.

The first critical component of a Universal Service Program is a bill affordability program. Through the affordability program component, the price of home energy is set at a level that will generate the greatest ability of low-income customers to make actual payments. Applying a discount to every bill has been found to be most effective in reducing problems associated with energy poverty. In the 2024 Nova Scotia “Energy Poverty Survey” this option was by far the most popular with people experiencing difficulty keeping their heat and electricity on. Nearly half supported this method of getting help with their bills.

A bill affordability program in Nova Scotia should incorporate the following fundamental components: (1) it should be directed to helping customers achieve an affordable Bill-to-Income Ratio for program participants; (2) it should seek to prevent unaffordable bills (and their consequences) rather than simply responding to unaffordable bills (and their consequences); (3) it should have a multi-fuel focus; (4) it should, with the exception noted further below, be provincially-funded through a government-funded trust.

Selecting a maximum income eligibility for receiving Universal Service Program discounts:

As discussed in detail above, while Canada has an official “poverty line” (the MBM), three primary measures are used in practice in Canada to identify who constitutes a “low-income” person or household: (1) the Low-Income Cut-Off (LICO); (2) the Market Basket Measure (MBM); and (3) the Low-Income Measure (LIM). Each of these metrics has commonly recognized advantages and disadvantages.

The use of LICO (after-tax) can be illustrated by reference to a four-person household.⁶² LICO for a four-person household would be: (1) \$28,200 for rural areas; (2) \$32,275 for communities with a population under 30,000; (3) \$36,005 for communities with a population between 30,000 and 99,999; and (4) \$36,459 for communities with a population between 100,000 and 499,999. Communities with populations exceeding 500,000 are not considered since Halifax, Nova

⁶² A four-person household is chosen because the “reference family” for MBM calculations is comprised of two adults and two children.

Scotia's largest community, does not have a population that large. To illustrate the applicability of LICO, therefore, the Table below shows the populations of Nova Scotia's largest communities (along with "rural" areas separately stated):

Community	2023 Population	Applicable LICO (4-person HH)
Halifax	422,130	\$36,459
Cape Breton	90,093	\$36,005
Lunenburg	24,510	\$32,275
East Hants	22,941	\$32,275
West Hants	15,430	\$32,275
Truro	12,549	\$32,275
Chester	9,919	\$32,275
Rural	---	\$28,200

In contrast to LICO, the measure of poverty using LIM is substantially higher in dollar terms. As described above, like LICO, LIM is differentiated by household size, but not by community size. One critique of LIM is that it is based on a national median income rather than on local median incomes. The currently effective LIM thresholds by household size are (for a household size up to six persons):

1-person	\$27,352
2-persons	\$38,682
3-persons	\$47,375
4-persons	\$54,704
5-persons	\$61,161
6-persons	\$66,998

As can be seen, for a household with four-persons, the LIM threshold is significantly higher than LICO is: (\$54,704 vs. either \$28,200, \$32,275, \$36,005, or \$36,459).

Finally, the MBMs in Nova Scotia are much closer to LIM than to LICO. MBM for "reference families" are published for five geographic areas in Nova Scotia: (1) rural; (2) population under

30,000; (3) population 30,000 to 99,999; (4) Halifax; and (5) Cape Breton. The Table below shows that 2022 MBMs for each of these geographic areas in Nova Scotia are somewhat lower than even the corresponding 4-person LIM (maximum MBM of \$52,439 in Halifax vs. 4-person LIM of \$54,704).

Nova Scotia: rural	\$48,476
Nova Scotia: population under 30,000	\$49,508
Nova Scotia: population 30,000 – 99,999	\$49,800
Halifax (Nova Scotia)	\$52,439
Cape Breton (Nova Scotia)	\$48,287

Using the LIM to establish income eligibility for a Nova Scotia Universal Service Program has the disadvantage of being based on a national metric. Using LIM has the advantage over MBM of differentiating income eligibility by household size. Given the expectation that home energy costs will also vary by household size, use of LIM rather than MBM is the recommended approach. The income eligibility threshold recommended for Nova Scotia is LIM.⁶⁴

Selecting a discount to achieve an Affordable Bill-to-Income Ratio:

A Nova Scotia bill affordability program component should be directed toward helping households achieve an affordable Bill-to-Income Ratio. Bill discount levels can be structured such that the resulting discounted bill –given average incomes and average usage–will represent an affordable percentage of income. As discussed above, the measure of “affordability” has been defined to be a bill at no more than 6% of household income.

A bill assistance discount to income-qualified households of 50% for both electricity and fuel oil would reasonably achieve an affordable Bill-to-Income Ratio in Nova Scotia. Using EfficiencyOne’s Energy Poverty Visualization Tool (discussed in more detail above, the base case analysis⁶⁵ found that 43% of Nova Scotia’s households were in energy poverty. When examined on an FSA-specific basis, the base case scenario finds—as demonstrated in the Table below—

⁶³ For the provinces, the “reference family” is comprised of two adults with two children.

⁶⁴ The selection of LIM would allow Nova Scotia to mirror the income-eligibility threshold used for the Ontario Electricity Support Program (OESP), discussed in detail below.

⁶⁵ The “base case” incorporated the following factors: (1) cost of electricity equal to \$0.172 per kWh; (2) cost of fuel oil equal to \$1.440 per litre; (3) cost of wood equal to \$392 per cord; (4) cost of propane equal to \$1.09 per litre; (5) cost of natural gas equal to \$24.65 gigajoule.

that this energy poverty is widespread throughout the province. With no interventions (i.e. the base case scenario), 19 of Nova Scotia's 77 FSAs have more than 50% of their households in energy poverty, while 71 have more than 25% of households in energy poverty. A full 75 of the 77 FSAs have more than 20% of their households in energy poverty.

Since an FSA may have a low percentage, but a high number, of households in energy poverty (or vice versa, a high percentage but low number), the Table similarly disaggregates the number of FSAs by the number of households in energy poverty. Eight (8) of Nova Scotia's 77 FSAs have more than 5,000 households in energy poverty under the base case scenario, while 40 have more than 1,500 and 63 have more than 500 households in energy poverty.

Percent of households in energy poverty	Number of FSAs by percent of households in energy poverty	Number of households in energy poverty	Number of FSAs by number of households in energy poverty
More than 50%	19	More than 500	63
More than 40%	46	More than 1,000	49
More than 30%	64	More than 1,500	40
More than 25%	71	More than 2,500	32
More than 20%	75	More than 3,000	25
		More than 4,000	15
		More than 5,000	8

Providing assistance equal to a 50% discount on electricity and fuel oil prices⁶⁶ substantially alleviates Nova Scotia's energy poverty, if applied to all households with energy bills over 6% of income. Given such discounts, rather than 43% of households experiencing energy poverty, only 8% of Nova Scotia's households would. The corresponding distribution of energy poverty among the province's FSAs given a 50% discount on both electricity and fuel oil is set forth in the Table below. Expanding the discount to other fuels would decrease the Energy Poverty rate even further.

⁶⁶ An electricity price of \$0.086 per kWh. A fuel oil price of \$0.720 per litre.

Only one (1) Nova Scotia FSA would have 25% or more of its households in energy poverty under the 50% discount scenario. Only four (rather than 75) would have more than 20% of their households in energy poverty. A similar reduction in the actual number of households (rather than in the percentage of households) can also be seen.

Percent of households in energy poverty	Number of FSAs by percent of households in energy poverty	Number of households in energy poverty	Number of FSAs by number of households in energy poverty
More than 50%	1	More than 500	28
More than 40%	1	More than 1,000	14
More than 30%	1	More than 1,500	1
More than 25%	1	More than 2,500	0
More than 20%	4	More than 3,000	0
		More than 4,000	0
		More than 5,000	0

Care must be taken in reviewing these impacts. The results of even a 50% discount will not be as robust as this data suggests. As discussed with respect to HARP below, these results are achieved only if two conditions are met. First, the results are achieved only if assistance is provided to all households in energy poverty. This assumption, in other words, is that 100% of those households in energy poverty participate and receive the discount, an outcome not likely to be achieved. In fact, three participation scenarios are identified in the development of program costs below, with the “high participation” scenario assuming a 70% participation rate.

Second, the results that have been identified above arise only if everyone in energy poverty falls into the population of income-eligible households, i.e., that energy poverty does not extend to households above the income thresholds. It is commonly accepted, however, that energy poverty is extending to households with increasingly higher incomes. Nonetheless, for cost and administrative purposes, income limits are proposed for the Universal Service Program. These limits, explained in detail below, reduce the eligible population to about 43,500 households or almost 25% of the 185,000 households that experience energy poverty. These are the households likely to be most severely affected by energy poverty.

Despite these cautions, it is important to understand what the 50% discount could achieve under ideal circumstances. The comparisons above are important to the extent that they allow comparisons between different programmatic responses. The 50% discount, by far, generates the greatest benefits for the dollars distributed.

Selecting an intake mechanism for a Nova Scotia Universal Service Program:

Providing sufficient “doorways” through which income-eligible households can enter the Universal Service Program is one of the most essential decisions to make in the implementation of the program. Two principles underlie the design of program intake: (1) the intake mechanism should not impose unreasonable administrative costs on program operators; and (2) the intake mechanism should maximize the opportunities for income-eligible households to receive benefits through the program.

The primary intake for Nova Scotia’s Universal Service Program should occur through the various Access Nova Scotia centers located throughout the province, and used for other assistance programs such as the existing HARP and HEAT programs, as well as the Senior Care Grant. In addition, other provincial agencies providing means-tested benefits should be allowed to enroll households in a Nova Scotia Universal Service Program. For example, the Department of Municipal Affairs and Housing, which enrolls income-eligible households to receive targeted housing benefits for both renters and homeowners should be enlisted as a partner in the intake process. Aside from provincial agencies, municipal agencies should be enlisted as partners as well. The Town of Bridgewater, for example, operates its “Energize Bridgewater” program.. Finally, intake sites should be expanded by enlisting non-government organizations as intake centers. Examples include, but are not limited to, the Salvation Army and the Antigonish Women’s Resource Centre.

One advantage of using a discount program is that eligibility for the Universal Service Program is a yes/no toggle. Either a household is income-eligible, or the household is not income-eligible. There are no shades of eligibility, such as might be the case if different discounts were offered given different income levels. Because of this, intake sites can utilize what is referred to as “Express Lane Eligibility.” This process allows a household to establish income-eligibility for the Universal Service Program by documenting their participation in a different program eligibility for which would be sufficient to establish eligibility for the Universal Service Program. Examples of such programs might include, but not be limited to, the receipt of Income Assistance from the Department of Community Services or the receipt of Guaranteed Income Supplement (GIS) of the Allow from Service Canada.

Even in the absence of the use of Express Lane Eligibility, income-eligibility can easily be determined by reference to the most recent Canada Revenue Agency Notice of Assessment (or “proof of income statement”).

In short, intake centers for the Nova Scotia Universal Service Program should be open to as broad a network of provincial, municipal and private organizations as possible.

In an ideal world, intake for the Universal Service Program would be automated to a high degree. In the United States, such automatic enrollment is common. For example, many state programs directed toward improving telecommunications affordability rely on an automated intake procedure for enrolling participants. In addition, virtually all participants in the New

Jersey electric/gas Universal Service Program (USP) are certified by the state's energy assistance agency. The rate discounts offered by Massachusetts gas and electric investor-owned utilities primarily enroll customers through an automated intake procedure. These gas and electric utilities provide electronic tapes of their residential customer base to the Department of Transitional Assistance (DTA), which then matches the tapes to participants in various public assistance programs. DTA then informs the utility of which customers are eligible for the utility rate discounts.⁶⁷ Automated intake would involve an electronic exchange of information between identified provincial agencies delivering means-tested assistance. In Nova Scotia, it could also involve an electronic exchange of information between the Universal Service Program and the Canada Revenue Agency. Such automated information exchanges should be pursued in the longer-term in support of the program.

Applying the Universal Service Program benefit:

While the Universal Service Program benefit recommended above is referred to as a "discount," the benefit would not be calculated as a reduction in per-unit costs by the energy vendors of program participants. Rather, at the time of application, the benefit calculation would involve the following steps: (1) the program applicant would provide the name of their electricity and (if applicable) fuel oil vendor; (2) the intake site would contact the listed vendor to determine whether the program applicant has been a customer of the vendor in the past; (3) if the customer has been a prior customer, the intake site would obtain the customer's two-year average consumption;⁶⁸ (4) the intake site would multiply the applicant's usage times an average province-wide per unit price for the fuel determined on an annual basis by the program (to determine a base bill); (5) that base bill would be adjusted for the specific vendor by multiplying the base bill by an adjustment equal to the average annual price of fuel for the vendor (collected at the beginning of each program year by the program)⁶⁹ divided by the provincial average to determine the adjusted-bill;⁷⁰ and (6) the adjusted bill is multiplied by 50% to determine the level of the discount to be provided.

⁶⁷ The agency need not identify precisely which program the household is participating in when it confirms household eligibility. The utility need not know, in other words, *why* the household is eligible so long as it knows that the household is eligible.

⁶⁸ If the customer has not been a prior customer, the intake site would use an average residential usage determined by the program, either for the province as a whole or for particular geographic regions of the province. Such estimates, for example, might be calculated by EfficiencyOne.

⁶⁹ If a vendor declined to provide any necessary information, the program applicant would have the choice to select a vendor that does provide the required information or to remain with the vendor and forego participation in the program.

⁷⁰ For example, if the provincial average electricity price is \$0.172/kWh and the vendor's price is \$0.190, the base bill would be multiplied by 1.10 (\$0.190/\$0.172). If the provincial average fuel price is \$1.440/litre and the vendor's price is \$1.750, the base bill would be multiplied by 1.22 (\$1.750 / \$1.44).

The Universal Service Program benefit is then provided as an electronic Direct Vendor Payment to the vendor (i.e., it is not provided as a payment to the participant, but is rather provided to the vendor). The vendor, in turn, applies the benefit to the participant's bill⁷¹ over the course of a program year.⁷²

Estimating the cost of a Nova Scotia Universal Service Program:

High level estimates of the cost of providing the recommended home energy discounts can be developed using existing information on the penetration of low-income households in Nova Scotia combined with home energy cost estimates provided through the EfficiencyOne Poverty Visualization Tool. The estimated cost of the Universal Service Program depends in part on the cost of energy at the beginning of any given program year along with the participation rate that is achieved for the program. Since Universal Service Program discounts are not modified during a program year in response to changes in energy costs, the factor that will most likely lead to variations in total program costs each year will be the program participation.

Developing a cost estimate for the Universal Service Program begins with an estimation of those who live in Nova Scotia with incomes that would make them eligible for the program. According to data released by the Nova Scotia Finance and Treasury Board in May 2023,⁷³ the distribution of income is that reflected in the Table below.

In Economic Families		Not In Economic Families	
Income range	Percent	Income range	Percent
Less than \$40,000	7.9%	Less than \$20,000	16.5%
\$40,000 - \$60,000	12.5%	\$20,000 - \$40,000	39.5%
		\$40,000 - \$60,000	24.1%

⁷¹ It would left to the discretion of the vendor on how such a credit would appear on a customer's bill. It is expected that it would be applied as a monthly lump sum credit rather than as a per unit of energy credit.

⁷² With a fuel oil provider, should the program participant change vendors in the middle of a program year, leaving a credit on their bill, the value of that credit is returned to the program. Benefits are not potable between energy vendors. While the same rule would apply to an electricity vendor, the likelihood of such a change in electricity vendors occurring is much less. This is an example, of various detailed program operating rules that would need to be developed once a program is adopted and in the process of being implemented. It is not the intent of this report to outline those detailed operating regulations.

⁷³ Nova Scotia Finance and Treasury Board (May 2023). Indicators of Prosperity, at 27.

Given those income distributions, the Finance and Treasury Board estimate that 9.1% of all persons over age 18 in Nova Scotia live in poverty (as defined by reference to the MBM). Given that the MBM poverty incomes in Nova Scotia are somewhat lower than the LIM incomes (at a 4-person household) (\$54,704 LIM vs. \$49,508 MBM for communities with population lower than 30,000 and vs. \$49,800 MBM for communities with population of 30,000 to 99,000), the estimate used for calculating the cost of a Universal Service Program is qualitatively adjusted upwards to 10% (i.e., a higher maximum income qualifier would yield more households in poverty).

Using this 10% poverty estimate, and the estimated number of Nova Scotia households provided by EfficiencyOne of 435,000, there are an estimated 43,500 households in Nova Scotia with income at or below LIM. Of those, according to EfficiencyOne, 170,530 households heat with fuel oil. Finally, EfficiencyOne estimates the home energy cost of households heating with electricity as being \$2,184 and of households heating with fuel oil as being \$3,880. Combining these data elements lead to an estimated cost of a Universal Service Program at a low participation rate (20%), medium participation rate (45%), and high participation rate (70%). Combined with a five percent (5%) administrative cost, the total costs of a Universal Service Program given these inputs, are:

- Low participation (20%): \$16,901,220
- Medium participation (45%): \$29,811,600
- High participation (70%): \$46,300,800

It is proposed that these costs be government-funded rather than being funded through riders attached to home energy prices.

Program costs can be reduced, of course, by reducing the amount of the discount. In reducing the extent of the proposed discount, however, the degree to which energy poverty is reduced is compromised as well. Adopting a 50% discount for fuel oil only, for example, would reduce the extent of energy poverty from 43% to only 26%, while providing a 50% discount for electricity only would reduce the energy poverty rate to only 27%. In contrast, adopting a 25% discount for electricity and fuel oil would reduce the energy poverty rate from the base case of 43% to 25% of Nova Scotia's population.

Periodic recertification of income eligibility for program participants:

Recertifying income for customers whose income cannot reasonably be determined to be non-variable over the long-term should occur on a bi-annual basis. Most participants will have their income recertified automatically through a contract with the appropriate provincial or federal agency. For those customers whose income cannot be recertified in this fashion, the customer will be notified at an appropriate time before his or her anniversary date of the need for recertification.

The Ontario Electricity Support Program (OESP) as a Practical Example:

The Ontario Electricity Support Program (OESP) provided energy relief for 212,000 low-income customers across the province in 2023.⁷⁴ New income guidelines adopted effective March 1, 2024, are expected to expand eligibility to 100,000 additional families. The new income eligibility guidelines for OESP reflect Canada’s 2020 Low-Income Measure (LIM).⁷⁵

Households eligible for OESP can receive monthly credits of \$35 to \$75 through the program depending on household size. Higher monthly credits of between \$52 and \$113 are available to customers who are indigenous, living with indigenous family member, using electric heating, or using electricity-intensive medical devices.

The OESP income thresholds that became effective March 1, 2024 are set forth in Table 31 below. OESP credits are applied direct to the bills of eligible customers.

	1	2	3	4	5	6	7+
\$38,000 or less	\$45	\$45	\$51	\$57	\$63	\$75	\$75
\$38,001 - \$54,000		\$40	\$45	\$51	\$57	\$63	\$75
\$54,001 - \$65,000			\$35	\$40	\$45	\$51	\$57
\$65,001 - \$71,000					\$35	\$40	\$45

⁷⁴ A detailed history of OESP can be obtained from the Ontario Energy Board’s “Report of the Board: Developing an Ontario Electricity Support Program,” December 22, 2014.

⁷⁵ Detailed information on OESP operations can be obtained from the Ontario Energy Board’s “OESP & LEAP Manual” (effective March 1, 2024).

Customers can apply for OESP at any time. There is no application deadline. Once enrolled, customers receive on-bill credits for two years before needing to re-enroll. Households where the account holder is either disabled or age 65 or older need to re-enroll only once every five years.

For entry into OESP, income is verified by the Ministry of Finance with the Canada Revenue Agency using a customer's Social Insurance Number (and the SINs of other income tax filers in the household). The CRA verifies income as declared on the household's tax return from the previous year or the year before. If a household believes that its tax return does not adequately reflect its current circumstances, income can be manually verified through a designated intake agency.

Customers can apply for OESP online at OntarioElectricitySupport.ca. In addition, a paper version of the application can be downloaded and mailed to the OESP Contact Centre. Paper applications will be mailed to a potential applicant upon request. Customers who are unable to apply online can contact designated intake agencies. A list of these agencies can be searched online at the OESP website. There are 173 intake agencies who can help customers apply for OESP. This assistance is free of charge.

The OESP is in addition to benefits that are available through the provincial Low-Income Energy Assistance Program. Through that program, customers can receive up to \$600 in emergency assistance if they are behind on their electricity or natural gas bills and face having their service disconnected.

All electricity distributors are required to offer OESP. The Ontario Energy Board selected a "Central Service Provider" to administer the OESP. The CSP receives all applications for the program and determines each applicant's eligibility (with the help of the Ministry of Finance and intake agencies as described above). The CSP also communicates eligibility determinations to applicants. The OESP is taxpayer funded, and its costs are recovered from provincial funds.

ELEMENT #2: An Arrearage Management Component

The second critical element of a Nova Scotia Universal Service Program involves arrearage management for NSPI customers and other vendors as appropriate. An arrearage management program component is designed to reduce pre-program arrears for NSPI customers to a manageable level over an extended period of time. Through an arrearage management program, a customer earns credits toward his or her preprogram arrears over a period of time, so long as the customer remains on the Universal Service Program and makes complete payments. By the end of the time period, the household's preprogram arrears will be reduced to \$0.

An arrearage management program component is necessary to help get low-income customers "even" so they have a chance at future success in making payments. It makes no difference to have current bills be affordable if the household is subject to service termination for past due bills incurred before the program began (known as pre-program arrears). In addition, it makes no sense to have current bills be affordable if the total bill is unaffordable due to payment obligations required to retire past arrears. It does not resolve the problem of unaffordability to address bills for current service if a customer has an arrears, incurred during a time when bills were unaffordable, that would push the customer's total payment into an unaffordable range. Affordability is driven by total bill payments, not simply by payments for current usage.

While some utilities simply forgive all arrears brought into a Universal Service Program at the time the program begins, most utilities operating an AMP provide arrearage management over an extended period of time. The recommendation here is that arrears should be retired over a two-year period subsequent to a customer's enrollment in the Universal Service Program. The shorter the time period the better. However, the time period has budget implications. Forgiving arrears over a three-year period imposes a lower annual cost to NSPI than forgiving the same amount of arrears over a two year period. Experience shows that reaching out four years, however, is too long. The participating customer does not see the "end of the tunnel" as happens with a two or three-year retirement period. A customer needs to be able to see the arrears decrease on a regular, substantial basis.

Arrears credits should be earned as complete bill payments are made, whether or not those payments are made in a timely fashion. The offer of a credit toward the customer's pre-existing arrears should not be viewed as an incentive to make a prompt bill payment. Customers should not need incentives to make payments. Rather, the philosophy of the program is as follows:

*we realize that you may not have made payments in the past when bills were unaffordable. We have agreed to address (and redress) that problem. Having done our part by making bills affordable, we need you to now do YOUR part by making your payments. Accordingly, we will match your arrearage payments as they are made; but if you do NOT make your payments, the consequence is not simply the loss of arrearage credits. The consequence is that you go into the collection cycle, as would anyone else who has received an affordable bill.*⁷⁶

Stated another way, from a policy perspective, we have learned that creating layer upon layer of incentives for payments clouds the fundamental underlying proposition. That proposition posits that, in recognition of the underlying unaffordable burden posed by utility bills at standard

⁷⁶ Consequently, there is no forgiveness of "in-program" arrears. Once a customer enters the Universal Service Program, nonpayment of bills for current service are met with standard collection practices.

rates, the low-income customer is allowed to take service under the low-income program. Given that public/utility response to unaffordability, customers then have the responsibility to make full payment of their bills irrespective of any further incentive.

A cost-sharing arrangement to pay for the arrearage management program should be considered by the government. To the extent that energy vendors, of any fuel type, can be found to achieve cost reductions as a result of the Universal Service Program, the government should consider the propriety of requesting those vendors to share some of those savings by helping to fund the arrearage management component. Given the financial benefits that may arise to energy vendors through the government-funded rate affordability program, it is appropriate for the government to design a cost-sharing arrangement.

ELEMENT #3: A Crisis Intervention Component

The third critical component of a Universal Service Program involves crisis intervention. The need for a crisis intervention program arises from three different attributes of lower-income households.

- First, one attribute of low-income households is their lack of cash assets to allow them to weather the storm of unexpected expenses or unexpected loss of income. Low-income households do not have the ability to withstand, for example, a significant expense associated with a family emergency, or the loss of income associated with such an emergency. Given such exigencies, there is a likelihood that some proportion of customers taking service under the Universal Service Program will have occasional exigencies that can be met through a crisis intervention program.
- Second, one attribute of a low-income household is that low wage workers tend to be hourly wage workers. The overwhelming majority of these workers lack paid leave. The need for either medical leave, or family care leave, in other words, leads directly to lost income when paid leave is not provided. The lack of paid leave time may directly affect the ability of a working poor customer to maintain payments on their monthly utility bill. A person working 35 hours a week on hourly wages may lose days of work simply due to a sick child missing school and requiring care, or due to a major snow storm. If no paid leave time exists for that employee, that sick child or major weather event translates into permanently lost wages.
- Third, low wage workers tend to have lower quality jobs, often marked by considerable income fluctuations due to the number of hours they are called upon to work. The number of lost hours, and thus the amount of lost wages, is often referred to as involuntary part-time employment. This fact of unstable income presents no commentary on the working poor individuals themselves. Rather it reflects the nature of work in which the working poor find themselves.

Given these attributes of the target population, the crisis component of the Universal Service Program provides a budget to provide crisis intervention assistance on an as-needed basis.

Crisis intervention assistance should not be based on income eligibility such as that established for the rate affordability assistance. Crisis intervention is as frequently triggered by unusual expenses as by persistently low-income. A senior citizen facing medical expenses, as well as a working poor household facing substantial automobile repair expenses, may be marginally capable of paying their monthly bills but for their unusual expenses. The agency or community-based organization administering crisis interventions should be provided the flexibility to distribute crisis intervention funding on an as-needed basis rather than be bound by income limitations. At a minimum, income-eligibility for the crisis intervention program component should not be limited to the same levels as the rate affordability and AMP program components.

Given this, assistance provided through the crisis intervention component should be on a limited-time basis. The crisis intervention is intended to help meet financial exigencies rather than to provide monthly rate affordability assistance to customers.

This report recommends a crisis fund equal to 10% of the total rate affordability assistance. These funds can best be distributed through the existing provincial crisis assistance program. In sum, five critical components of the crisis intervention component of a Universal Service Program are proposed above: (1) the crisis intervention program component should be funded at 10% of the total credits provided through the rate affordability program; (2) the crisis intervention component should not be based on the same income-eligibility as is proposed for the rate affordability program; (3) the crisis intervention component should provide administering agencies with the flexibility to distribute assistance on an as-needed emergency basis; (4) the crisis intervention component should be on a limited-time basis and not provided as an annual bill payment supplement; and (5) the crisis funding should be distributed through Nova Scotia's existing provincial crisis intervention programs.

ELEMENT #4: An Energy Efficiency and Electrification Component

In contrast to rate affordability assistance, energy efficiency programs targeted at the poor reduce bills and promote affordability by reducing consumption. As described further below, however, while investments in energy efficiency can be an effective tool to use in reducing low-income energy needs for some, they cannot resolve the affordability problems for all households.

Energy efficiency investments provide a long-term and sustainable solution to addressing the high costs of energy, and should be coupled with any supplemental distribution of fuel assistance. Energy efficiency provides continuing benefits year-in and year-out. Investments in

residential energy efficiency help deliver efficient end-uses to consumers. In both the medium- and long-term, energy efficiency will reduce the costs of the rate affordability program.

A multi-state study of affordability programs in the United States found that “every state that has adopted a home energy affordability program has incorporated an energy efficiency component into that affordability initiative.” The study found that “these [low-income efficiency] programs can effectively complement the impacts of affordability programs.”⁷⁷ The study reported that energy efficiency “programs can have the greatest overall impact if they target lower income households, households with vulnerable household members, and customers that are participating in a ratepayer-funded affordability program.”

The Nova Scotia program advanced in this report proposes just that: (1) to use energy efficiency to complement the impacts of the rate discount; and (2) to maximize the “overall impact” of the efficiency investments by targeting those investments to high energy-use program participants.

Nova Scotia should continue to fund the direct participation of low-income customers in energy efficiency programs in response to high and unaffordable home energy bills. This recommendation for continued funding is supported by two observations. On the one hand, unless specifically funded, low-income consumers are systematically excluded from having access to energy efficiency investments. In addition, low-income energy efficiency programs reduce the overall expenses of public utilities. Accordingly, there should be a mandated minimum amount of energy efficiency funding directed toward low-income customers.

Low-income energy efficiency programs should continue to deliver a full range of efficiency services. These services would include, but not be limited to, energy audits and air sealing, insulation, heating system replacement with high efficiency equipment, and appliance upgrades. Given the positive role that cost-effective energy efficiency can play in reducing utility costs, while at the same time helping to improve the affordability of home energy to low-income customers, the Nova Scotia policymakers should require efficiency programs as part of NSPI's response to unaffordable home energy. Currently NSPI funds low-income energy efficiency programs (the HomeWarming program) via its investment in demand-side management activities, overseen by the Nova Scotia Utility and Review Board.

⁷⁷Carroll, Colton and Berger (2007). *Ratepayer Funded Low-Income Energy Programs: Performance and Possibilities*, at 132, Apprise, Inc.: Princeton (NJ)..

The Limits of Energy Efficiency as an Affordability Strategy:

One key aspect of a low-income energy efficiency program in the language used above is that such a program “complements” or “supplements” the rate affordability assistance. The delivery of energy efficiency investments cannot, however, be the primary, let alone the exclusive, element of a Universal Service Program. The effectiveness of the role that energy efficiency can play in addressing home energy affordability is limited by several considerations:

- For many low-income customers, energy efficiency cannot completely relieve the energy poverty burden because unaffordability is driven by income to a higher degree than consumption. In some cases, even an extremely low energy consumption level yields a bill that imposes an unaffordable home energy burden on the household.
- For some low-income customers, energy efficiency cannot deliver affordable home energy service because the cost of energy is driven by factors that are beyond the ability of efficiency investments to control. Even a substantial reduction in energy consumption, in some cases, can leave annual energy bills at high levels.
- The immediate need for affordability assistance in Nova Scotia extends to tens of thousands of low-income households (or more) per year, a number significantly beyond the ability of an energy efficiency program to treat in a timely fashion.
- For some low-income customers, energy efficiency cannot deliver affordable home energy service because the unaffordability is driven in part by arrears. Even if efficiency services were to reduce future bills for current use to an affordable burden, the asked-to-pay amount of the customer can sometimes exceed the ability-to-pay due to the need to retire arrears.

The conclusion to be drawn from the above discussion is that low-income energy efficiency investments are an effective strategy that should be pursued, though are not the entire solution to relieving energy poverty burdens. The limitations simply indicate that investments in efficiency measures, while necessary and appropriate, cannot be the primary, let alone the exclusive, focus of an affordability program.

Determining Eligibility for Low-Income Efficiency Programs:

Determining the eligibility for participation in a low-income energy efficiency program has several components to it. On the one hand, eligibility should be determined based on income considerations. In addition, however, low-income efficiency programs should have a targeting component to them. An efficiency program directed toward low-income customers should be explicitly targeted to help advance the resolution of payment troubles and improve the affordability of home energy in addition to simply reducing home energy usage.

Basic eligibility for low-income energy efficiency programs funded through a Universal Service Program should be set at 135% of LICO. Use of LICO for income eligibility purposes was discussed in detail above with respect to the rate affordability program. Wherever an income eligibility line is drawn, however, there will be some households that have incomes marginally in excess of that line. It would thus also be appropriate to set aside a pre-determined proportion of low-income energy efficiency funding for households that have income marginally in excess of the income eligibility standard. A recommended 20% set-aside for households with income between 135% and 150% of LICO is recommended.

In addition to defining income eligibility, an equally important task is to define the population to which the low-income energy efficiency programs will be targeted even within the total eligible population. Maximizing benefits to all utility customers, whether through reduced traditional avoided costs or through the reduction of costs associated with low-income payment troubles, is dependent upon an appropriate targeting of the low-income program. Two primary alternative decision rules exist to guide targeting a low-income efficiency program: (1) to target those with the highest energy usage, believing that these households present the greatest potential for energy savings; or (2) to target those with the greatest payment problems, believing: (a) that payment problems and high usage are positively associated; and (b) that these households present the greatest potential for improved energy affordability.⁷⁸

To a certain extent, the difference between the two principles is artificial if one accepts the premise that energy efficiency measures can not only generate traditional avoided costs (in the case of electrical utilities), but can generate avoided costs associated with a reduction in payment troubles as well. It has become well-established over the years that payment troubles are often associated with higher-than-average utility consumption. By targeting customers with payment troubles, in other words, an electrical utility implicitly targets its high use customers as well. This appears to be true in Nova Scotia as well.

⁷⁸ Electric payment difficulties, of course, can be determined through records of the electric utility. Difficulties with obtaining or paying for bulk fuels would need to be determined through personal contact with the bulk fuel customers.

The Pennsylvania Public Utility Commission (PUC) has explicitly considered this tie-in between high usage and payment-troubles and the use of each for implementation of the Pennsylvania Low-Income Usage Reduction Program (LIURP). The Pennsylvania PUC found as follows:

...we would like to clarify the distinction between LIURP eligibility criteria and the prioritization criteria for the receipt of program services. LIURP eligibility criteria has evolved into a two-part requirement. First, income must be at or below 150% of the federal poverty guidelines. There is an exception to this rule. Up to 20% of the LIURP budget may be spent on customers with an income level in the range 150% to 200% of the federal poverty level.⁷⁹ Second, the LIURP experience over the past nine years has shown that high usage is the strongest predictor of high energy savings. Consequently, each of the major electric companies has established company specific minimum usage requirements for each of the three major job types for electric jobs: heating, water heating and baseload. The bottom line is that all income eligible customers do not have a usage profile that warrants the provision of LIURP services.

Prioritization for the receipt of program services is as follows. Most importantly, usage is the driver. Once again, we emphasize that in the actual delivery of LIURP services, each electric company has established minimum usage guidelines for each of the three electric job types. It is only after the usage requirement is met that the prioritization scheme is applied. The prioritization process follows two steps. First, among customers meeting the threshold for usage, participation is further prioritized from highest arrearage to no arrearage. Second, a further prioritization is done to further delineate equal usage and equal arrearage candidates. This is done by prioritizing from lowest to highest income.

* * *

The primary goal of LIURP is to achieve bill reduction through usage reduction. We have elaborated above that high usage is the best indicator for achieving this primary goal of LIURP. Another LIURP goal states that the reduction in energy bills should decrease the incidence and risk of customer payment delinquencies and the attendant utility costs associated with uncollectible accounts expense, collection costs and arrearage carrying costs. In view of this program goal, arrearage prioritization has been appropriately listed as the first prioritization among the highest users.⁸⁰

⁷⁹ The Federal Poverty Level is the U.S. equivalent to Canada's LICO.

⁸⁰ Pennsylvania Public Utility Commission, Re Guidelines for Universal Service and Energy Conservation Programs, No. M-00960890, 178 P.U.R.4 508 (July 11, 1997).

Nova Scotia should use the above-quoted Pennsylvania PUC language to guide its pursuit of low-income energy efficiency. An identical two-step process (involving: (1) eligibility-setting; and (2) priority-setting amongst eligible customers) should be adopted in Nova Scotia.

- Basic income eligibility should be set at 135 percent of LICO;
- Approval should be given for a modest set aside for customers with income marginally in excess of this income level;
- Prioritization should be directed toward the customers that are the highest users;
- Amongst equally situated high users, if additional prioritization is necessary and appropriate, priority should be given to high users with the highest arrears. This second prioritization, however, should only be implemented given equally high usage.

Establishing Funding Targets for Low-Income Energy Efficiency:

One of the key questions, perhaps the key question, that Nova Scotia must resolve in considering energy efficiency programs is the proper funding of the low-income component. As indicated earlier, Efficiency Canada reports that Nova Scotia is a leader in funding for low-income energy efficiency programs. A full analysis of low-income energy efficiency spending in Nova Scotia is beyond the scope of this report. However, general considerations for any jurisdiction are provided in this section, which should be used by Nova Scotia when considering future funding for its low-income energy efficiency programs. Conceptually, funding for low-income efficiency improvements should be the amount required to make energy efficiency programs accessible to low-income residential consumers. Where low-income consumers cannot access energy efficiency measures, Nova Scotia should spend additional funds to ensure that programs are fully accessible.⁸¹

Another general consideration is that Nova Scotia should reaffirm its long-term objective to be achieved through the expenditure of low-income efficiency funds. The low-income budget should be viewed as a means to an identified end. Establishing the budget in this fashion allows Nova Scotia to measure not merely its activities (e.g., how many dollars were spent; how many homes were treated), but also allows the province to measure its progress toward that objective. After measuring its progress, the province will further be able to determine what, if any, changes (programmatic or financial) should be made if appropriate progress is not realized.

⁸¹ Fully accessible means that no lost opportunities exist for cost-effective energy efficiency investments.

Nova Scotia should reaffirm its goal of treating the full range of low- and modest-income customers with bills above the Energy Poverty Threshold within a time-span of 10 years. Since articulating that objective, however, because of moderate income, high increases in energy costs, and new technologies (e.g. heat pumps), additional funding is now required above that anticipated at the time the objective was first articulated. The low- and modest-income efficiency budget should be sufficient to achieve this objective. Progress toward that goal should be continuously measured, with program and/or budget adjustments adopted if progress is inadequate.

A Separate Look at Electrification and Clean Energy Initiatives:

In addition to the traditional focus on reducing energy consumption through investments in energy efficiency measures, there is also a contemporary focus on reducing carbon emissions through investments in strategic electrification and other clean energy initiatives. A full analysis of the current situation in Nova Scotia, along with potential options and costs, is out of the scope of this report. However, it should be noted that there are currently significant incentives for income-eligible homes to switch from oil heating to high-efficiency heat pumps. Other electrification options exist and since these strategies continue to rapidly evolve in today's world, no specific electrification and clean energy proposal is advanced in this Universal Service Program proposal.

Having said that, it is nonetheless critical that low-income households not be left behind as the province continues to make clean energy investments, whether those investments are publicly or privately funded. The same barriers that impede low-income investment in efficiency strategies are found to impede low-income investment in clean energy strategies as well. Barriers that are either unique to the poor, or that disproportionately impede low-income clean energy investments, include (but are not limited to):

- **High initial capital costs:** The barrier posed by high initial capital costs is one of the primary barriers to low-income investment in clean energy strategies. The payback period for any particular clean energy measure –for example rooftop solar panels-- becomes irrelevant if the household does not have the investment capital with which to begin.⁸²
- **High implicit discount rates/payback periods:** Low-income households tend to have extremely high implicit discount rates (also sometimes known as hurdle rates or internal rates of return). In a report for the Electric Power Research Institute (EPRI), Cambridge Systematics found that the implicit discount rate for low-income

⁸² Current programming, which provides funding of up to \$30,000 for low- and moderate-income households to complete this upgrade, is designed with this barrier in mind. This funding, however, is insufficient to reach Nova Scotia's low- and moderate-income population.

investments in energy efficiency strategies ranged up to the 80-90 percent level.⁸³ For residential households in general, however, the hurdle rate for energy efficiency investments was 30 percent; that translates into a payback period of roughly three years. To the extent that a Nova Scotia program thus strives to bring a clean energy investment only within the 30 -percent range, it excludes by implication all households which have a higher hurdle rate. One entire category of excluded households consists of low-income households.

- **High proportion of low-income renters:** A disproportionate number of low-income households tend to live in rental dwellings. The most common barrier identified for renters is what is called the “split incentive.” Tenants have little or no incentive to improve their landlord’s property. They do not receive any of the increased value of the property and, in fact, may face rent hikes as a result of the improvements. An even more substantial barrier, however, is that tenants generally do not have dominion interest over their homes; they do not have the authority to make decisions about major energy-consuming systems.

Given these low-income barriers, when Nova Scotia invests in clean energy strategies, the province should establish and track specific, quantifiable, short- and long-term Key Performance Indicators (KPIs) that ensure that low-income households are not being left behind. The following KPIs are recommended for Nova Scotia clean energy initiatives. These are not based on a review of Nova Scotia’s current metrics or a deep dive into existing low-income energy efficiency programs, but rather are metrics that could be used by any jurisdiction:

1. **Outcome measured:** For energy efficiency investments, is Nova Scotia achieving the same savings in low-income homes as in non-low-income homes? Metric: Ratio of the percent of low-income energy savings per home to the percent of residential savings per home. A ratio of 1.0 is an indicator of equity.
2. **Outcome measured:** For energy efficiency investments, is Nova Scotia reaching a proportionate share of low-income homes with deep savings? Metric: Ratio of the sum of the average kWh or GJ saved per home times the number of low-income homes treated to the average kWh or GJ saved per home times the number of residential homes treated. A ratio equal to the percentage of income-eligible households amongst all households is an indicator of equity.
3. **Outcome measured:** For clean energy investments, is Nova Scotia achieving the same carbon reduction in low-income homes as in non-low-income homes? Metric: Ratio of the average carbon reduction in low-income homes to average carbon reductions in residential homes. A ratio of 1.0 is an indicator of equity.

⁸³ Cambridge Systematics (1988). Hurdle rates for energy efficiency by income, Cambridge Systematics: Cambridge (MA).

4. **Outcome measured:** For both energy efficiency and clean energy investments, is Nova Scotia generating a substantive improvement in low-income home energy burdens through a reduction in energy usage? In measuring the impacts on energy burdens, it would be unreasonable to establish an objective of using efficiency and clean energy funding to achieve an affordable burden for all treated households. Some households have high energy burdens not because of high energy use, but rather because of very low incomes. In these instances, achieving an affordable burden is not a function of energy efficiency standing alone, but rather a function of combining energy efficiency with bill assistance. The outcome desired here is an improvement in energy burdens. An energy burden reduced from 20% of income to 12% of income (an improvement even though the burden is still “unaffordable”) may be as important as an energy burden reduced from 9% of income to 5% of income.

Multiple advantages arise from the use of these outcome measurements. First, these measurements do not allow the low-income population to be treated with low-cost, but low-savings energy efficiency measures. The “inequity” in such treatments would routinely appear in Equity Ratios consistently less than 1.0. Second, these measurements can easily be modified to reflect particular interests of areas of inquiry. For example, one area of inquiry might involve a comparison not of low-income households to residential households, but rather of low-income households in “vulnerable” areas to low-income households generally.

Part 7. Some Concluding Observations

The unaffordability of home energy is a serious problem facing Nova Scotia today. At today's energy prices, more than four of every ten Nova Scotia households live in energy poverty. As a result, households have difficulty in heating their homes in cold weather, and cooling their homes in hot weather. As climate change increases extreme weather events, both hot and cold, the danger posed to those in energy poverty becomes ever more acute.

Even when households make their payments toward home energy bills, in full and on-time, it cannot necessarily be said that the bills being paid are affordable. The paid-but-unaffordable bill is a real phenomenon. The lived experience facing Nova Scotia households in energy poverty finds that these households make terrible tradeoffs in order to pay their home energy bills. Some reduce food consumption, while others forego necessary medical and dental care. Some take their prescription medications at doses less than those doses which are prescribed.

The quality of housing is affected also. Unaffordable home energy bills lead Nova Scotia residents to reduce the temperature in their homes to unsafe or unhealthy levels. Many households seek to reduce heating bills to be closer to their budgets by shutting off parts of their home so they need heat only a few rooms rather than their entire homes. Some even entirely shutoff their primary heating so they can live in a room heated only by the household's oven.

At the same time quality of life for households in energy poverty deteriorates, so, too, does their economic ability to improve their inability-to-pay decline as well. Financial stress at home has been found to lead to missed days of work by those who are employed, yielding permanently lost wages to those who are hourly employees. Households forced to move in search of more affordable bills must pay for the cost of the housing search as well as the cost of transitioning from one job to another should the move involve a change in communities.

At the same time, the very fact that households face unaffordable home energy bills causes those utility bills to increase. Many households in energy poverty are faced with demands for cash security deposits to guarantee payment. Other households paying late, or not at all, incur monthly "late payment charges" as a type of "interest" on their unpaid balances. Even customers who agree to retire an unpaid balance, that they concede they owe, through extended payment plans simply find that they have added an installment payment for the unpaid bill on top of the bill for current service the unaffordability of which was the cause of the unpaid bill in the first place.

In Nova Scotia, in particular, the problem of home energy unaffordability is getting worse, month-by-month, year-by-year. A review of historical changes in home energy prices finds that those prices are spiraling upward at a rate that far exceeds any upward movement in income.

In short, low-income households in Nova Scotia are losing the war against unaffordable home energy bills.

Nova Scotia should not fool itself. The price tag of a Universal Service Program will not be cheap. But, failing to respond when more than forty percent of households live in energy poverty is expensive also. The cost of inaction comes not merely in the form of dollars, but comes also in the form of poorer health outcomes, reduced economic activity, increased housing instability, and the loss or reduction of essential household energy services. One cost of energy poverty arises to Nova Scotia as households find themselves to be frequently mobile, either in response to nonpayment disconnections, or in a never-ending effort to find housing with more affordable bills. This frequent mobility leads to poor educational outcomes as young students switch school districts, which, in turn, contributes to the perpetuation of the poverty cycle from one generation to the next.

Imagine a different world. Given sufficient political wherewithal and leadership, Nova Scotia could adopt a Universal Service Program that would make a difference in the province. As proposed, a bill affordability component of such a Universal Service Program would address the unaffordability of current bills for home energy service on a going-forward basis for low income households. An arrearage management program component would give households a fresh start from the crippling debt incurred when bills were unaffordable in the past. A crisis intervention program component would provide a safety net when the exigencies of life –be they unexpected expenses such as health care crises, or the unexpected loss or decrease in income due to illness or injury–gives meaning to the “fragility” of incomes. Energy efficiency investments provide reductions in energy poverty year-in and year-out by reducing bills through reduced consumption.

In many ways, Nova Scotia is lucky. Numerous examples exist of programs that have been successfully adopted in other jurisdictions from which Nova Scotia can draw for precedent. These successful programs can provide models which Nova Scotia can then use to design a made-in-Nova Scotia response such as the Universal Service Program recommended in this report.

The time is now. The harms of inaction have been well-documented. The benefits of a well-designed Universal Service Program cannot be denied. A path forward has been identified and mapped out.

A Nova Scotia Universal Service Program should be adopted and implemented with all due speed.

Appendix A:
Base Case Scenario: Energy Poverty

**EfficiencyOne's Energy Poverty
Visualization Tool**

CODE	Nearest Location to FSA Code	Estimated # of Homes	% of Homes in Energy Poverty	Homes in Energy Poverty	Est. Average Annual Home Energy Costs (ALL)	Median Household Income (After Tax)	Energy Poverty Threshold Amount	Energy Poverty Threshold %
B3S	Halifax West	5,858	14%	842	\$2,281	\$53,833	\$3,230	6.00%
B3G	Eastern Passage	3,947	17%	677	\$3,112	\$66,263	\$3,976	6.00%
B2V	Dartmouth Morris Lake	2,929	23%	684	\$4,148	\$79,446	\$4,767	6.00%
B4E	Lower Sackville West	6,130	23%	1,434	\$3,443	\$69,262	\$4,156	6.00%
B4B	Bedford Northwest	2,543	24%	609	\$5,133	\$95,796	\$5,748	6.00%
B3Z	Tantallon	4,170	25%	1,029	\$4,416	\$82,804	\$4,968	6.00%
B3T	Lakeside	5,772	25%	1,456	\$3,679	\$71,386	\$4,283	6.00%
B3J	Halifax Mid-Harbour Nova Scotia Provincial Government	5,754	26%	1,482	\$1,848	\$42,563	\$2,554	6.00%
B4C	Lower Sackville North	1,615	27%	441	\$3,954	\$74,581	\$4,475	6.00%
B3M	Halifax Bedford Basin	15,948	28%	4,413	\$2,497	\$51,631	\$3,098	6.00%
B2S	Lantz	2,010	28%	567	\$3,710	\$71,251	\$4,275	6.00%
B3V	Harrietsfield	2,148	29%	614	\$3,642	\$69,095	\$4,146	6.00%
B3P	Halifax North West Arm	4,737	29%	1,364	\$3,018	\$58,083	\$3,485	6.00%
B3K	Halifax Upper Harbour	12,449	31%	3,868	\$2,334	\$48,520	\$2,911	6.00%
B2T	Enfield	4,492	31%	1,404	\$4,527	\$81,805	\$4,908	6.00%
B4A	Bedford Southeast	5,262	32%	1,684	\$3,765	\$69,970	\$4,198	6.00%
B2W	Dartmouth East Central	11,643	32%	3,771	\$3,485	\$65,919	\$3,955	6.00%
B3E	Porters Lake	2,794	32%	905	\$3,561	\$66,726	\$4,004	6.00%

CODE	Nearest Location to FSA Code	Estimated # of Homes	% of Homes in Energy Poverty	Homes in Energy Poverty	Est. Average Annual Home Energy Costs (ALL)	Median Household Income (After Tax)	Energy Poverty Threshold Amount	Energy Poverty Threshold %
B4C	Lower Sackville South	7,018	33%	2,287	\$3,190	\$60,927	\$3,656	6.00%
B1X	Big Bras d'Or	689	33%	230	\$3,144	\$59,466	\$3,568	6.00%
B2R	Waverley	658	34%	222	\$4,669	\$83,184	\$4,991	6.00%
B3H	Halifax Lower Harbour	10,438	35%	3,661	\$2,408	\$47,639	\$2,858	6.00%
B3N	Spryfield	6,564	35%	2,317	\$2,914	\$55,100	\$3,306	6.00%
B4R	Coldbrook	1,186	36%	424	\$3,359	\$61,548	\$3,693	6.00%
B2X	Dartmouth North Central	4,533	37%	1,674	\$3,622	\$65,029	\$3,902	6.00%
B2Z	Dartmouth East	3,128	37%	1,170	\$3,761	\$67,159	\$4,030	6.00%
B1T	Christmas Island	403	37%	151	\$2,744	\$51,528	\$3,092	6.00%
B2G	Antigonish	4,868	38%	1,844	\$3,069	\$56,149	\$3,369	6.00%
B4P	Wolfville	4,353	38%	1,662	\$2,767	\$51,450	\$3,087	6.00%
B2E	Loch Lomond	117	38%	45	\$1,949	\$38,313	\$2,299	6.00%
B1J	East Bay	1,021	40%	404	\$3,117	\$55,735	\$3,344	6.00%
B1K	Marion Bridge	2,189	40%	882	\$3,160	\$56,696	\$3,402	6.00%
B2Y	Dartmouth South Central	8,057	41%	3,289	\$2,787	\$49,618	\$2,977	6.00%
B2C	Iona	292	41%	121	\$2,989	\$53,438	\$3,206	6.00%
B4V	Bridgewater	9,519	42%	3,997	\$2,786	\$48,677	\$2,921	6.00%
B1L	Sydney Southwest	2,136	43%	908	\$3,571	\$61,572	\$3,694	6.00%
B6L	Truro	4,919	43%	2,121	\$3,416	\$59,465	\$3,568	6.00%

CODE	Nearest Location to FSA Code	Estimated # of Homes	% of Homes in Energy Poverty	Homes in Energy Poverty	Est. Average Annual Home Energy Costs (ALL)	Median Household Income (After Tax)	Energy Poverty Threshold Amount	Energy Poverty Threshold %
B0J	Mainland East Shore (Lunenburg)	21,331	43%	9,220	\$2,929	\$50,985	\$3,059	6.00%
B0R	West Lunenburg County (New Germany)	4,293	43%	1,861	\$2,741	\$47,837	\$2,870	6.00%
B0N	Hants County (Shubenacadie)	19,228	44%	8,515	\$3,124	\$53,239	\$3,194	6.00%
B1M	Sydney East	560	44%	248	\$3,420	\$58,942	\$3,537	6.00%
B1Y	Alder Point	2,755	45%	1,229	\$3,192	\$54,898	\$3,294	6.00%
B0P	Kings County (Kingston)	16,920	45%	7,557	\$3,180	\$53,991	\$3,239	6.00%
B3A	Dartmouth Southwest	12,139	46%	5,592	\$2,501	\$41,967	\$2,518	6.00%
B0T	Queens County (Shelburne)	9,910	46%	4,571	\$2,630	\$43,769	\$2,626	6.00%
B0C	North Victoria County (Dingwall)	1,973	47%	929	\$2,881	\$48,701	\$2,922	6.00%
B0K	Southern Northumberland Strait (Pictou)	20,554	47%	9,721	\$2,998	\$49,681	\$2,981	6.00%
B4N	Kentville	8,114	47%	3,840	\$2,917	\$47,976	\$2,879	6.00%
B2J	Fourchu	111	48%	53	\$2,662	\$46,061	\$2,764	6.00%
B1C	Louisbourg	989	48%	473	\$3,317	\$55,525	\$3,331	6.00%
B1R	Sydney West	1,969	48%	951	\$3,595	\$60,164	\$3,610	6.00%
B2N	Truro	9,989	48%	4,822	\$2,705	\$43,325	\$2,599	6.00%
B0E	West Cape Breton Island (Baddeck)	15,936	48%	7,719	\$3,030	\$49,531	\$2,972	6.00%
B0W	Southwest Mainland (Weymouth)	13,925	48%	6,745	\$3,079	\$50,271	\$3,016	6.00%

CODE	Nearest Location to FSA Code	Estimated # of Homes	% of Homes in Energy Poverty	Homes in Energy Poverty	Est. Average Annual Home Energy Costs (ALL)	Median Household Income (After Tax)	Energy Poverty Threshold Amount	Energy Poverty Threshold %
B9A	Port Hawkesbury	2,108	49%	1,023	\$3,242	\$52,891	\$3,173	6.00%
B3L	Halifax Central	7,816	49%	3,804	\$3,231	\$51,875	\$3,113	6.00%
B2H	New Glasgow	6,925	50%	3,436	\$3,181	\$50,920	\$3,055	6.00%
B0L	Isthmus of Chignecto (River Hébert)	1,624	50%	811	\$2,880	\$46,419	\$2,785	6.00%
B4H	Amherst	7,026	50%	3,527	\$3,005	\$48,365	\$2,902	6.00%
B0M	Cobequid Bay north shore (Springhill)	10,144	50%	5,093	\$2,984	\$47,808	\$2,868	6.00%
B5A	Yarmouth	8,337	51%	4,258	\$2,819	\$43,730	\$2,624	6.00%
B0V	Digby Neck (Digby)	2,899	52%	1,500	\$2,708	\$41,204	\$2,472	6.00%
B0H	Canso region (Havre Boucher)	6,231	52%	3,229	\$2,902	\$46,374	\$2,782	6.00%
B1S	Sydney Central	3,984	53%	2,100	\$3,199	\$50,745	\$3,045	6.00%
B0S	West Annapolis County (Middleton)	9,027	53%	4,770	\$2,784	\$42,159	\$2,530	6.00%
B3B	Dartmouth Northwest	707	56%	398	\$3,401	\$53,616	\$3,217	6.00%
B2A	North Sydney South Central	3,770	57%	2,131	\$3,032	\$45,601	\$2,736	6.00%
B1B	Port Morien	753	57%	431	\$3,148	\$47,455	\$2,847	6.00%
B1E	Reserve Mines	802	59%	476	\$3,155	\$46,069	\$2,764	6.00%
B1P	Sydney North Central	6,752	61%	4,149	\$3,011	\$40,491	\$2,429	6.00%
B1V	North Sydney North	2,865	62%	1,772	\$3,053	\$42,600	\$2,556	6.00%
B1A	Glace Bay	7,292	63%	4,627	\$3,198	\$43,329	\$2,600	6.00%

CODE	Nearest Location to FSA Code	Estimated # of Homes	% of Homes in Energy Poverty	Homes in Energy Poverty	Est. Average Annual Home Energy Costs (ALL)	Median Household Income (After Tax)	Energy Poverty Threshold Amount	Energy Poverty Threshold %
B3R	Halifax South	3,943	65%	2,560	\$2,832	\$38,930	\$2,336	6.00%
B1N	Sydney North	2,722	67%	1,819	\$3,252	\$42,290	\$2,537	6.00%
B1H	New Waterford	4,438	67%	2,983	\$3,327	\$43,621	\$2,617	6.00%
B1G	Dominion	966	68%	661	\$3,164	\$40,311	\$2,419	6.00%
B1W	Eskasoni	884	87%	767	\$3,271	\$25,069	\$1,504	6.00%
TOTAL	Nova Scotia	435,000	43%	185,024	\$3,032	\$52,547	\$3,153	6.00%

THE NOVA SCOTIA ENERGY POVERTY TASK FORCE PARTICIPANTS

Affordable Energy Coalition

Clean Foundation

Consumer Advocate

Ecology Action Centre

Efficiency Nova Scotia

Government of Nova Scotia

Department of Community Services
Department of Natural Resources & Renewables
Department of Municipal Affairs & Housing

Kate Ervine - Saint Mary's University

Nova Scotia Oil Heat Association

Nova Scotia Power Inc.

Society of Saint Vincent de Paul

Town of Bridgewater

THANKS TO THE FUNDERS OF OUR WORK

A Way Forward:

Fisher, Sheehan & Colton

EfficiencyOne

Ivey Foundation

Affordable Energy Coalition

Nova Scotia Action Coalition on Community Well Being

The Energy Poverty Survey:

Nova Scotia Power Incorporated

FOR FURTHER INQUIRIES PLEASE CONTACT:

Energy Poverty Task Force,
katharine.turner@ecologyaction.ca
& gifford.brian@outlook.com