ECOLOGY ACTION CENTRE RECOMMENDATIONS FOR NOVA SCOTIA ENERGY POLICY

SOLVING NOVA SCOTIA'S ELECTRICITY PRICING PROBLEM:

# Energy Affordability vs Rising Electricity Prices

08·2013

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# Introduction

Nova Scotians are angry about the increases in electricity rates from NSPI over the last several years. Electricity rates increased by almost 58%[1] from 2001 to 2012. Most of these increases occurred before 2009, but the latest rounds have incensed Nova Scotians more than ever as stories of Emera's record profits and million dollar salaries for top executives along with requests for annual rate increases make them particularly galling.

The controversy misses the real underlying issue and it threatens to de-rail significant progress in reducing Green House Gas emissions and other pollutants. It threatens to return Nova Scotia to an old way of thinking that prevents innovation and environmental progress. We must change this way of thinking to embrace a healthier, more affordable, more innovative and more sustainable future.

Nova Scotians have been gripped by cycles of public anger about energy prices for decades. But real energy affordability is about energy costs compared to income and not energy prices. This reality is very well described in "Energy Cost Politics and the Environment in NS" written by former EAC staff member Brendan Haley in 2010 for the Canadian Centre for Policy Alternatives. Haley explains: ***"... energy prices are only one component of consumer energy costs. Our energy bills are determined by both price and how much energy we use; including the energy we waste."*** He further writes: ***"Energy bills themselves only become unmanageable when they are too high relative to the income of a household or business."***

While the increase in electrical prices has caused widespread concern, low income Nova Scotians who pay more than 3% of their income on electricity (or 6% if they heat their homes electrically) are most severely affected. They are most likely to face the stark choice of heating or eating, medications or lights. This is also true for Nova Scotians who heat with oil the price of which has gone up even faster than the price of electricity. Any measures to address the price of electricity must change the conversation to look at energy costs instead – how much our bills are instead of what the price is. They must also address how those costs affect people with different incomes. They must address the right to energy cost security - the ability of every Nova Scotian to secure energy required for food preparation, warmth, hot water and light.

# Context

From 2001 to 2009 electricity rates increased by 36%; the average weekly salary in Nova Scotia went up by 27%; general inflation increased by almost 19%; and fuel oil prices were up by over 30%. By 2010, oil prices had gone up faster than electricity and by 2012, the increase in electricity prices since 2001 was 58% but the increase in fuel oil prices was 90%.[2]

| | Information from Nova Scotia Power Inc. | | NSPI info plus HST changes | | | | Information from Statistics Canada – all figures for Nova Scotia | | | |
|---|---|---|---|---|---|---|---|---|---|---|
| | **RATES IN CENTS/KWH** INCL. ENERGY EFFICIENCY CHARGE & FUEL ADJUSTMENT (FAM) | **% CHANGE – RATES SINCE 2001** (INCL. EEC, FAM & BASE CHARGE) | **AVERAGE ANNUAL COSTS** INCL. ENERGY EFFICIENCY CHARGE & FUEL ADJUSTMENT (FAM) & HST + BASE CHARGE | **CHANGE – COSTS** INCL. HST SINCE 2001 | **CHANGE – COSTS** INCL. HST SINCE 2009 | **CHANGE – MONTHLY COSTS** INCL. HST SINCE 2009 | **AVERAGE PRICE OF FUEL OIL** IN JAN IN CENTS/LITRE | **CHANGE – FUEL PRICES** SINCE 2001 | **AVERAGE WEEKLY SALARY** | **CHANGE – WEEKLY SALARY** SINCE 2001 |
| **2001** | 8.35 | | $1,078 | | | | 59.2 | | $570 | |
| **2009** | 11.796 | 36% | $1,405 | 30% | | | 77.3 | 30.6% | $723 | 26.8% |
| **2010** | 11.805 | 36% | $1,340 | 24% | -4.6% | -$5.40 | 86.3 | 45.8% | $744 | 30.4% |
| **2012** | 13.923 | 58% | $1,555 | 44% | 10.6% | $12.43 | 112.9 | 90.7% | $773 | 35.6% |
| **2014** | 14.824 | 68% | $1,647 | 53% | 17.2% | $20.10 | NA | NA | NA | NA |

While electricity rates have increased faster than inflation and income those increases are not nearly as high as increases in the cost of oil, which is the most common fuel Nova Scotians use to heat their homes. About 30% of Nova Scotians heat with electricity, while over 60% heat with oil. The main reason for rising electricity costs has been the same as for oil heat: the cost of fossil fuels has gone up dramatically.

# The central problem: Heat or eat[3]

There is a group of Nova Scotians who really suffer when energy prices increase. Rising prices for electricity and other energy force some citizens to choose between necessities – food, clothing, rent or electricity. They must sometimes choose to "heat or eat" or to buy clothing for their children or keep the lights on. Those who are unemployed or living on social assistance, the working poor, visible minorities and low income seniors on fixed incomes are vulnerable.

***"How are people to live, pay bills and keep food in our children's stomachs when the power bills have risen more than the cost of living in the past 5 years." "How much money do you need? There are people who can't afford heat, food, medication, etc...It is one or the other."*** These are quotes from some of the 31,000 plus Nova Scotians on the petition to "Deny Nova Scotia Power a Rate Increase in 2013" and its related Facebook page.

## The additional problem of collections and arrears management

Low income households are much more likely to get behind in their payments, have their electricity disconnected and have to pay large deposits to have it re-connected. This is for the simple reason that they cannot afford the cost of electricity. The extra penalties and unrealistic repayment plans that result only make their unaffordable energy burden that much more difficult to bear.

Disconnection as well as choosing between paying for electricity or other necessities are the stark consequences of energy insecurity.

## The scope of energy insecurity

Electricity is a basic necessity for Nova Scotians. It is required for lights, cooking, and refrigeration. Roughly 30% of Nova Scotian households use electricity as their main source of heat.[4] A higher proportion of low income households probably use electric heat although there are no statistics verifying this. Nova Scotians have a right to electricity that is entwined in their right to housing and food. Another way to put this is that they have the right to energy security.

A household's energy burden is the percent of income paid for energy. Anti-poverty advocates consider electricity is unaffordable when the energy burden is over 3% for electricity excluding heat and 6% for an electrically heated "all-electric" home. When a low income household spends over 3% of their income for electricity or 6% if they use electric heat they are often forced to choose between heat and lights and other necessities like food.[5]

Statistics Canada publishes the average electrical bill by income quintile. There are no figures for the average bill for base load electricity vs. bills that also cover electric heat. As a rough estimate, in Nova Scotia electric heat costs about as much as baseload electricity (all other home electricity uses). The bill for an all-electric home (i.e. one that is heated with electricity) is about double the bill for a home that is not electrically heated. Since 30% of NS homes use electric heat figure, an average bill can be estimated for both baseload and electric heat.

In 2010, a household earning $32,000 per year or more could afford the average electricity bill paid by households in the 2 lowest quintiles at 3%/6% of income. There were approximately 124,800 households that earned this much or less. This was about 30% of NS households.[6] This is a rough approximation of the number of households that could face the dilemma of choosing between heat and food. The actual number of households in trouble would be lower

because many of these households would have energy costs lower than the average and below 3%/6% of their income. However, since 2010 there would also be increased numbers due to electricity rate increases.

There are some households that are more vulnerable to energy insecurity than others. In 2010,there were about 76,200 Nova Scotian households that were at or below pre-tax Low Income Cut Offs, a definition of poverty. LICO sensibly takes into account family size and community size.[7] They include households that are especially vulnerable, such as most First Nations and African Canadian citizens , people with disabilities and households relying on income assistance.

Over 28,500 households relied on social assistance in October 2012. The portion of social assistance that covers electricity costs is a shelter allowance, a maximum amount available to cover rent and electricity and heat. Shelter allowances have only increased twice since 2002 and there has been no change since 2006. Meanwhile, between 2006 and 2012 average shelter costs in Nova Scotia have gone up by over 16% and electricity prices have gone up by almost 37% in that period and are going up another 6% in 2013 and 2014. Shelter allowances were already too low in 2006 but 7 years later they are much worse.[8]

# Programs that already exist and action now under negotiation

1 **HEATING ASSISTANCE REBATE PROGRAM (HARP):** This provincial program provides assistance to low and modest income Nova Scotians, totaling approximately 50,000 homes in 2010-11 and 2011-12. This is about 30% of eligible households.[9] It is restricted to home heating costs (i.e. oil, wood, electric heat, gas) and offers a single rebate of up to $200. Single persons with incomes of less than $27,000 and families with incomes of less than $42,000, as well as Nova Scotians receiving income assistance or Guaranteed Income Supplement, are eligible to apply. All must have paid some form of heating bill to qualify for the rebate. This program was budgeted at about $15 million per year in 2009-10 and 2010-11 but only about $11 million was actually given out each of those years.[10] It is budgeted at $12.4 million for 2013-14.[11]

2 **GOOD NEIGHBOUR ENERGY FUND:** This fund is administered by the Salvation Army. It provides emergency assistance for heating bills during the months of January to April to financially eligible households, to a maximum of $350 once every 2 years. It assisted approximately 1,400 households in 2010. NSPI employees and customers contribute money through donations to this fund (about $100,000/year) and the province contributed $800,000 in 2011-12.

3 **YOUR ENERGY REBATE PROGRAM (YERP):** This is by far the largest energy subsidy by the provincial government but it is not targeted to those in most need of help. It is a rebate of the provincial portion of the HST (10%) that is provided to every household that buys electricity or fuel to heat their homes. The average is about $240/year for electricity and heat. This cost about $88 million in 2011-12 and was forecast to cost $104 million in 2013-14. Low income households benefit like everyone else,[12] but it primarily benefits households that are not low income.

**COMBINED IMPACT OF GRANTS AND REBATES:** The combined total of the 3 grant/rebate programs described above would result in assistance to low income households of up to $440 every year and up to $790 every 2nd year.

4 **COMMUNITY SERVICE LOANS:** In addition, the Department of Community Services contributes to electricity bills in another way. On an annual basis, DCS pays NSPI directly upwards of $800,000 to keep the lights on in households who rely on income assistance. However, these funds are considered to be a loan not a grant to the income assistance recipient, and they are recovered month by month, through "overpayment" deductions from income assistance cheques, thus diminishing further the ability of low income households to meet their housing costs.[13]

5 **EFFICIENCY NS CORPORATION:** [revised January 2014] Efficiency NS spent just under $61 million on programs in 2012. Most of the funding comes from a fee on electrical bills – $43.6 million in 2012. The province provided another $17 million in funding for energy efficiency and conservation of non-electric heat sources in 2012.

In 2013, $46 million in program expenditures to reduce electricity use were expected to result in $103 million in lifetime savings for the electricity system. 2012 actions resulted in over $12 million per year in direct savings for participants for all types of energy. Household savings will continue for years.

In 2012 Efficiency NS spent over 25% of its residential electricity reduction budget ($5.2 million) and over 40% of the province's funds for saving non electric types of energy ($6.3 million) on programs for low income households. This is at a higher level than most other jurisdictions. Their program for low income

*[note – contact EAC for sources for the revised figures about Efficiency NS on this page]*

home-owners pays 100% of the costs for deep conservation retrofits like insulation. They also have a "direct install" program that installs efficient lighting and water saving devices for homeowners or tenants including those with low to modest incomes at no cost.

Most low income Nova Scotians are renters. Efficiency NS' programs for landlords are limited. They range from the "direct install" program to custom assistance for major changes in appliances, lighting or replacing baseboard electric heating with ductless air to air heat exchangers. The larger scale custom program has had almost no takers among landlords in the last year. ENSC is working on changes to make it more useful to landlords. A good feature of the program is that ENSC and the province are monitoring the effects of assistance in later years to ensure that savings contribute to lower rents for tenants over time.[14] It would be beneficial to expand this program and market it vigorously to landlords with low income tenants.

6 **REGULATORY REFORM UNDER NEGOTIATION:** NSPI and the Affordable Energy Coalition in 2012 agreed to work cooperatively to examine problems related to arrears, reconnection fees and so on to establish more realistic, fairer terms in these administrative matters. They are expected to report in 2013.

# A Note about electric heat and its alternatives

Electricity price hikes are a bigger problem for some Nova Scotians than for others. Households that use electricity for their heat are hit harder because electric heat requires so much electricity. However, over 60% of Nova Scotians heat with oil and prices for oil heating fuel have risen much more rapidly than the price for electric heat – by 90% compared to 68% from 2001 to 2012.[15] In 2010 Nova Scotians spent more to heat their homes with wood or oil than they did with electricity – about $1,093 according to Statistics Canada compared to a rough estimate of $1,004 for electric heat, on average.[16] The difference between oil and electricity has only increased considerably since 2010.

NSPI does not calculate the average cost for customers who use electricity for heat and those who don't. They calculate one average for everyone. The average bill in 2010 was $$1,305 according to Statistics Canada ($1,263 according to NSPI). As a rough estimate, households that heat with electric heat spend about twice as much on electricity as those without. Approximately 30% of Nova Scotian households use electricity to heat their homes. For households that don't heat with electricity, using Stats Canada figures, this would make the average electrical bill in 2010 an estimated $971/year or $81/month compared to $727 in 2001. For those that heat with electricity the estimated average cost was about $1,942/year or $162/month compared to $1,454 in 2001.[17]

NSPI estimates that approximately 7.5% heat with wood and over 60% heat with oil. The actual number of households that use wood primarily could be higher but hidden due to under-reporting based on insurance and other issues. Natural gas is a much cheaper alternative these days, but at present it is only available on a limited basis and the cost to convert is expensive – only about 2.5% of N.S. households use it. Nova Scotians who heat with wood and especially with natural gas are the ones who are genuinely saving compared with both oil and electricity.

Technologies like electro thermal storage (ETS) heaters and ductless air to air heat exchangers can substantially cut the costs of electric heat. Insulation and air sealing are important ways to reduce the costs of all kinds of heating.

# The problem with current approaches

The programs described under “Programs that already exist” help but they are inadequate. To quote the Affordable Energy Coalition, ***“Government response to the issue of energy poverty in Nova Scotia since 2002 has been a combination of energy rebate programs, tax relief, and charitable measures. None of these government funded programs provides targeted assistance to the most vulnerable low income households as determined by their energy burden. None of the programs address the problem of electricity bills that are inherently unsustainable because of high energy burdens and none offer percentage of income payment plans. Many of the programs struggle with low take-up, due to poor design features that require the consumer to initiate the application and provide documentation. The programs have been subject to frequent changes in funding. The disadvantage of these programs is that they are either restricted to crisis relief (grants or rebates once per season) or they are targeted so widely (such as the tax rebates) as to have little impact on truly vulnerable households with unsustainable electricity burdens.”***[18]

# Potential new solutions

There are several specific solutions that have been proposed to address the serious problems some Nova Scotians face with energy cost security as described in this section. But more fundamentally, we must change how we think about energy costs.

1 **A NEW WAY OF THINKING:** Nova Scotia must adopt a new way of thinking about energy costs. The problem is not prices but affordability. If prices go up but we use less energy so we spend less, that is more affordable. Those with the highest levels of insulation will be the least impacted by price increases. If we take decisive steps to reduce the energy burden of the lowest income Nova Scotians so they don't have to choose between heating and eating or medicine and lights, that will address the real affordability problem. Thinking about energy costs in these ways makes it possible to address affordability while taking measures that will be much more successful in reducing environmental impact and increasing innovation.

2 **UNIVERSAL SERVICE PROGRAM:** Nova Scotia's Affordable Energy Coalition (AEC) has proposed a four point plan that targets low income households that pay more than 3% of their income on electricity or 6% if they heat with electricity – i.e. they experience an energy burden that is unacceptably high. AEC says that similar Universal Service Programs ***"are being undertaken in Canada, and have proven successful over the last 30 years in over 40 states in the USA. Legislative reforms are needed to require the NS Utility Review Board to design and implement rate funded low income electricity programs in Nova Scotia."***[19] Through such a program the UARB can design a solution to the stark energy poverty experienced when energy costs exceed 3% (or 6% including heat) for low income Nova Scotians. The details of this proposal are outlined in submissions to the UARB, most recently in 2007, by expert Roger Colton on behalf of the Affordable Energy Coalition. A summary follows.

### RATE AFFORDABILITY:

An essential part of the solution to the energy insecurity problem is energy cost relief targeted to the most vulnerable. The proposal recommended by the Affordable Energy Coalition (AEC) is to add a modest charge on everyone's electricity bill and to redirect those funds to low income households to bring their costs down to 3% of their income (or 6% if they heat with electricity). This is the system widely used in the U.S. AEC recommends a fixed credit approach. To calculate the fixed credit involves three steps: (1) calculate a burden-based payment – i.e. how much can a household afford; (2) calculate an annual bill – i.e. how much does their electricity actually cost; and (3) calculate the fixed credit necessary to reduce the annual bill to the burden-based payment.

The burden based payment is how much the household could afford to pay at 3% of income (6% if electric heat is included). The annual bill is calculated the same way an equalized Budget Billing Plan is calculated. The credit is the difference between the two. The same credit is applied on the household's bills for a year. This is administratively simpler than monthly calculations and it creates an incentive for conservation – any savings from conservation are earned by the household for one year.[20]

### MANAGEMENT OF ARREARS:

A program is needed to deal with existing arrears of households eligible for the rate relief program. Otherwise their energy costs will continue to be unaffordable due to repayment of the arrears. The proposal by Roger Colton and the Affordable Energy Coalition is to give credit to reduce the households arrears every time they pay their bill under the new rate relief plan so that all of their arrears are eliminated within 2 years.

### CRISIS INTERVENTION ASSISTANCE:

Roger Colton's testimony in both 2004 and 2007 describes this component of the Universal Service Program this way: ***"The crisis component of the universal service program provides a social service agency (or community-based organization) with a budget to provide crisis intervention assistance on an as-needed basis. Income-eligibility should be somewhat higher than the income eligibility for the rate affordability assistance. Assistance provided through the crisis intervention component should be on a limited-time basis. The crisis intervention is not intended to provide monthly rate affordability assistance to NSPI customers."***[21]

Although demand for emergency assistance would be lower with a rate relief program in effect, it would still be needed due to unexpected emergency expenses or rapid changes in income that low income households don't have the resources to handle.

**ENERGY EFFICIENCY PROGRAMS TARGETED TO LOW INCOME HOUSEHOLDS:**

Efficiency NS is already doing this to some extent as described above. The Efficiency NS Corporation Act should be amended to include a goal of achieving energy equity. This would ensure that a minimum spending target would be maintained for low income citizens – for example, 15% of ENSC's overall budget[22] or a percent of ENSC's residential budget. Social benefits and indirect economic benefits could be included in cost effectiveness analysis (example: the benefits from improved health and lower health care costs).

A majority of low income households are renters. Nova Scotia already spends a good percentage of conservation funding on low income households. We could become an innovator in reaching rental households with high impact conservation measures. This would include full building multi-unit retrofits and developing landlord agreements to ensure savings go primarily to occupants and that improvements don't lead to eviction of low income tenants. If Efficiency NS targets low income households with higher energy use for efficiency upgrades, as identified under the energy cost relief program, this would reduce the cost of the energy cost relief program itself.

**IMPLEMENTATION OPTIONS:**

1. Depending on the details of the program, the annual cost in 2013 is estimated to be between $8.5 million and $13.5 million. It would provide average assistance between $370 and $570 per household and 73,000 to 122,000 households would be eligible depending on program design. The estimates are based on the lower than average electricity spending by low income households as reported by Statistics Canada by income quintile. The Affordable Energy Coalition recommended only pre tax Low Income Cut Off (LICO) households be eligible. The cost for a program limited to LICO households would be in the lower range. The higher cost would offer rate relief to all low income households spending more than 3% of income for base load electricity (6% for electrically heated homes) and earning $32,000 or less. The income at which households could afford the average amount spent on electricity in the 2nd quintile was about $32,000 in 2010. With the rise in rates and incomes since then, the $32,000 cut-off would remove households that would otherwise be eligible for small amounts of rate relief.

2. Another big factor is how many eligible households participate in the program. We have used the estimate recommended by Roger Colton based on his experience in the US – 40%. HARP's 30% participation rate supports a low figure, with the somewhat higher 40% rate because of improved design elements. Participation rates higher than 40% would mean higher costs. Two other assumptions based on US experience lower the estimated cost: 1 – NSPI can expect savings in bad debt and other costs associated with low income payment problems that can be used to offset the cost of the Universal Service Program by 25%. 2- Only households that pay their electrical bills themselves are eligible. This % is not known; an Ontario analysis assumed 76% pay their own; we have used 79% in Nova Scotia because of the higher level of home-ownership here.

3. One way to pay for this program is to charge NSPI ratepayers a modest fee. The charge estimated for 2013 is a sliding scale from $0.80/month for residential customers and up to $80/month for large industrial customers for a program costing $10.5 million.[23] The UARB is well suited to work out the details with all the stakeholders having a say. The Affordable Energy Coalition advocates that the Public Utilities Act must be changed ***"to require the Board to establish a universal service fund and program and to ensure that electricity is economically accessible and sustainable to all Nova Scotians. The goal of the legislative reform would be to insure that a low income household's electricity bill will be based on a sustainable electricity burden (proportion of gross annual income spent on electricity)."***[24] This is the approach adopted by US jurisdictions that have implemented this kind of program.

**4.** An alternative would be direct government funding paid for out of general taxes. In 2013 $104 million was budgeted for the Your Energy Rebate Program (YERP - HST rebate), and $12.5 million for the Heating Assistance Rebate Program (HARP). A well designed Universal Service Program would ensure electricity is affordable to the households in greatest need. Program design could be delegated to the UARB. The electricity portion of the $12.5 million spent on the HARP program and the $400,000 provincial contribution to the Good Neighbour program could be redirected to this broader, more effective program, including a reduced emergency relief component. About $3 million in resulting savings could be redirected to help pay the program's costs. More than $10 million of the YERP rebate currently goes to households earning $100,000 and more. A refund of this rebate through the annual income tax return could pay a substantial portion of the Universal Service Program.

**3** **INVERTED BLOCK RATE / CONSERVATION BLOCK RATE PROGRAM:** This is an option that would see a lower price for the first "block" of electricity, considered to be the minimum required by a household – for instance for the 1st 700 kwh/month. Any electricity used above the basic amount would be charged a higher price, so the overall income generated would be the same.

Such a policy is appealing because low income households would get some relief, while everyone would be encouraged to lower their consumption to achieve the lower rates.

A serious problem with this approach as far as energy affordability is concerned for those who need it most is similar to the problem with the HST energy rebate. It is not well targeted. It would not be directly tied to the income of the household and their ability to pay. More benefit would go to higher income households with enough income to invest in considerable conservation technology and renovations. This effect would be partially offset by Efficiency NS investments in low income efficiency measures.[25]

Two questions would be establishing at what volume of electricity the lower prices would end and how many "blocks" there should be. Dr. Larry Hughes has proposed such a system with 5 "blocks", each more expensive than the other at higher levels of electricity use.[26] Dr. Hughes recommended increments of 3400 kwh/year or about 280 kwh/month.

Too many blocks would make the system hopelessly complicated for consumers to understand. Some jurisdictions have implemented a single block sometimes called a "Conservation Rate" with a goal of conservation and equity. BC has one at 90% of the median residential consumption level – it's now set at 6.9c/kwh for the first 675 kwh/month compared to 10.34c/kwh for the rest.[27] Quebec has one as well as a price for peak demand that is much higher in winter than summer. Their conservation rate is now 5.41c/kwh for the 1st 900 per month (30/day) and 7.78c for the rest.[28] This kind of rate would be simple, combine a conservation incentive with equity and it would reduce the costs of the Universal Service Program. It would likely increase public acceptance due to its universal nature.

One problem with a Conservation Rate is that the higher rate would apply to electric heat. Although there are no statistics available, it is believed that a higher portion of low income households use electric heat than in the general population.

A "Conservation Rate" would not directly solve the affordability problem for low income Nova Scotians so it would not be effective unless it was combined with a Universal Service Program. We have not done calculations to estimate the potential effect of a Conservation Rate on the costs of a Universal Service Program.

**4** **REGULATORY REFORM TO IMPROVE COLLECTIONS AND ARREARS MANAGEMENT:** If the negotiations between NSPI and the Affordable Energy Coalition to improve handling of arrears are not successful, AEC recommends that Nova Scotia introduce ***"regulatory changes allowing for better credit and collections and arrearage management approaches similar to Ontario"***.[29] This would only be needed if the Universal Service Program is not implemented, which includes an element that addresses arrears for those enrolled in the program.

**5** **INCENTIVES FOR DEEP ENERGY RETROFITS:** The best long term way to make energy affordable is by ensuring homes are well constructed so they need minimal heating. A US study found that an under-insulated home that is fully insulated through a deep retrofit uses 24-73% less heating energy.[30] Canada has long experience achieving these kinds of savings. There are many mechanisms to encourage this to happen.

### SET HIGH CONSERVATION STANDARDS FOR NEW HOUSING

The 2011 National Energy Code for Buildings could be adopted for all new buildings in NS. Passive solar design could be a requirement for all new housing. New affordable housing built with government assistance could include requirements for high energy conservation standards and passive solar design, with the appropriate funding to ensure such requirements are practical. The long term cost savings would more than offset the additional upfront costs.

### PROPERTY ASSESSED PAYMENTS FOR RETROFITS

Deep energy retrofits for older homes can be encouraged through repayment plans attached to tax bills to spread costs over different owners in the event a home is sold, as HRM's Solar City program has proposed. The repayment rate can be set lower than the price of consuming the energy saved. The retrofits can include substantial additional insulation, more efficient heating systems (heat pumps, highly efficient gas furnaces) and renewable energy (solar hot water). The province should adopt legislation to enable this and municipalities across the province should adopt local by-laws and programs to enable this.[31] This would benefit all income levels and could expand the effectiveness of Efficiency NS programs targeted at low income households.

### EFFICIENCY REQUIREMENTS FOR LANDLORDS HOUSING SOCIAL ASSISTANCE RECIPIENTS

Many low income households live in substandard housing, including substandard insulation and other energy efficiency measures, adding to the energy costs of residents who cannot afford them. A program of building inspections and minimum energy efficiency standards for landlords housing people on income assistance could be beneficial in improving the standards in place. This would need to be handled carefully to avoid limiting the availability of landlords willing to rent to households on social assistance.

**6** **OTHER MEASURES TO REDUCE ENERGY COSTS:** There are several actions governments could consider which would reduce energy costs or alleviate energy cost security problems. They have varying levels of environmental benefit.

### REAL TIME ENERGY MONITORING:

If consumers know how much electricity they are using, it will help them figure out what to turn off with minimal loss of convenience or service. In-home monitors exist that can show consumers how much each of their appliances and lights use in real time. Some have computer based tracking programs associated with them. A program to make these available to consumers would help them reduce their electrical consumption by being aware of how they are using their electricity. This could be done by subsidizing the purchase of in-home monitors and by establishing lending programs through public libraries and community organizations. Centralized monitoring with in-home internet based reporting by NSPI is possible as is being made available in Ontario, but it wouldn`t provide much detail unless a smart meter was installed in the home. Unlike Ontario where 100% of homes have smart meters, only a small percent of NS homes have them installed at present – those with electro thermal storage heaters.

### ENCOURAGE MORE EFFICIENT FORMS OF ELECTRIC HEAT:

The form of electric heat that is least efficient and most costly is baseboard resistance heaters. They are cheap to install and expensive to run. They are the most widely used form of electric heat. Measures could be taken to discourage their use and to encourage more efficient alternatives, especially in cheaper housing that is likely to be owned or rented by lower income households. Ductless air to air heat pumps are a relatively new much more efficient technology available for retrofit at a reasonable cost.

**Heat pumps:** Electric air source or ground source heat pumps cost in the range of 40% less to operate than normal resistance electric baseboard heating. The main barrier to access is the large initial investment required. They can be used with existing hot air or hot water distribution systems to replace oil furnaces. Ductless air source heat pumps can be installed to replace baseboard heating. NSPI has a plan that provides financing and allows repayment on their monthly bill, similar to the property assessed payments for retrofits described above.

**Electro Thermal Storage:** These are electric heaters that store and re-radiate heat so that you can use the electricity at night and re-radiate it during the day. They reduce heating costs if a time-of-use meter is installed, allowing NSPI to charge a lower rate at off-peak times, to reflect their lower costs of generation. NSPI currently has a program to install Electro Thermal Storage units and Time-of-Use meters at the same time. It could be expanded. Upfront capital costs are a barrier.

### REGULATING THE FUEL OIL SUPPLY INDUSTRY

Fuel oil remains the most commonly used heat source in NS - over 60% of Nova Scotians heat their homes with oil. Fuel oil prices have gone up much faster than electricity prices in the last decade. Price regulation similar to the regulation in the gasoline supply industry could bring NS costs closer to prices in nearby provinces and states. The Petroleum Products Pricing Act already allows for such regulation but it is not done in practice. New regulations would be required directing and enabling the UARB to act. This would need to be carefully examined to ensure it would be likely to reduce costs. This examination is beyond the scope of this paper.

A Universal Service Program and an efficiency charge to fund energy efficiency projects could be designed for the oil heating sector as well. Efficiency measures would encourage personal investment to reduce heating costs permanently through improved insulation and air sealing. The case for an efficiency charge would rest on the long term savings for individual consumers and the reduction in Green House Gas (GHG) emissions. There would be no system wide savings similar to those in the centralized electrical system.

With Efficiency NS administering efficiency programs for all sectors, they could also promote fuel substitution where that would lead both to lower consumer costs and lower GHG emissions. As electricity is increasingly produced from renewables the more efficient forms of electric heat such as heat pumps would be an alternative to home oil heating.

### EXPANDED ACCESS TO NATURAL GAS:

Dalhousie Professor of Mechanical Engineering Dr. Peter Allen has promoted government action to expand natural gas distribution in the province. Heritage Gas has the right to distribute natural gas in 6 counties: Cumberland County, Colchester County, Pictou County, Guysborough County, Hants County, and Halifax Regional Municipality.[32]

In the long term, as Nova Scotia's electrical generation transitions to renewables and heat pumps become the norm for electric heat, electricity will be the best way to heat our homes in terms of environmental impact. With fossil fuels still playing a large role in producing our electricity, using lower emission natural gas to heat our homes would provide environmental benefits. As long as the current low price for natural gas remains in effect, it would also save consumers considerable amounts. In the long run its use must be phased out to reduce GHGs. The dilemma is that the cost of installing gas distribution infrastructure would make it difficult to stop using gas after only 10 to 20 years.

The best way to expand natural gas use would be to supply gas to "anchor" customers, but then use it more efficiently in combined heat and power units and then create a heat (not gas) distribution network in those local areas. This will be much more resilient, since we can switch the gas to other, more sustainable fuels, including biogas – but perhaps also using the heat storage to store excess wind energy. Several proposals are now being considered in HRM for institutional/commercial users. This kind of arrangement may be possible for residences especially in large multi-unit buildings, depending on set up costs.

7 **INCREASED INCOMES:** The best way to ensure low income Nova Scotians have energy security is to increase their incomes so they can afford electricity and other fuels for their homes. There have been some important steps in this direction including raising minimum wage and creating the Affordable Living Tax Credit and Poverty Reduction Tax Credit. However there continue to be many Nova Scotians too impoverished to be able to afford their electrical bills – the incomes of the lowest quintile are among the lowest in Canada.[33] Realistic shelter rates for income assistance recipients would be very beneficial but it would not solve the problem of energy insecurity for the many other low income households – the working poor, low income seniors and others. A comprehensive guaranteed income program would be the most effective approach, but it is beyond the scope of this paper to explore this option effectively.

# Recommendations

Nova Scotians are seeking relief from high energy costs. They are particularly concerned with the effects of high electricity costs on low income households who face stark choices between necessities – should I heat my home or have enough to eat, should I keep the lights on or buy medications, clothing or other necessities?

The best way to address energy security (i.e. affordability for low income households) is to implement a Universal Service Program that directly addresses energy cost security by making energy costs affordable to low income households. The target should be households whose total energy costs exceed 6% of income or whose electricity costs exceed 3% of income with an income cap.

At a broader level, the two best ways to address the problem of energy insecurity would be to increase incomes of the poorest Nova Scotians so they can afford the energy they need and to ensure that the homes they live in benefit from the best conservation measures available so energy costs remain low even as prices increase.

1 **ADOPT A NEW WAY OF THINKING:** Adopt a new way of thinking about energy costs. Focus on affordability instead of price alone. Take decisive steps toward energy conservation. Take decisive steps to reduce the energy burden of the lowest income Nova Scotians so they don't have to choose between heating and eating or medicine and lights.

2 **ESTABLISH A UNIVERSAL SERVICE PROGRAM FOR ELECTRICITY:** *This is the most targeted, effective action that can be taken to address energy cost affordability for low income households that cannot afford rising energy costs, short of a concerted effort to solve the problem through increased incomes. It could be considered one step toward a more comprehensive approach to ensure low income households do not have to choose among necessities.*

Establish an effective targeted Universal Service Program to ensure the energy burden – the percentage of their incomes spent on energy – is affordable for low income Nova Scotians.

**A. IMPLEMENT AN ENERGY COST RELIEF PROGRAM FOR TARGETED LOW INCOME HOUSEHOLDS TO ENSURE HOUSEHOLDS CAN AFFORD TO KEEP THE LIGHTS AND THE HEAT ON.**

- Amend the Public Utilities Act to require the Utility and Review Board to establish an energy cost security program to ensure that a low income household's electricity bill will be based on a sustainable electricity burden (calculated as a proportion of gross annual income spent on electricity).
- Direct the UARB to establish the details of the energy cost relief program, setting the income ceiling for eligibility and raising the funds required from rate payers through a small charge on their bills. Alternatively, raise the funds for a UARB designed rate relief program through general tax revenues. To fund the program through general taxation, raise the funds through savings in the existing Heating Assistance Rebate Program (estimated saving: $3 million); by taxing back the HST rebate (Your Energy Rebate Program) from households earning more than $100,000/year (estimated revenue: $10 million); and by seeking a grant from NSPI through its community service funds.
- Set the income ceiling at $32,000. This is close to the income that covers the average estimated electricity cost for low income households. Alternatively, establish the income ceiling as the pre-tax Low Income Cut Offs set by household size and community size.

**B. MANAGE ARREARS:**

The UARB program should include a plan to deal with existing arrears of households eligible for the rate relief program as proposed by Roger Colton and the Affordable Energy Coalition. This would give credit to reduce the household's arrears every time they pay their bill under the new rate relief plan so that all of their arrears are eliminated within 2 years.

**C. FUND CRISIS INTERVENTION ASSISTANCE:**

The UARB program should include providing a social service agency (or community-based organization) or a network of agencies with a budget to provide crisis intervention assistance on an as-needed basis. This could continue to be the Salvation Army's Good Neighbour Fund. Income-eligibility should be

somewhat higher than the income eligibility for the rate affordability assistance. Assistance provided through the crisis intervention component should be on a limited-time basis.[34]

Although demand for emergency assistance would be lower with a rate relief program in effect, it would still be needed due to unexpected emergency expenses or rapid changes in income that low income households don't have the resources to handle.

**D. EXPAND EFFICIENCY NOVA SCOTIA'S ENERGY EFFICIENCY PROGRAM FOR LOW INCOME HOUSEHOLDS.**

- Add energy equity as a goal under the Efficiency Nova Scotia Corporation Act, ensuring that a minimum 30% of residential resources are used to assist low income households.
- Establish a timetable and a plan for identifying low income owners and renters and implementing deep energy retrofits with all identified households over time. This should include full building multi-unit retrofits and landlord agreements to ensure that savings go primarily to occupants and that improvements don't lead to eviction of low income tenants.
- Target those with the highest energy burdens first as identified through the Universal Service Program's rate relief component. Make Nova Scotia a leader in designing and implementing this program.

**3 ENSURE NEW AFFORDABLE HOUSING MEETS HIGH ENERGY EFFICIENCY STANDARDS:**

- Require all new housing in NS to meet the 2011 Energy Code for Buildings standards.
- Require all new housing to include passive solar design where practical.
- Require new affordable housing projects to meet high energy efficiency standards.
- Provide sufficient funding to make the affordable housing requirement practical.

**4 TAKE FURTHER STEPS TO ENCOURAGE CONSERVATION:**

- **Adopt legislations and by-laws enabling Property Assessed Payments for Retrofits**
  Enable many more Nova Scotians to implement deep energy retrofits through repayment plans attached to tax bills to spread costs over different owners in the event a home is sold.
- **Make home energy monitoring equipment widely available**
  Make home energy monitoring equipment available through libraries, community organizations and schools. Explore incentives to allow individual households to purchase them.
- **Encourage energy efficiency standards for landlords renting to households on income assistance**
  This would include publicizing minimum standards, conducting inspections and linking landlords with Efficiency NS for incentives available to implement upgrades.
- **Implement a building energy labeling program, including rentals.**
  Energy labeling provides a measure of relative heating energy when someone is considering rental or purchase. An energy audit at the time of building sale would establish the rating to be posted in the building entry for multi-resident buildings or to the electrical panel for homes.

**5 CONSIDER A UNIVERSAL SERVICE PROGRAM FOR OIL:** Consider amending the Public Utilities Act to require the Utilities and Review Board to establish a Universal Service Program for heating oil with the same 4 components as the electricity program (heating bill affordability based on an affordable energy burden calculated as a proportion of gross annual income spent on fuel oil; a plan to manage arrears; a crisis intervention component; and an efficiency program targeted at low income oil users).

**6 INCREASE INCOMES:** Adopt realistic shelter rates for income assistance recipients. Consider a guaranteed annual income or another broad approach that would ensure all low income households can afford rising energy costs.

# Conclusion

Real energy affordability is about energy cost security and not energy prices. As stated in *Energy Cost Politics and the Environment in NS* ***"... energy prices are only one component of consumer energy costs. Our energy bills are determined by both price and how much energy we use; including the energy we waste."*** ...***"In this alternative future, energy cost security will not be provided via lower prices, but by providing universal access to energy efficiency services and renewable energy generation opportunities. This future requires a new social bargain whereby government, citizens and industry agree to respond to rising energy prices by developing new methods of ensuring energy affordability. This process needs to start now."***

The current controversies over electricity pricing must result in real change for the Nova Scotians who are most severely affected by rising prices. These controversies must not become an excuse to derail important progress being made through expanded energy efficiency efforts and expanded use of renewables. We must continue to tackle climate change while ensuring those most affected by rising energy costs can afford to pay for essential energy services.

# ENDNOTES

[1] This includes increases due to the Energy Efficiency Charge and the Fuel Adjustment Mechanism (FAM).

[2] Statistics Canada: Various publications and NSPI: direct correspondence. From 2001 to 2010, the average wage increased by 30% and the median family income increased by 27%. Median income is a better measure of how well most people are doing. From 2001 to 2010 heating oil prices increased by 45.8% while average spending on non electric heating and cooking fuel increased from fuel oil prices increased by 31.4%. The increase in actual spending on electricity was only 20% during this period according to Statistics Canada but figures from NSPI show spending increases rose by the same % as rates did – i.e. by 40%, with the exception of the year 2010, when there was a drop in spending due to a rebate on provincial sales tax. Both sources have similar figures for what Nova Scotian households spent in 2010 (Statistics Canada: $1,262; NSPI: $1,305), but NSPI show lower average costs in 2001 compared to Statistics Canada figures - $932 vs. $1,083. It's not clear why the discrepancy in earlier years exists.

[3] This title and the background, analysis and recommendations in this and following sections about energy security rely heavily on the ideas and work of the Affordable Energy Coalition and the expert witness they brought to the 2004 and 2007 UARB hearings on NSPI rates, Roger Colton. Ecology Action Centre is a member of this coalition.

[4] NSPI submission to the UARB hearing, page 45 - May 16, 2012: 29% of homes heated with electricity in 2010 and NSPI forecasts this to rise to 31% by 2013-14.

[5] Roger Colton: 2007 UARB testimony, UARB hearing re. NSPI rates, pages 14 and 16-17 re energy burden. Pages 11-13 provide a detailed analysis of the gap in energy costs and what low income households can afford. In his 2004 UARB testimony he referred to a range of 3-4% of income as affordable for base load electricity and 6-8% for homes with electric heat – but he said the 3%/6% figures are used when 30% of income is the accepted standard for affordable housing costs. The 30% standard is widely accepted in Canada. In addition, a program would need to establish a single number for practical purposes for the purposes of calculating rate relief. For these reasons in this paper we use the 3%/6% standard that Mr. Colton used throughout his 2007 testimony. In January 2013, Mr. Colton used 4% as the standard in calculations done for Ontario, based on an assumption that homes using electric heat use twice as much for baseload electricity as for heat. NSPI does not have accurate figures for the % of electricity used for heat vs. baseload electricity, but they assume heat uses 1.5x more than baseload for their calculations for equal billing for all electric households. This makes the 50/50 split (3% baseload/6% all electric) used in this paper continue to be reasonable for NS.

[6] Statistics Canada: "Survey of Household Spending - Detailed table 62F0032XDB." This report includes average electricity costs for Nova Scotian households by income quintile – i.e. for the lowest 20% of Nova Scotian households by income, the 2nd lowest, etc. There are 5 quintiles that cover all Nova Scotians. In 2010, each income quintile in Nova Scotia had about 78,000 households for a total of 390,000 households in NS. The upper limit of income for the lowest income quintile was $22,300. On average they spent $853 per year on electricity compared to the average for all Nova Scotians of $1,305. This works out to about $655 per year on base load electricity and $1,310 for homes with electric heat. The 2nd lowest income quintile had an upper income limit of $38,8000. On average they spent $1,245/year on electricity. They spent about $958/year for base load electricity and $1,915 in households with electric heat. A household could afford to pay those amounts if they earned $31,900 per year. Households earning $30,550 are at the midpoint of the 2nd lowest quintile. The average electrical bill for all households was $1,305, which works out to $1,004 for base load electricity. This is affordable by households with an income of $33,500. Statistics Canada Table 111-012 shows a higher number of total households (426,370). 124,800 is 29% of 426,370 and 31% of 390,000, 124,800 is about 30% of the total.

[7] Statistics Canada: "Table 202-0802 – Persons in Low Income Families." This is similar to the 74,400 households living in poverty by the "Market Based Measure"(MBM). Pre tax LICO and Market Basket Measure are two of four methods of measuring poverty in Canada. A NS Dept of Community Services analyst reports that MBM is the one with growing acceptance these days. There are 117,000 individuals in poverty using the MBM definition, including 46,000 unattached individuals and 71,000 in families. Using an estimate of 2.5/household for the unattached individuals, that works out to 74,400 households. The pre-tax LICO measure shows 114,000 people living in poverty, including 51,000 unattached individuals and 63,000 living in families. Using the 2.5/household estimate that works out to 76,200 households.

[8] "Sustainable Solutions: Rate Funded Low Income Electricity Programs in Nova Scotia" , page 1 by the Affordable Energy Coalition (AEC) in 2012. This was the AEC submission to the UARB hearings on rate increases.

[9] Households must apply to receive the rebate. About 157,000 families and individuals were eligible (based on 2010 Stats Can figures). 50,000 is about 30% of eligible households applying.

[10] Public Accounts Committee – May 16, 2012 proceedings.

[11] Making Live More Affordable for Nova Scotians – a 2013-14 NS Budget document.

[12] Calculations done for this paper show about $8.5 million in savings for low income households, based on households below the Low Income Cut-Offs. A simple analysis by another group showed savings may be higher.

[13] "Time for Reform: Rate Funded Low Income Electricity Programs in Nova Scotia" by the Affordable Energy Coalition in 2011. This was the AEC submission to the UARB hearings on rate increases.

[14] The information in this section is from 2 telephone conversations with ENSC staff, Lorelei Simm and Liam Cook as well as from ENSC's website.

[15] Prices are from Stats Can Table 326-0009. We have compared the price in January of each year.

[16] The figure for electric heat is calculated starting with average costs, as explained elsewhere in this document. Costs in 2010 were somewhat lower using figures from NSPI. The average bill in 2010 was $1,263 according to NSPI vs. $1,305 according to Stats Canada. The cost used in the table on page 2 is $1,340 – this is based on changes in rates, using a standard amount of kwh/year to eliminate variations due to weather. The cost for electric heat alone is estimated to be $971 using the NSPI figure and $1,004 using the Stats Canada figure. I have used the Stats Canada figure since the figures on oil prices are Stats Canada figures.

[17] Each household's actual bills will vary depending on weather, home size, insulation, number and type of lights and appliances, how they are used, etc.

[18] "Time for Reform: Rate Funded Low Income Electricity Programs in Nova Scotia" by the Affordable Energy Coalition in 2011, page 4.

[19] Ibid, page 1.

[20] 2007 UARB testimony, UARB hearing re. NSPI rates - Roger Colton, page 53.

[21] 2004 Colton – page 30; 2007 Colton – page 66

[22] "Energy Cost Politics and the Environment in Nova Scotia" – Brendan Haley for CCPA, 2010, page 6. The direct quote is: "During a consultative process, experts and stakeholders proposed "equity targets" to ensure that the province's efficiency agency properly de¬signs and funds programs for groups that could otherwise be excluded. The low income target would require Efficiency Nova Scotia to spend a minimum amount (e.g. 15%) of its overall budget on low-income households.34 A recommendation to make "special provisions for those on low in¬come", including minimum spending targets were outlined in a final report to government."

[23] "Time for Reform: Rate Funded Low Income Electricity Programs in Nova Scotia" by the Affordable Energy Coalition in 2011 estimates a charge of $1/month for residential customers up to $500/month for industrial customers. Calculations for 2013 were updated by Brian Gifford for the current report based on a methodology Roger Colton used in Ontario in January 2013 and modified for NS by Brian.

[24] "Time for Reform: Rate Funded Low Income Electricity Programs in Nova Scotia" by the Affordable Energy Coalition in 2011 – page 3.

[25] Seasonal households could benefit 100% and very few of them belong to lower income households. However, they already get special treatment to recognize they are not in use several months of the year. They could easily be charged a flat rate similar to the one used today. Large apartment buildings with a single meter would need to install sub-meters or have a special arrangement that recognized the number of households in the building.

[26] Submission to the UARB November 27, 2004 by Dr. Larry Hughes, Energy Research Group, Department of Electrical and Computer Engineering, Dalhousie University, Halifax, Nova Scotia, B3J 2X4. His research showed that the lowest 20% of customers by income used 1/13th the electricity of the top 20% while the top 20% used 50% of the total. This may be distorted if there are large apartment buildings with single meters in the top category and large non-profits who are treated as residential customers. While there are differences in spending on electricity by each of the quintiles, they are not as wide as he indicated – an average of $1,661 spent by the highest quintile vs. $853 by the lowest in 2010 according to Statistics Canada's table on spending by income quintile.

[27] See *www.bchydro.com/accounts-billing/customer-service-residential/residential-rates.html*

[28] See *www.hydroquebec.com/residential/understanding-your-bill/rates/residential-rates/rate-d/*

[29] Affordable Energy Coalition 2012 brief to the UARB NSPI hearing, page 4.

[30] Final Retrofit Pilot -Community Evaluation Report, Research Report 1107, 21 December 2011,Rosie Osser, Ken Neuhauser and Kohta Ueno - *www.buildingscience.com/documents/reports/rr-1107-final-retrofit-pilot-community-evaluation-report*; CMHC's Equilibrium Housing Net Zero Energy demonstration homes: *www.cmhc-schl.gc.ca/en/inpr/su/eqho/index.cfm*

[31] "Property Assessed Payments for Energy Retrofits" – Suzuki Foundation – April 2011.

[32] "The Real Power Rate Story We Ignore" - Ralph Surrette – Chronicle Herald – Nov 17, 2012.

[33] Statistics Canada – CANSIM Table 202-0405, Table 203-0022

[34] 2004 Colton – page 30; 2007 Colton – page 66

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