

CLIMATE CHANGE AND ENERGY

Comments for the 2016 Government of the Northwest Territories Energy & Climate Change Consultations

Presented

by



Alternatives North

Introduction

Alternatives North is a social justice coalition operating in the Northwest Territories.

Within our ranks are representatives of churches, labour unions, environmental organizations, women and family advocates and anti-poverty groups. Individual citizens are important participants in our work.

This document was produced entirely by volunteer members of Alternatives North and is a result of a collaborative process. The writing style is not always consistent, but that simply reflects that many people have contributed.

We start with what we all agree on:

- that climate science demands that we all must rapidly switch to renewable energy,
- that NWT targets should be 80% renewable energy by 2025 and 100% by 2050,
- that renewable energy credits / carbon offsets offer a temporary way to rapidly take action, and should be considered “the right thing to do” in the same way that recycling is viewed by many people,
- that GNWT energy initiatives must be rigorously evaluated to prove that they are the most cost effective way of achieving the transition to renewable energy

We finish with a large list of policy and program suggestions and acknowledge that we do not have the resources to evaluate all the options. We expect, however, that these options will be evaluated as part of the GNWT’s energy plan and climate change strategic framework.

The Science of Climate Change

The science behind climate change is clear; burning fossil fuels is causing the global climate to warm with largely negative impacts. It is possible that there are already

enough greenhouse gases in the atmosphere that virtually irreversible global warming feedback loops have been triggered. Examples of such feedback loops include:

- melting permafrost - which releases greenhouse gases (especially methane), which themselves cause more warming,
- melting arctic sea ice - which leaves a darker planet surface which absorbs more heat from the sun, causing more ice to melt,
- rising temperatures - which stimulate the net loss of soil carbon to the atmosphere in a similarly continuous cycle.

It is clear that the faster greenhouse gas emissions are reduced, the less severe the total warming effect will be. World leaders agreed in November 2015 to try to limit warming to 1.5 degrees C. Global temperatures have already risen 0.8 degrees C from pre-industrial norms and climate models show that even with the most aggressive emission reduction scenarios, the planet will warm beyond 1.5 degrees C. The hope is that, by eliminating greenhouse gas emissions by 2050, the planet will cool back down to 1.5 degrees total temperature rise by 2100. This will only happen if every jurisdiction unreservedly commits to meeting or exceeding the science-based targets.

Be the change we want to see in the world

Climate change is perhaps the largest “tragedy of the commons” that humanity has ever faced. According to this concept, no single individual can make a difference if the rest of the community does not cooperate. Some form of collective commitment is needed. A specifically northern example of this phenomenon would be efforts to save the caribou herds. If everyone doesn’t play his or her part in the solution, failure is virtually guaranteed.

For climate change – all individuals, businesses, organizations, and governments share a collective responsibility to work together to ensure that greenhouse gas emissions are reduced to a level that will allow global temperatures to return to normal. In such a situation the saying, “*Be the change you want to see in the world*” applies. If everyone adopts the attitude that solving climate change is a mutual concern, the potential “tragedy of the commons” will instead have a happy ending.

The NWT is made up of individuals, businesses, industry, organizations and several layers of government. All have an opportunity to “*be the change that is required*” by adopting policies to switch to renewable energy, and to encourage positive action by other actors. At an ethical level, individuals can see what is required and make the changes voluntarily, assuming they have viable options and the resources necessary to allow them to make the right choice. Organizations and corporations must also be able to “be the change that is required”. Under current law, publicly traded corporations are required to operate in such a way that they must seek to return maximum financial value to their shareholders. They are somewhat constrained, therefore, to only take actions that do not unduly reduce their short term bottom–line, despite the ethical standards of the individual

members of boards of directors and shareholders. Governments, as legislative bodies that can write laws and set regulations and standards, bear a large responsibility to help enable, encourage and demand responsible action from all stakeholders, including from organisations and corporations. This is in addition to the action they can take within their own operations to also “be the change.”

The change we need – A just transition to 100% renewable energy

Individuals, businesses, organizations and governments need to create and implement plans to transition to renewable energy. These plans should:

- Include “SMART” goals (Specific, Measurable, Attainable, Relevant and Time-based)
- Include goals to exceed global science-based targets for limiting global warming to 1.5 degrees C:
 - 80% Renewable Energy by 2025 (based on the ‘80/20 Rule’ – 80% of the goal will take 20% of the time)
 - 100% Renewable Energy by 2050
- Be rational and evidence based
- Look at all aspects of energy use – in particular heating, transportation and electricity
- Prioritize projects that provide the largest increases in renewable energy use over the shortest period of time. Twenty years ago, the popular approach was to improve efficiency first and consider renewable energy options later. There is no longer enough time – the switch to renewable energy needs to happen immediately – even at reduced efficiency. For example, replacing a 90% efficient fossil fuel fired boiler with a 96% efficient fossil-fuel boiler is no longer an adequate response. An 80% efficient renewable energy boiler (wood pellet) would reduce more greenhouse gas emissions.
- Consider the lifespan of infrastructure and prioritize projects that will give the longest renewable energy return on investment. For example, installing renewable energy systems in new buildings should take priority over retrofitting old buildings that will be replaced in a few years.
- Include the purchase of *Gold Standard* carbon offsets / renewable energy credits as a rapid but temporary measure to achieve a 100% renewable energy portfolio. Gold Standard emissions can be purchased at Planetair <http://planetair.ca/en/index.sn>. The website includes calculators to help figure out how many offsets to purchase.

What can individuals, Organizations and Privately Owned Businesses do?

Individuals (who are not living in poverty), organizations and privately owned businesses should:

1. Go “100% renewable” / “carbon neutral” by purchasing carbon offsets for their share of non-renewable energy use. Going carbon neutral is the first priority because it is the fastest way to make change. There are renewable energy projects ready to be built in other parts of the world as soon as funding is received. 100% renewable / carbon neutral living should be considered as “the right thing to do” in the same way that recycling, composting and not littering are. Purchasing 25 tons of offsets per year per person (~\$625) will more than cover most NWT residents.
2. Do as much as can be afforded to switch from fossil fuels to renewable energy, and to invest in energy efficiency. Investing in biomass technology for heating would be a northern priority action.

What can publicly traded corporations do?

Publicly traded corporations should:

1. Adapt their business models to include 100% renewable energy / carbon neutrality as part of their normal operations. At this point in time (and probably more so going forward), carbon neutrality will be acceptable to most shareholders as adding value to a corporate brand. Furthermore, doing so will be preparing the business for inevitable carbon pricing that will be imposed by regulations.
2. In emissions intensive industries where purchasing offsets might not be accepted by shareholders, an internal carbon price should be included in all investment decisions so that corporate investments account for future carbon pricing that will be coming. For example, the calculation on the payback of a renewable energy system should include a \$50 per ton price on carbon, even if the price has not been legislated yet.
3. Take every economic opportunity to switch from fossil fuels to renewable energy, and to invest in energy efficiency.

What can the Territorial Government Do?

The GNWT has the mandate and responsibility to protect the environment as a whole, while also dealing with its own emissions.

The GNWT should accelerate its transition to 100% renewable energy. It should:

1. Continue investing in renewable energy and efficiency. The GNWT has been steadily investing in wood pellet heating and solar electric generation, and it should do much more of this.
 - a. The GNWT should commit to converting all its remaining fossil fuel–heated facilities to biomass (wood pellet or wood chip) heat. Over 40% of the buildings in downtown Yellowknife are owned or occupied by the GNWT and that percentage is often higher in smaller communities. The GNWT has developed the expertise and oversight capacity to do this conversion efficiently, typically with financial savings, so it could be done at modest extra cost. Converting GNWT facilities to biomass heat would provide the renewable energy anchor-customer that is required in each community to enable a viable delivery infrastructure and potential district heating systems that involve other community entities.
 - b. The GNWT should go “100% renewable” / “carbon neutral” by purchasing Gold Standard carbon offsets for their share of non-renewable energy use. Requiring all departments to operate carbon neutrally through the purchase of offsets would make renewable energy investments comparatively more financially attractive.

2. Focus on a Rapid Transition to Renewable Energy

As previously mentioned, incremental improvements in energy efficiency do not result in the rapid reductions in Greenhouse Gases that are now needed. NWT goals should exceed global science-based targets for limiting global warming to 1.5 degrees C, as follows:

- a. 80% Renewable Energy by 2025 (based on the ‘80/20 Rule’ – which states that 80% of the goal will take 20% of the time/effort)
 - b. 100% Renewable Energy by 2050
3. Ban fossil fuel development in the NWT and re-allocate the resources now committed to Oil and Gas (O&G)

The GNWT has jurisdiction over the extraction of fossil fuels in most of the territory. Whether in the Territories or elsewhere, fossil fuels that are extracted are destined to be burned and will therefore contribute to global warming. As of December 2016, investors world-wide have divested or pledged to divest \$5.2 trillion from fossil fuel investments, a doubling from the previous year. Considering this trend, GNWT investment in the O&G industry is very risky and undermines climate change mitigation and adaptation efforts. As the rest of the world is doing, the GNWT must recognize that the science and physics of climate change demands a reduced reliance on fossil fuels; the majority of fossil fuel resources simply must stay in the ground. Since scientific studies have concluded that the cost of development of NWT resources makes them among the least attractive for development, **expending resources to plan for them to be extracted is effectively betting that the world is going to fail to take action on climate change.** Doing so is participating in the

making of a tragedy, one that will severely impact the NWT. Assuming that the world will take action on climate change means that our expensive oil and gas resources will not be needed until several generations from now, if ever. The GNWT must pursue other more promising sources of economic development and employment. In point of fact, the GNWT must ban all fossil fuel development, and re-allocate funds currently spent regulating and promoting fossil fuels towards development of a robust renewable energy infrastructure.

4. Separate 'Carbon Pricing' Policy from 'Energy Cost of Living' Policy

“Cost of Living” and “GHG Emissions” need to be viewed and handled separately. Current GNWT policy and programming mix the two issues together, making it difficult to focus (set clear targets and achieve results) on either issue. The smaller, remote communities, where the costs of energy are the highest, are also the lowest absolute sources of greenhouse gas emissions. Carbon pricing raises concerns because of fears that a carbon price would drive up the cost of living in small communities. If the two policies are viewed separately, small communities can be exempted from carbon pricing, a policy option fully justifiable due to the higher cost of living they face. As the NWT switches over to 100% renewable energy, the GNWT must always help those who cannot afford their heating and power bills.

5. Use Cost of Living Policy to reduce impact of Renewable Energy Transition

As the GNWT switches to 100% renewable energy, there will be opportunities to reduce the cost of living. Energy efficiency, hydro, wind and solar all cost more up front but offer lower and more stable cost energy once the investment has been paid off – a sound investment opportunity. Wood chips and wood pellets are also typically cheaper than fossil fuels. Such efforts often provide jobs and other economic development within communities, as the generation of energy is localized, helping both to stimulate local economies and residents to be better able to meet their energy costs.

While these energy sources and actions are all win-win opportunities and should be included in any cost benefit analysis, they are not sufficient to meet all needs or to get the NWT to 100% renewable energy. In some cases, such as aircraft transportation, it may be more affordable to continue purchasing carbon offsets while new technologies are developed. Over the next few decades, as the rest of the world switches to renewable energy, gold standard (reliable) carbon offsets will, in theory, become harder to find and more expensive. If the cost of offsets begins to negatively impact the cost of living for those in smaller communities or for low-income people generally, income assistance programs should be adjusted.

The cost of living discussion is often framed in terms of the prices per unit of energy (\$/kWh or \$/litre), but the total energy bill that people are paying (heating, power, transportation fuel) should be the basis of how policies are judged. Efficiency measures do not reduce the price of energy, but they do reduce the total energy bill.

The GNWT spends at least ten times more every year on subsidies for fossil fuel energy than it does on energy efficiency investments. The recent emergency funding to buy fuel for the Jackfish power plant is a typical example. The GNWT spent tens of millions of dollars on diesel fuel while investing only an extra few hundred thousand in energy efficiency.

Investments in efficiency are closely tied with capacity (technical, administrative and financial know-how) issues - particularly in small and remote communities. Because of this, even if larger financial subsidies were made available, capacity issues may prevent people, small businesses and communities from accessing them. The GNWT should focus on communities that generate their power with fossil fuels (diesel, propane/natural gas) and are therefore subsidized. It should implement an aggressive energy efficiency strategy in these communities. A great example is the recent LED light bulb replacement program that demonstrated a 1.5 year payback to ratepayers on a GNWT investment of \$450K.

6. Adopt a “Barriers and Incentives”- based approach to the Renewable Energy Transition

The GNWT’s energy policy should focus on encouraging investments that have the highest potential to increase the use of renewable energy. The most cost effective combination of barriers and incentives should be put in place to bring about this change. Policies should:

- a. Eliminate barriers to renewable energy use
- b. Create incentives to renewable energy use
- c. Increase barriers to fossil fuel use
- d. Eliminate incentives to fossil fuel use

Many GNWT programs are focused on providing financial incentives, which assumes that the barriers are only financial. In many cases a financial incentive does not address the key barriers. For example, a financial incentive to purchase pellet stoves does not address the barrier that there are very few certified pellet stove installers. In other cases, regulations or carbon pricing mechanisms can be more cost effective at bringing about change.

7. Rigorously evaluate all renewable energy programs annually

Current GNWT energy initiatives appear to be a mish-mash of policies and programs developed without clear renewable energy related criteria. Further, it is rare to see program evaluations comparing costs to realized outcomes. Financial incentives and investments vary wildly from program to program without any consistent relation to potential for GHG or financial savings. All energy and climate change projects and programs should be screened and evaluated based on their cost effectiveness and ability to rapidly increase the use of renewable energy, with the results feeding back

in to modify or adjust the program to better achieve overall goals. The following is a sample template for completing such evaluations:

	Total GHG Reduction Potential	Barriers & Incentives Addressed	Effectiveness of Measure (%)	Program Impact	Cost per ton to GNWT
33% rebate on EPA wood stoves up to \$750; installation cost not eligible	50% of heating energy; 4,000 privately owned homes; 4t per year per home. 10% of homes already use a wood stove. 14,000 t potential.	Reduces capital cost, but home owner must pay up front so does not address cash-flow barrier. Does not address insurance issues, lack of trained installers.	35 stoves per year = ~1% of homes per year. ~100 years to achieve potential.	35 x 4t = 140 t/yr	\$175/t/yr
33% rebate on Solar PV panels up to \$5,000; installation cost is eligible	Limited impact in hydro communities. 5 kW system; 5 kWh per house; 2,000 privately owned homes in thermal communities. Potential to save 1.5t per year per home. 3,000 t potential	Reduces capital & installation cost, but home owner must pay up front so does not address cash flow barrier. Does not address lack of trained installers.	2 systems per year = ~0.1% of homes per year. ~1,000 years to achieve potential.	2 x 1.5t = 3 t/yr	\$3,333/t/yr
Free LED Light bulb Replacement - \$450 K total program cost	64,000 bulbs in 4,000 homes in thermal communities 2,000 t potential	Bulbs directly distributed – assume 100% are installed, although previous studies show that free bulbs are often not installed by owners	11,000 bulbs = 17% per year. ~6 years to achieve potential.	350t/yr	\$1,300/t/yr
\$10/t carbon price; revenue neutral	Total NWT emissions: 1,500 kt	Increases barriers to fossil fuel use by \$0.02/litre. Does not remove barriers to renewable energy	Market fuel prices go up and down by \$0.20/litre so impact is low – 0.1% per yr ~1,000 years to achieve potential	0.1% x 1,500 kt = 1,500t/yr	Revenue neutral

<i>\$200/t carbon price; revenue neutral</i>	<i>Total NWT emissions: 1,500 kt</i>	<i>Increases barriers to fossil fuel use by \$0.40/litre. Does not remove barriers to renewable energy</i>	<i>Similar to price increase in 2007 – 2% per yr ~50 years to achieve potential</i>	<i>2% x 1,500 kt = 30,000t/yr</i>	<i>Revenue neutral</i>
<i>Numbers in these examples are for <u>illustration purposes only</u> – these are not precise calculations and should not be used to determine policy!</i>					

Potential renewable energy measures

Different policies and programs based on addressing different barriers and providing appropriate incentives are called for in different parts of the NWT society. Following are suggestions of policies and programs that could be combined to create an NWT energy plan and climate change strategy. As mentioned above, these suggestions should be rigorously evaluated and then combined to create an effective plan that demonstrates how it will meet the NWT goals of 80% renewable energy by 2025 and 100 % renewable energy by 2050.

Financing Renewable Energy Systems through Local Improvement Charges (LICs)

Heating is a large part of fossil fuel use in the NWT and wood pellets are a form of renewable energy that is cheaper than heating oil. Many home-owners have already had a pellet stove installed and businesses are also installing wood pellet boilers. Analysis of barriers and incentives suggest that while some home-owners are installing pellet stoves, others find that the payback on the investment is too long (if they plan on selling their house before the stove is paid for and the housing market does not recognize the additional value of a pellet stove). A local improvement charge (LIC) loan – provided by municipalities, could be paid back through the property tax system, allowing the debt to be transferred to future home-owners. Using the LIC funding model allows the costs to be paid through energy savings over time. This mechanism could be used for other energy measures too, such as re-insulating homes, adding solar panels in thermal communities, and so on.

An LIC program may not have much impact on rental properties where landlords have little financial incentive to put in pellet stoves or boilers because their renters pay the heating bills. Depending on how many privately owned homes install pellet stoves, and how many rental units exist, a policy focused on requiring property owners to install pellet stoves might be called for.

Communities have repeatedly and for years called for legislation enabling LICs but the GNWT has failed to act. This needs to be remedied immediately.

Require large industry to use renewable energy

Industry, which produces more than half of all NWT greenhouse gas emissions, requires a different analysis than do home-owners and communities. Different barriers and incentives, including renewable energy standards, are required to bring about the switch to renewable energy. For example, Diavik Diamond Mine has demonstrated the technical and economic feasibility of wind power generation at mine sites with their 9.3 MW facility and less than 8-year payback. Through transparent and predictable regulatory schedules, new mines must be required to provide an increasing proportion of their

energy needs from renewable sources and new and existing mines must account for their carbon energy use through the purchase of carbon offsets.

Increase renewable electricity generation and electrify local transportation

Abundant evidence shows that energy demand across the country currently being met with fossil fuels is shifting to being met with clean electricity. Significant expansion is now forecast to be likely by as early as 2020. While it may be longer for the NWT to see this change, there are many cases where electricity is already replacing fossil fuels, such as for heating infrastructure in Ft. Smith, and solar power production in thermal communities. Energy storage technology is also developing faster than predicted only a year or two ago. This is similarly the case with ground transportation. Given all this, the GNWT should be developing and implementing evidence-based plans for more renewable electricity generation throughout the jurisdiction, and establishing electric charging stations beginning in the southern centers.

Put a price on carbon

Greenhouse gases are clearly a source of air pollution and the GNWT has the mandate to regulate air quality. The GNWT air quality regulations framework that is currently under development and scheduled for enactment by the current Legislature should include a price on greenhouse gas emissions. This legislation is being designed to target the larger sources of emissions and will not impact people living in smaller communities who already pay very high prices for fossil fuels. The carbon price should be the same as that suggested by the federal government, but continue escalating at \$10 per ton per year until it reaches \$200 per ton. Revenues from the levy should be directed towards investments in renewable energy generation and energy conservation. In addition, emitters who choose to offset their emissions by purchasing Gold Standard carbon offsets should be exempt from the carbon price or have it rebated to them.

A second mechanism that should be considered is available under the *Petroleum Products Act*, under which regulations set tax rates according to fuel type. Currently there is no correlation between carbon content and tax rate, and there is no tax at all on natural gas and propane. This needs to be remedied, and could support a carbon tax approach, with revenues allocated to areas of highest sensitivity.

Develop a Territorial Energy Building Code and the capacity to enforce it

The GNWT, like all provinces and territories, has jurisdiction over building codes. In the rest of Canada, building codes are provincial - not municipal. While Yellowknife has its own building permitting and inspections system and has created its own energy related

building code, no other community has the capacity to do this. The GNWT should develop a territorial energy building code including:

- EGH-80 for homes
- MNECB plus 40% for buildings
- 50% of a building's energy requirements be met with renewable energy
- EnergyStar appliances
- Low-flow toilets & showers
- No electric water heaters in diesel communities
- District heat with mandatory connection
- GNWT taking responsibility to inspect and enforce building codes throughout the NWT

Pursuant to energy charrette recommendations, the GNWT committed to implementing an *Energy Efficiency Act*, and these and other measures should be addressed in such overdue legislation. The GNWT should require all GNWT-funded building infrastructure, including all new municipal government infrastructure—to exceed the territorial energy standard and to use 100% renewable energy.

Invest in Renewable Energy infrastructure

The GNWT should also create an investment strategy to switch the entire territory to 100% renewable energy by 2050. It is an opportune time to establish green infrastructure considering current Government of Canada infrastructure funding programs. However, despite their potential to contribute to cost of living and permanent employment challenges, the GNWT has a consistent record of passing up on green infrastructure in favour of transportation infrastructure. This is wrong-headed. Options for how to switch to 100% renewable energy, beginning with technology now available, are outlined in the Alternatives North research paper “100% Renewable Energy NWT by 2050” (available at www.alternativesnorth.ca). Some examples include:

- Build district heating systems in all communities to make use of waste heat from generators that burn wood pellets or wood chips.
- Develop a program to encourage installation of EPA certified wood pellet, and wood stoves (and dramatically cut heating costs).

Make GNWT Technical Capacity available to everyone in small Communities

The GNWT has the most technical capacity in small communities. This capacity should be made available to people, local businesses and communities on a cost recovery basis (especially where it is not available from private enterprise). For example, technical staff at NWT HC should be made available to inspect new construction, and to tune pellet boilers throughout the communities.

Create an Energy Revolving Fund

Create a revolving fund that people and small businesses can borrow from to finance the cost of converting to more energy efficient homes and operations. The loans can be repaid with savings in costs. The fund could be financed through government issued, RRSP-eligible, investment grade bonds available to NWT citizens.

Create Renewable Energy Cooperatives

An NWT renewable energy cooperative could provide a mechanism to harness private capital, encourage private investment and enhance participation of residents and businesses if supported with appropriate policies. Such policies have been documented and developed by the Toronto Renewable Energy Cooperative. Details are available on their web site at www.trec.on.ca.