

YUKON DOMESTIC (IN-TERRITORY) ENERGY PRODUCTION POLICY - Final

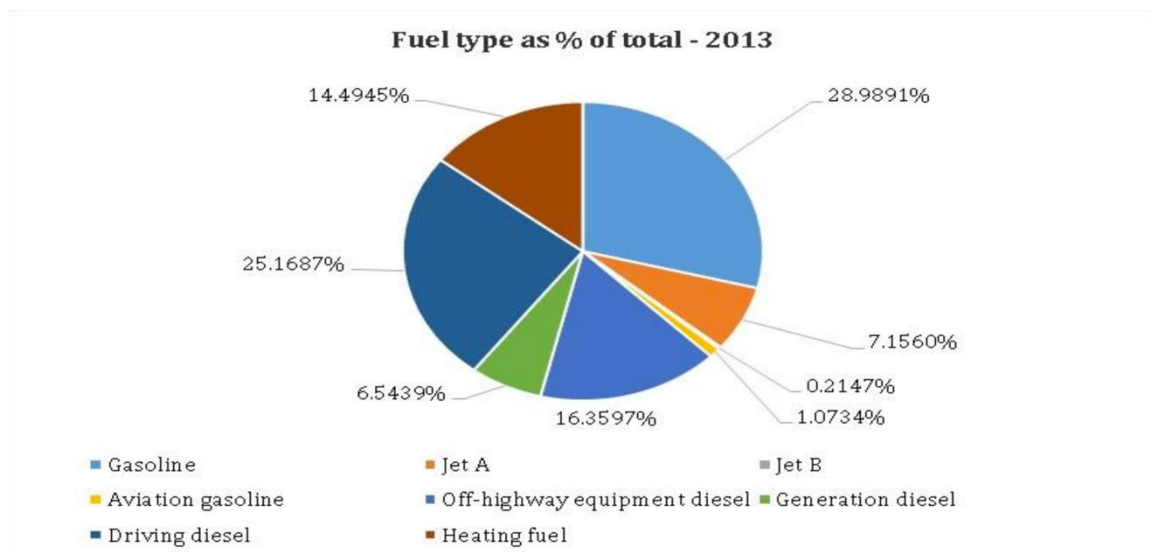
OPENING STATEMENT

Based on 2014-2015 study by Benjamin Ryan, *Participating in Vital Energy Needs – The Benefits of a Yukon Fuel Supply Chain*, the Yukon spends over \$200 million per year on fossil fuels, all of which are imported from outside of the territory, and of which two-thirds are imported from outside of Canada. It is estimated that 9,000,000 litres of fuel are consumed to transport this fuel into the Yukon. This level of expenditure represents a significant economic leakage from the Yukon's economy.

BACKGROUND

Excluding a few local fuel distributors who benefit from the transport and sale of fossil fuels (worth approximately \$34.7 million per year), fossil fuel consumption currently represents in an economic drain on Yukon's economy in excess of \$200 million per year.

Yukoners use fossil fuels for a range of different activities, some of which lend themselves to currently available alternatives (i.e. space heating at 14.5% of fossil fuels consumed) and others, for which substitute alternatives are not currently available (i.e. aviation fuel at ~9% of fossil fuels consumed and off-highway equipment diesel at 16.4% of fossil fuels consumed). The majority of fossil fuels are consumed by personal and commercial motor vehicles (54%), with 20% of total fossil fuel consumption attributable to trucks bringing goods in and out of the territory and the remaining 34% attributable to local personal and commercial motor vehicles and tourist traffic.



Three alternatives to imported fossil fuels have been identified, all of which can reduce the economic leakage attributable to fossil fuel imports:

1. Improved Energy Efficiency
2. Renewable Energy Solutions
3. Domestic Fossil Fuel Production

1) Improved Energy Efficiency

a. Space Heating Efficiency

Space heating, through imported fossil fuel use, represents an economic leakage of \$28 million annually. Advancements in efficiency technologies and building codes help to drive construction of more energy-efficient homes and commercial buildings, but the territory has an extensive stock of legacy buildings that were built to older standards (or no standards at all) and are energy inefficient. These buildings present an opportunity for energy retrofiting, which, in turn, presents an opportunity for the occupants of the buildings to reduce their heating bills and local contractors and suppliers to perform the retrofits.

While the economic case for improving energy efficiency may be apparent at a territorial level, it is not always apparent or affordable for building owners. A significant barrier to improving energy efficiency is the upfront capital cost required to renovate existing buildings. Stimulating the renovation of existing buildings for energy efficiency purposes will require mechanisms to improve access to capital and incentives to make a clear and compelling business case for efficiency upgrades.

b. Transportation Efficiency

The majority of fossil fuels are consumed by personal and commercial motor vehicles (54%), with 20% of total fossil fuel consumption attributable to trucks bringing goods into and out of the territory and the remaining 34% attributable to local personal and commercial motor vehicles and tourist traffic.

Changing transportation-related fuel consumer behaviour requires the availability of alternatives that provide identifiable value to consumers (improved ease of mobility, availability, convenience, affordability/lower cost, etc.). Identifiable alternatives include:

- a) Public transportation (enhanced municipal public transportation where such transportation exists),
- b) Regular inter-community transportation services, and
- c) Developing infrastructure to support the use of non-fossil fuel reliant vehicles (e.g. electric charging and/or hydrogen fuel stations).
- d) More affordable energy efficient vehicles and alternative fuel vehicles and hybrids

Public transportation was identified in the 2014 *Yukon Labour Market Supply and Migration Study* as a barrier for many Yukoners to find and maintain work, both in Whitehorse and in the communities. The report goes on to state “Public bus schedules in Whitehorse do not always align well with work schedules or because the job site is not in a location where public transportation is available. When transit or a car is not available, alternative transit such as a taxi comes at a high cost which can be prohibitive if there is any such transportation available at all.” Recognizing that public transit service in Whitehorse (while recently enhanced) and the communities is both an opportunity to reduce the use of private vehicles and a way to facilitate access to jobs, a robust and affordable public transportation system is important to both Yukoners and Yukon businesses.

Ideally, regular inter-community transportation services (beyond services currently offered) and infrastructure to support the use of non-fossil fuel-reliant vehicles will be developed by the private sector. However, because economies of

scale do not always support a private sector business case, public-private partnerships or incentives for business may be required. Recognizing that ground transportation represents \$108 million in economic leakage annually, there is a compelling territorial case for public-private partnership or incentives to support these services. Given that more than 75% of Yukoners live in Whitehorse, increased use of public transportation within the Whitehorse municipal boundaries could make a huge difference in reducing this leakage.

2) Renewable Energy Solutions

a. Renewable Energy for Space Heating

There are a number of renewable energy solutions for space heating including but not limited to geothermal, biomass, solar, wind, and hydro-electric sources, either through individual power generation, district heating systems, or electric utilities.

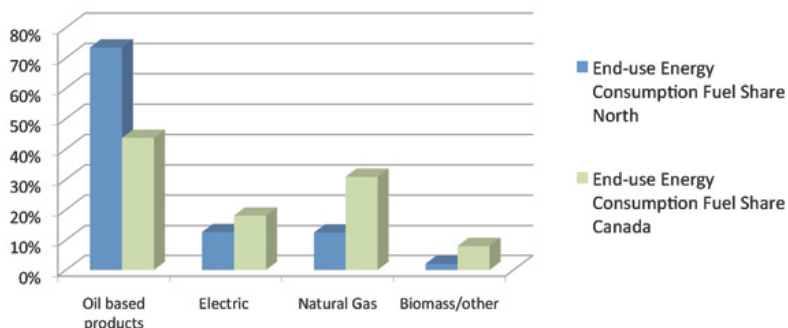
Uptake on switching to renewable energy is challenged by the same factors that affect renovations for improved energy efficiency. A significant barrier to switching to renewable sources for space heating is the upfront capital cost required. Stimulating the conversion to renewable heating sources will require mechanisms to improve access to capital and incentives to make the business case clear and compelling. Conversion to renewable energy sources has the additional benefits of developing local expertise and stimulating local employment and business opportunities.

b. Renewable Energy for Electricity Generation and Transportation

Owing to its robust hydroelectric system, most of the Yukon's electrical supply is generated using a renewable source. In fact, in the summer months, the Yukon has a surplus of renewable electrical energy and capacity. This compares very favourably with many parts of the world, which tend to be short of renewable energy in the summer due to air conditioning loads. However, diesel consumption for electricity generation still results in \$13 million in economic leakage annually. This figure is largely attributed to diesel generation in off-hydro-grid communities such as Watson Lake, Destruction Bay and Old Crow. It is also attributable to wintertime diesel generation for the hydro grid when electrical demand exceeds the hydroelectric production capacity. The fuel consumption and economic leakage could be much higher if the Yukon were to experience a significant drought.

Even with its hydroelectric system, 80% of energy consumed in the North currently comes from fossil fuels (see the "Oil based products" and "Natural Gas" National Energy Board data below, comparing Canada vs. the North from Energy Facts – *Energy Use in Canada's North - 2009*). To the degree that efforts to shift away from fossil fuels to alternatives are successful, the demand for renewable-generated electricity sources for space heating and electrical vehicle use could be significant. Efforts to improve energy efficiency will also be important. The Yukon and Yukoners must be prepared to add incremental electrical generation capacity to cost-effectively enable fuel switching from fossil fuel to electricity-based renewable-energy options.

Fuel Type Usage - Canada vs. North

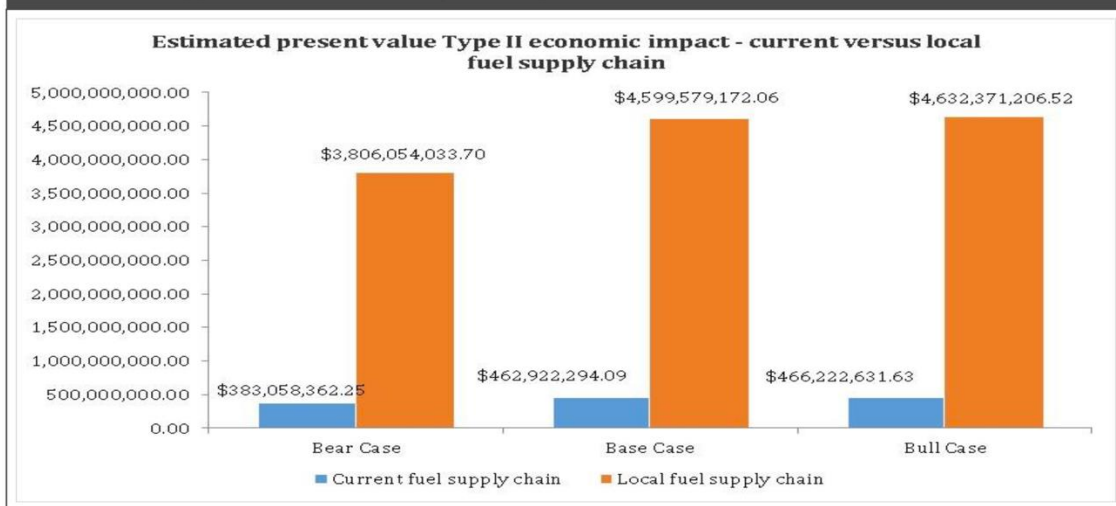


The Yukon Development Corporation and its subsidiary the Yukon Energy Corporation have been exploring renewable-energy alternatives for increased electrical production. The Independent Power Producer (IPP) legislation is now in place, in theory, to stimulate the construction of renewable-energy supply by private investors. Even with Independent Power Producer legislation, the development of renewable-energy sources will require significant planning and public investment. The IPP policy currently targets only 10% of new electrical demand to be met by IPP power sources.

3) Domestic Fossil Fuel Production

In the *Participating in Vital Energy Needs – The Benefits of a Yukon Fuel Supply Chain* report, Mr. Ryan estimated that developing a local supply chain (domestic fossil fuel production and refining for domestic consumption), could result in a \$310 million per year economic benefit to Yukon’s economy. This is equivalent to one-third the value of the annual federal transfer payment to the territory.

Estimated Type II economic impact in present value terms



It must be noted that this figure (the “Base Case”) is based on current consumption trends and does not factor in improved energy efficiency or switching to renewable

energy sources. Canada's commitment in the Paris agreement is estimated to require a 30% reduction from 2005 emissions levels by 2030. Reductions in usage will need to continue beyond that date if the limits to global warming targets are to be met. It also does not factor in the continued growth of Yukon's population and its energy consumption habits (reduction in per customer use in recent years), nor the time lag for the uptake of new technologies. There will be cases where alternatives to fossil fuel consumption are not readily available (e.g. aviation and placer mining). These factors combined suggest that fossil fuel consumption will still be necessary and significant for the foreseeable future.

Recognizing that the consumption of imported fossil fuels represents a significant drain on Yukon's economy and that fossil fuel consumption will continue for the foreseeable future, it is worthwhile to explore the potential for a domestic fossil fuel production and refining industry for domestic consumption. Based on the work undertaken by the YCC on its 2016 "Fueling Yukon" project, and its perspective as the voice of the Yukon business community, the Chamber is well positioned to undertake this effort, managed by its Energy Committee. Research should consider:

- a) The economic case at a territorial level
- b) Environmental impacts
- c) Effects on aboriginal rights and title, and
- d) The technical and business feasibility of a domestic fossil fuel supply service taking into account the reductions in consumption that are targeted by Canada and Yukon.

Conclusion

To reduce the \$200 million in annual economic leakage attributable to imported fossil fuels, a mix of approaches must be pursued, including

- Increasing energy efficiencies,
- Switching to renewable energy sources, and
- Exploring the development of a domestic oil and gas industry to meet the residual energy requirements.

These approaches will require collaboration among the government, First Nations and the private sector.

THEREFORE THE CHAMBER RECOMMENDS:

That the Yukon Government, in consultation with the Yukon business community:

1. Provide greater economic incentive (such as tax incentives, grants and rebates, and no- or low-interest loans, public-private partnerships) for energy efficiency improvements and the conversion of buildings to renewable heating solutions, including an allowance for district heating projects.
2. Improve the energy efficiency of publicly-owned facilities and convert as many as possible to renewable sources for heating where there is a viable business case to do so.
3. Assist in the expansion of public transportation systems (hours, frequency, and routes), both municipally and among communities.
4. Incent and explore partnerships to develop infrastructure that supports the use of non-fossil-fuel-reliant vehicles (ex. electric charging and/or hydrogen fuel stations).
5. Factor the benefits of reducing economic leakage into the Independent Power Producer rates to better incent the development of new renewable power generation capacity.
6. Factor in the benefits of reducing fossil fuel use and reducing economic leakage in the Yukon on the Yukon Carbon tax paid.
7. Work with investors, First Nations, and Yukon communities to develop renewable energy sources.
8. Have the Energy Committee of the Yukon Chamber of Commerce manage and support a research initiative into the potential for a domestic fossil fuel production and refining industry for domestic consumption of the fossil fuels that will continue to be needed for the balance of energy needs This research should consider:
 - a. The economic case at a territorial level;
 - b. Environmental impacts;
 - c. Effects on aboriginal rights and title; and
 - d. The technical and business feasibility of a domestic fossil fuel supply service

Resolution Submitted by: Yukon Chamber of Commerce Energy Committee

Resolution Adopted: 17/02/15