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Energy Branch, Energy Mines and Resources, Yukon Government
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Yukon Conservation Society (YCS) comments on draft Biomass Energy Strategy

Thank you for the opportunity to comment on Yukon Government's draft Yukon Biomass Energy Strategy. Please accept this document as YCS's official submission for the public consultation ending June 26. Please feel free to share, distribute and publish these comments attributed to the Yukon Conservation Society.

Overview

YCS is impressed with the level of thought that appears to have gone into the development of this strategy. In principle, biomass heat energy from trees in the Yukon could be supported by YCS. Our support is conditional of course, as the details and implementation will determine whether this is a responsible strategy to displace fossil fuels and provide sustainable local economic development opportunities.

For a variety of reasons, among them small tree size and slow forest growth, the Yukon doesn't have an established lumber industry to provide waste material to manufacture feedstock for biomass burners, as other jurisdictions with biomass industries do.

As a result, logging will have to be done to supply a biomass industry in the Yukon. YCS notes that large volumes of wood from highway and transmission line rights-of way clearing, agriculture land clearing, placer and top soil mining areas in the Yukon are currently piled up and burned. It is our hope that this unacceptable and wasteful practice will end and these biomass resources utilized.

We have addressed a few questions in your Response Form below.

What are the main benefits of using wood as a source of heat in the Yukon?

Wood is a local renewable resource that can displace fossil fuels in the second most greenhouse gas intensive sector in the Yukon: space heating. Sustainable harvest of wood can provide local employment and economic development opportunities. Many Yukon people enjoy the feelings of satisfaction and self-sufficiency when harvesting cordwood and doing wood-related chores such as stacking, splitting, packing it inside, etc. Many Yukon people enjoy the quality of the radiant dry heat and the flickering glow of the woodstove.

What are your main concerns with using wood as a source of heat in the Yukon?

1: Air emissions

YCS is concerned about air pollution from existing and future biomass burning stoves and boilers. YCS is concerned about cumulative air emissions from several wood burners in populated areas in Whitehorse and other Yukon communities situated in valleys. YCS is concerned about the combination of air emissions from additional sources such as vehicles (in motion and idling), natural gas and diesel generators, dryer vents, etc.

YCS does not believe that adequate ambient air quality monitoring is being done currently. We don't know how particulate matter and other biomass burner emissions interact with other forms of air pollution, particularly when temperature inversions exacerbate comingling and prevent dispersion.

YCS believes that part of expanding the use of biomass should be to take an inventory of existing biomass burners – many that are currently emitting unacceptable amounts of particulate matter – and upgrade them.

Another air quality concern with existing and future biomass burners is ensuring fuel quality. It is difficult if not impossible to control what people put in their stoves – be it wet wood, green wood, or garbage.

2: Unsustainable forest management practices

One of the six priority areas identified in the draft strategy is “Ensure a sustainable timber supply based on completed forest resources management plans”. YCS is concerned because the term sustainable can mean very different things to different people. In this case, does sustainable mean: “enough wood to feed all the biomass burners now and into the future – regardless of how many burners there are”? Or does sustainable mean: “wood harvested in a way and in quantities that do not harm our forests or compromise forests’ ability to provide for the needs of future generations of people, and the needs of all living things that depend on healthy ecosystems now and into the future”?

Clearly, YCS supports the latter definition.

Some consolation is the caveat that a sustainable timber supply is based on completed forest management plans. However, only two currently exist in the Yukon. In the past, Forest Management Branch representatives have talked about increasing Annual Allowable Cuts (AACs) if biofuel becomes viable, because much smaller wood could be used than would be required for saw logs. A biomass industry could potentially target younger forests and less productive sites in addition to the larger trees and more productive sites targeted for saw logs. A biomass industry could also target tree species that are not currently logged in the Yukon, like aspen, vastly increasing the amount of

forest that is logged. It is critical that AACs are based on conservation-oriented science, not on the maximization of feedstock for a biomass industry.

In addition to concerns about the environmental impacts of logging, YCS is concerned that an expanded road network for biomass logging would result in habitat fragmentation, environmental impacts and wildlife disturbance due to increased access for hunting, fishing and fossil-fueled recreation.

The first step must be to determine what is a sustainable harvest to maintain optimal forest ecosystem health. We must first identify ecological limits and harvest well within those limits – and base our biomass for heat energy targets accordingly.

We are concerned that fire- and beetle-killed forests may become victims of an “open season” mentality because they may be considered full of “waste wood”. This is not the case. Forest management plans must ensure that wildlife and biodiversity values of fire- and beetle-killed forests are conserved, as well as sufficient habitat supply at a landscape scale for disturbance-dependent species. Timber harvest in naturally disturbed forests is not “salvage logging”, it is logging.

Specific management or operating practices within a harvest area (which trees, where, how many trees and how much coarse woody material is left on site for soil maintenance, soil moisture and habitat retention) should be established and adhered to within a cut block in order to minimize impacts to wildlife. Thresholds, best management practices and development of a regulatory framework for timber harvesting must be established with the appropriate traditional knowledge holders and scientific experts.

Further, we may want to consider the impacts of climate change on the boreal forest. Some forests will not regenerate to the same forest type if the climate is warmer and the evapotranspiration rate is higher. Recent studies in Alaska show that climate in the interior along the Yukon River has warmed to a point where white spruce are barely hanging on. It is likely these forests will transition to aspen parkland within our lifetime. We can see an example of this kind of transition in the Takhini valley near Whitehorse.

YCS does not support tree plantations for the purpose of providing biomass, because they replace forest habitat with monocultures. We oppose the use of fertilizers and herbicides, which are used in tree plantations elsewhere in the world, due to impacts on water quality and wildlife.

3: Claims that biomass is carbon neutral

Referring to the Yukon Government’s 2009 Climate Change Action Plan, page 6 of the draft strategy states: “If done cleanly and sustainably, burning wood is considered to be carbon neutral.”

This is a dubious and outdated claim. If climate change mitigation is the goal, the optimal strategy is more likely protecting standing forests. Burning wood releases all the stored carbon at once, compared to the slow release over time as forests mature and regenerate. This is important, as there is very little time to reduce GHG emissions. We need to consider the impacts of these emissions on our climate in the short term. For this reason, YCS uses the 20-year timeframe when considering methane's global warming potential (84+ CO₂e) rather than the 100-year horizon (25 CO₂e).

Carbon neutral claims also do not account for upstream emissions related to harvest and transportation. Logging requires chainsaws, skidders, logging trucks, road construction, chipping plants, possibly pellet manufacture and delivery – to name a few upstream sources of GHG emissions. YCS believes life cycle emissions and impacts for all fuel sources must be understood and accounted for.

Further, the draft biomass strategy does not mention black carbon – formed by the incomplete combustion of biomass, biofuels and fossil fuels. Black carbon is an extremely potent short-lived climate pollutant thought to be a major contributing factor to climate change.

That said, if we have to burn anything for heat energy, a local, responsibly harvested, renewable resource is preferable to fossil fuels. If biomass is to be burned, it must be done cleanly and sustainably.

YCS suggests that Yukon Government study and share data on life cycle financial costs (upfront capital costs, fuel costs, maintenance and operating costs) and life cycle GHG emissions and environmental impacts of all heat energy options. This will help consumers make informed decisions based on household finance as well as other considerations like climate and environmental impacts.

4: Cutting down and burning trees to heat inefficient buildings

The priority in planning a sustainable energy system must be first to reduce demand for and waste of energy. Indeed, the first pillar of Yukon Government's 2009 Energy Strategy for Yukon is **Conservation and Efficiency**.

Thus it is not acceptable that this bioenergy strategy is happening in the absence of a conservation and efficiency strategy.

Such a strategy should be comprehensive and needs to include all sectors including transportation, but for the purposes of this document we will discuss building efficiency and reducing the demand for heat energy in the Yukon.

We need to ensure that we are not wasting resources to heat inefficient buildings. While YCS is pleased with the new Residential and Commercial Energy Incentive Programs, these programs do not go nearly far enough. YCS would like to see Yukon Government

doing much more to create private sector and economic development opportunities in energy efficiency. Regrettably, there are many buildings in the Yukon – from houses to commercial buildings to schools and government offices – that waste heat energy.

Inefficiencies must be ambitiously corrected alongside a focus on replacing fossil fuels with local renewable resources.

5: Absence of holistic and integrated planning with the following goals: to displace fossil fuels, to maximize local economic benefits in the development of diverse renewable energy sources, while minimizing environmental harm

In addition to taking steps to reduce heat energy demand and reduce waste, we should be taking a holistic look at our current use of heat energy in the Yukon and plan, in a coordinated and integrated way, how to replace fossil fuels with local renewable resources in all sectors.

The Yukon Conservation Society is concerned that the biomass strategy is happening in the absence of not only ambitious demand reduction, but also integrated energy planning.

What is increasingly apparent is that the Yukon needs to revisit, update and integrate its three main energy policies: Government's Energy Strategy for Yukon and Climate Change Action Plan (both from 2009), and Yukon Energy Corporation's 20 Year Resource Plan update. Together, these plans should coordinate our efforts to displace fossil fuels and maximize local sustainable economic opportunities, while minimizing environmental harm.

As the draft strategy states: currently 75% of the Yukon's heat energy is from fossil fuels – heating oil and propane. Burning biomass wood for heat could play an important role in replacing fossil fuels in combustion for heating. However, we don't necessarily need to burn anything to heat our spaces.

Smart planning is needed to help ensure that a biomass industry, independent power producers (IPPs) and our public utility work together and complement each other to maximize opportunities to meet our space heating needs in ways that drastically reduce GHG emissions in the Yukon.

YCS would like to see the ambitious development of renewable electricity – whether by our public utility, partnerships or IPPs – to capture the space heating market. In particular, we would like to see the development of wind energy, because the wind resource matches the seasonal heating energy demands.

Developing wind projects should happen alongside the implementation of a utility-controlled electric thermal storage (ETS) program to maximize the utilization of that renewable yet intermittent energy source, and to store electricity in the form of heat in homes. This combination of wind and ETS is successful across the globe in displacing

fossil fuels, reducing peak demands on independent grids, integrating diverse renewable energy sources and optimizing grid efficiency.

YCS sees big potential for biomass heating units to work with electric heating units where one can act as backup for the other. This is the ultimate achievement in replacing imported fossil fuels with local renewable resources, and should be actively explored and implemented.

Other concerns and questions

What type and size of wood can be used?

Would aspen and willow be targeted because they are fast-growing?

How will the wood be dried to the right moisture content?

What fuel will be used for the drying process, or will it be air-dried?

What is the carbon intensity of pellet manufacturing?

What can government do to promote modern and safe wood heating systems in Yukon?

- Ensure stringent air emissions regulations exist with specific standards for wood burning systems
- Implement territory wide air quality monitoring, to provide a base line so we can assess the effect of increased biomass utilization on air quality.
- Ensure the only wood burners for sale at local businesses meet these requirements
- Provide incentive programs for the cleanest, most efficient systems
- Provide proper education for biomass system users to ensure they do not burn green or wet wood, or garbage.
- Study and share data on life cycle costs (upfront capital costs of equipment and installation, fuel costs, maintenance and operating costs)
- Study and share data on life cycle GHG emissions and environmental impacts of biomass and all heating fuel options
- Ensure that timber harvest plans are based on conservation science and that woodcutters adhere to best practices.
- Government should ensure that local businesses currently selling biomass heaters are informed about air emissions, their products, government programs and incentives to sell modern and safe wood heating systems, to help educate consumers in the Yukon.
- Through strong local air emissions standards and regulations, ensure that only modern and safe wood heating systems are for sale in the Yukon.
- If the existence of strong standards does not remove inferior products from stores, provide incentives for consumers to buy the cleaner burning and efficient ones.

Anne Middler, on behalf of the Yukon Conservation Society