Yukon Biomass Energy Strategy

What we heard during the public review process

February 2016



Yukon Government

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Executive Summary

The Yukon Biomass Energy Strategy was developed as a means for the Government of Yukon to encourage and support the use of biomass energy technologies and products in the territory. The draft strategy proposed six key actions that establish Yukon government as a key consumer of biomass for heat, and commit the government to managing air quality, facilitating private sector involvement in the biomass industry, and ensuring both a sustainable timber supply and a consistent fuel quality. It also articulates government's commitment to developing the necessary associated regulations, policies and programs.

This report summarizes the responses received during the public consultation on the biomass energy strategy, which occurred between April and June 2015. Overall, 34 submissions were received from First Nations, Renewable Resources Councils, affected territorial government departments, and the public.

The responses suggest additional work on the strategy is required to ensure that biomass for energy will be harvested sustainably, and that an evolving biomass industry will not contribute substantially to territorial carbon emissions or compromise air quality.

The feedback also suggests that, by cultivating a biomass industry to support energy use, Yukon government will contribute positively to local economic development and reduce the territory's reliance on imported fossil fuels.

This document will inform the final iteration of Yukon Biomass Energy Strategy.

Introduction

Biomass energy, or the use of wood and wood products as a fuel source for heat or electricity generation, is a viable renewable energy option for northern countries around the world. The Government of Yukon, in keeping with the policies of our neighbouring jurisdictions of the Northwest Territories and Alaska, has developed a biomass strategy to better enable the territory to take advantage of biomass resources. Such resources are known to be cheaper and more sustainable than more conventional thermal resources such as oil, diesel, and propane.

The biomass strategy was developed as a means for Yukon government to facilitate the uptake of biomass energy technologies and products in the territory. Such technologies and products could increase household energy savings, support local economic development opportunities, decrease greenhouse gas emissions, and increase Yukon's energy self-sufficiency.

The strategy provides a six point framework to optimize the use of wood for heat by using modern systems that are clean, efficient, and economical.

The six key action areas are:

1. Use biomass energy in government infrastructure.
2. Develop regulations, policies and programs for biomass energy industry.
3. Regulate air quality to protect public environmental health and safety.
4. Facilitate private sector development in biomass energy.
5. Ensure a sustainable timber supply.
6. Ensure biomass fuel security and quality.

This brief report provides a record and synthesis of public feedback on the draft Yukon Biomass Energy Strategy.

What We Heard: Responses

The Government of Yukon announced the release of the draft *Yukon Biomass Energy Strategy* on April 27, 2015 for public review. The public review period was for 60 days and ended on June 26, 2015.

Public feedback was solicited through a news release, online distribution of the draft strategy and a questionnaire (Appendix A), direct communication with key stakeholders, and targeted mail-outs. A total of 34 submissions were received via e-mail, mail and in person. The questionnaire was filled out by six participants. The remainder of the feedback was received in letter format, informal notes, or in person.

Responses were received from representatives from the biomass industry, non-government environmental organizations, First Nations, Renewable Resources Councils and individuals. A breakdown of participation is provided in **Figure 1**.

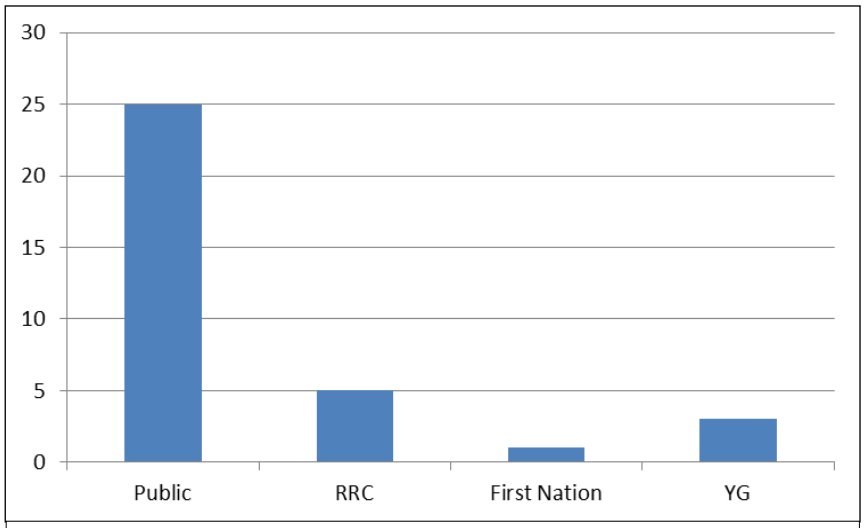

Figure 1: Responses submitted on the Yukon Biomass Energy Strategy

The submitted responses were broadly in favour of the biomass strategy. Of the 34 responses submitted, 76 per cent were in favour of the strategy, while 21 per cent where conditionally supportive and 3 per cent were not supportive.

The distribution of responses and their profile is provided in **Figure 2**.

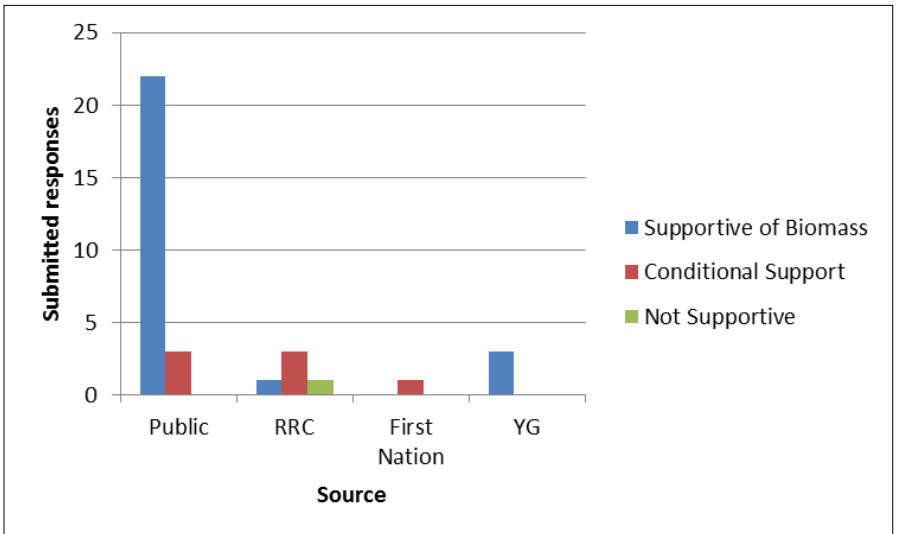

Figure 2: Responses expressing support for the Yukon Biomass Energy Strategy

Feedback

In analyzing the feedback submitted by respondents, four themes and 10 sub-themes were identified. The four themes are sustainable forestry, air quality, economic development and energy generation.

Of the 10 sub-themes, **Figure 3** provides an illustration of the incidence of the sub-themes found in the feedback.

Strong relationships exist between sub-themes and some overlap in themes does occur.

The comments are also at times contradictory due to the broad range of perspectives that were expressed in the feedback.

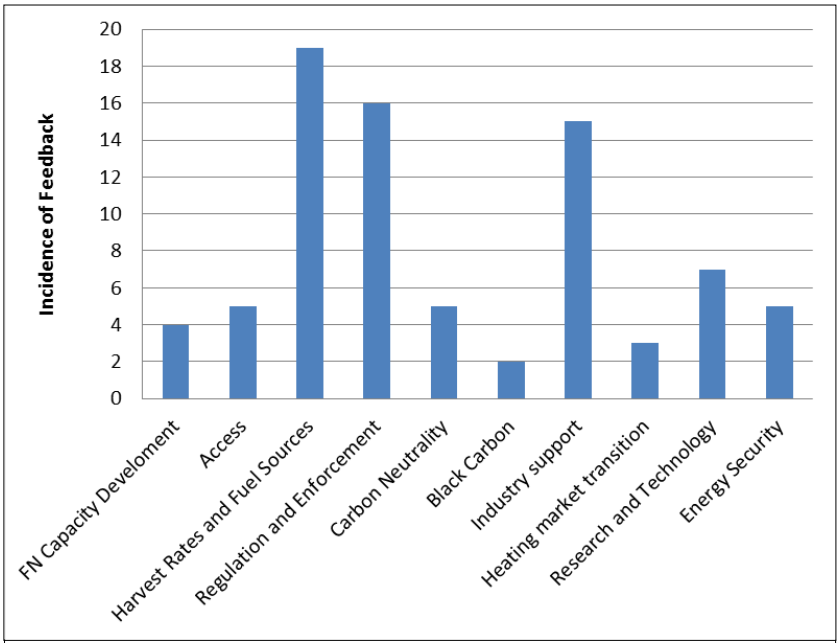

Figure 3: Incidence of sub-themes in feedback

The following is a summary of the feedback received presented by theme.

Theme 1: Sustainable Forestry

Most respondents commented on issues related to the sustainable harvesting of wood in Yukon. These comments related to the ability of First Nations to manage and/or benefit from harvesting, the rates with which trees would be harvested, and the number of corridors that would either be created or maintained to access biomass in Yukon's forests.

What We Heard: First Nations Capacity Development

- Provide support for First Nations to develop a Yukon forest industry.
- Any harvesting needs to be consistent with Chapter 17 of the Final Agreements.

What We Heard: Harvest Rates and Fuel Sources

- Yukon needs to investigate and establish regeneration rates.
- Fuel sources and anticipated harvest levels should be clearly articulated in the strategy, including the composition of whole trees in anticipated biomass harvests and the proportion of beetle-killed to green wood.
- The harvest rates suggested in the strategy are likely optimistic, given the variation in Yukon's topography, tree sizes, hydrology, etc. The strategy should provide an estimate of the useable volume of cordwood available from an average Yukon forest.
- The harvest rates suggested in the strategy may not be applicable to Old Crow.
- Whole trees should not be harvested to supply industrial chip and pellet processes.
- Forest Resource Management Plans need to be prioritized to ensure resource development can occur and harvest levels are sustainable.
- Beetle-killed and disturbed forest should not be considered waste. Biomass harvesting needs to be assessed at a high level if implementation of this strategy is anticipated to result in large-scale biomass harvesting to:
    - Address cumulative effects,
    - Propose indicators and effective monitoring programs,
    - Evaluate and record traditional/local knowledge, identify research gaps, and minimize the impacts of post-disturbance logging.
- A life-cycle assessment would be valuable for determining how and when wood is harvested as, during a tree's lifetime, it draws down varying amounts of carbon.
- Harvesting beetle-killed wood should be a priority.
- Harvesting trees to heat inefficient buildings is not a sustainable use of biomass: conservation and energy efficiency measures should be taken first. Yukon government should create an energy efficiency strategy.

What We Heard: Access

- Yukon government needs to articulate how salvage lumber operations will access wood.
- Access will affect First Nations rights and title. Yukon government needs to be clear about how access will be regulated and managed.
- Access is currently tight: meaningful investigation into how access can be increased is merited.
- Access can increase fragmentation and impact ecosystems, which is not sustainable.

Theme 2: Air Quality

Most respondents also commented on the impacts that increased biomass burning may have on air quality. These comments broadly broke down into the regulation and enforcement of particulates control, as well as the influence biomass harvesting may have on climate change.

Where climate change was of concern, the majority of comments reflected the need to pay back the carbon debt incurred by harvesting trees. A carbon debt is incurred when trees are harvested and burned, which prevents the harvested trees from absorbing carbon dioxide already in the air, while adding more carbon dioxide when they are burned. Biomass is only carbon neutral when enough new trees have grown and absorbed enough atmospheric carbon dioxide to account for the carbon debt.

Some respondents also expressed concern about the contribution of biomass energy in Yukon to our black carbon emissions. Black carbon is essentially soot, which absorbs heat once it settles on the landscape because it is black, and can exacerbate the effects of warming temperatures on snowpack.

What We Heard: Regulation and Enforcement

- Inefficient and poorly designed systems create air quality issues. Incentives and regulations will be required to manage old systems.
- Increased particulate emissions will affect all communities in Yukon.
- Policing will be required to enforce any by-laws and codes that are adopted to manage air quality concerns.
- Regulations are available and should be adapted from other jurisdictions (e.g. Australia and Europe). Don't develop regulations specific to Yukon, this is a waste of time and money.
- Potential for harmful emissions are the same for oil and propane.
- Develop a levy on oil and propane to fund research and provide grants on efficient wood furnaces and stoves.
- Air quality monitoring is resource intensive and time consuming. Sufficient human and financial resources must be identified to ensure robust monitoring occurs as the strategy is implemented.

What We Heard: Carbon Neutrality

- Biomass is viewed as being more carbon neutral than fossil fuels.
- The strategy frequently notes the use of biomass for energy is carbon neutral. This is not accurate and fails to express the potentially negative impacts of burning biomass harvested under poorly developed and implemented forest resource management schemes.
- Direction of the carbon payback period in the boreal forest, which explicitly depends on the harvested resource, needs to be investigated.

What We Heard: Black Carbon

- Black carbon is not a well understood pollutant that carries potentially harmful implications for climate warming in the Arctic. Black carbon should be included in the list of potential pollutants.

Theme 3: Economic Development

The potential benefits of economic development associated with a Yukon biomass industry was another dominant theme. Respondents were concerned with how a biomass industry should be fostered and how Yukon can transition from a heating sector dominated by the sale of fossil fuels to one characterized by the sale of biomass heat.

What We Heard: Industry Support

- Don't over-regulate the industry. Give it space to develop.
- Ensure sufficient players are in the market to cultivate competition.
- Print prices of commodities in British Columbia, Alberta, and the Northwest Territories to help customers appreciate what they should be paying.
- Issue incentives for all types of buildings to use wood for heat.
- A fully developed Yukon biomass industry will undoubtedly create jobs in the communities.
- Develop, or fund the development of, a local pellet mill.
- The development of Forest Resource Management Plans needs to be expedited to ensure Annual Allowable Cut levels are established and effective harvesting scales are introduced.
- Biomass does not need to be more cost effective. The importance of developing a locally based economy and displacing fossil fuels rationalizes the additional expense of biomass.
- Yukon government has a responsibility to lead the development of a biomass industry in the same way that the Government of the Northwest Territories has done. This leadership should bolster private sector involvement in the biomass industry.

- Transportation costs to the communities imply that the benefits of this strategy are only available to Whitehorse. This limitation should be addressed as a part of the strategy's implementation.

What We Heard: Heating Market Transition

- The term "heating industry transition" needs to be clarified.
- Need to certify (biomass heating system) mechanics.
- Need to promote safety, e.g. , chimney cleaning will need to be encouraged.
- Need to provide incentives to ensure the high up-front capital and insurance costs of biomass can be managed.

Theme 4: Energy Generation

Energy generation comprised a much smaller proportion of comments when compared to the other three themes. Comments on energy generation focused primarily on the research proposed in the strategy.

Others explored the benefits of using biomass to enhance Yukon's energy security and the reduced importation of fossil fuels into the territory. The feedback provided was especially divisive on the role of combined heat and power (CHP) systems in the implementation of the strategy. A breakdown of these comments is provided in **Figure 4**.

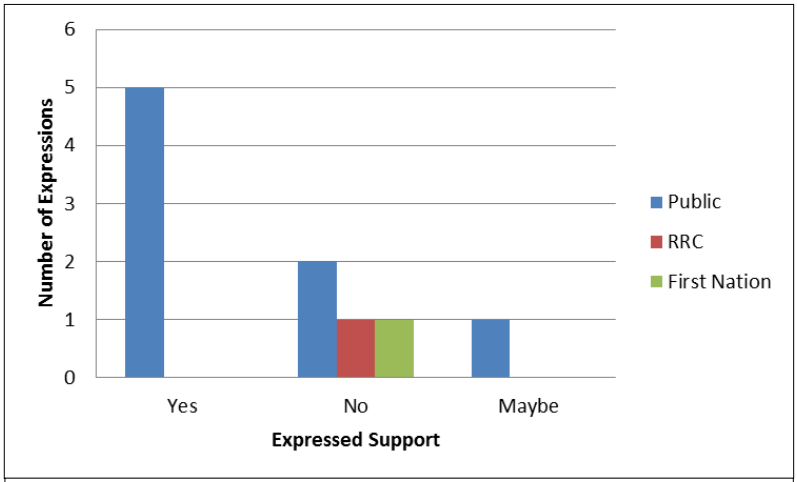

Figure 4: Support expressed for Combined Heat and Power (CHP) Systems

What We Heard: Research and Technology

- There is no need for additional research. The biomass industry is well developed. Just do.
- Baseline studies of the current biomass industry are necessary to manage air quality.
- Study heating technologies but not electricity generation or combined heat and power systems.
- The effects of removing slash or fire/insect killed timber should be researched.
- The opportunities associated with pelletizing willow should be explored.

- No additional research is required for heating systems as these technologies are proven. Pilot projects and future research should be directed at district heating systems, CHP systems, and refining biofuels.
- CHP should be emphasized in future research.
- The exploration of hybrid renewable energy technologies, such as biomass/solar or biomass/geothermal systems, should be investigated because they can create electricity while providing waste heat into district heating systems.

What We Heard: Energy Security

- Why have this strategy if there is an equal opportunity to switch to electric heat?
- Reduced reliance on imported fossil fuels improves local resilience and is cheaper for the consumer.
- In addition to keeping economic benefits local, we must manage our energy needs so that 100 per cent of environmental impacts are locally sourced and locally mitigated. We should not be exporting our impacts.
- If established energy facilities need to import wood then the carbon footprint of the transported wood much be considered.

Next Steps

The ideas, questions and suggestions received during the engagement process will be used to inform the final version of the Yukon Biomass Energy Strategy.

On approval and implementation, the final version will initiate by development of necessary associated regulations, policies and programs.

Appendix A

Public Consultation on draft Yukon Biomass Energy Strategy

Response Form

Please submit this form by Friday, June 26, 2015.

energy@gov.yk.ca

Yukon
Energy, Mines and Resources

1. Do you support the increased use of wood fuel for heat in Yukon?

2. Do you currently use wood for heating your home or building?

3. In your opinion, what are the main benefits of using wood as a source of heat in the Yukon?

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

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5. Are you interested in learning more about modern wood burning systems?

If yes, why?

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If no, why?

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6. How would you like to learn about new wood burning systems? (Please circle your answer.)

   a. Public presentations / seminars?

   b. Written pamphlets / information?

   c. Demonstration projects?

   d. Other? (Please note below.)

   _____

   _____

7. Would you consider using wood for heat in your home or building?

   If yes, why?

   _____

   _____

   If no, why?

   _____

   _____

8. If yes, what type of wood heating system most interests you? (Please circle your answer.)

   a. Wood stove burning cordwood

   b. Wood furnace burning cordwood

   c. Chip boiler burning local wood chips

   c. Pellet stove burning pellets

   e. Pellet boiler burning pellets

   f. Other? (Please note below.)

   _____

   _____

9. What different types of buildings should be considered for wood heating systems in Yukon? (Please circle your answer.)

   a. Residences

   b. Commercial buildings

   c. Government buildings

   d. Community district heating systems

   e. Other? (Please note below.)

   _____

   _____

10. Modern, clean and efficient wood burning boiler systems have advanced air emission controls. Would you support the development of these systems for large commercial/industrial/government buildings in populated areas?

    If yes, why and in which municipalities or sub-divisions?

    _____

    _____

If no, why?

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11. Do you support the use of wood fuel for generating combined electricity and heat?

If yes, why?

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If no, why?

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

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13. What can private sector businesses do to promote modern and safe wood heating systems in Yukon?

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14. Do you have concerns about the impact of wood burning devices on air quality for health or the environment?

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15. Do you have any concerns about forest management regarding bioenergy (harvesting and renewal)?

_____

_____

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_____

16. In terms of choosing a heating system for your home or building, how important are the following considerations?

Please rate on a scale of 1 to 5 with 1 meaning "not important at all" and 5 meaning "very important".

Level of Importance	**1**	**2**	**3**	**4**	**5**
Heating system is safe (no fire or health hazard).					
System is economical to install.					
System is economical to operate.					
System can be locally installed and serviced.					
System has clean air emissions.					
System has a low carbon footprint.					
System requires little or no maintenance by owner.					
System uses a Yukon-based fuel (not imported).					
System uses fuel that a home owner can supply themselves.					
System uses fuel that can be easily ordered and delivered.					

17. The draft Yukon Biomass Energy Strategy identifies the following six priority areas:

    1. Commit to using biomass energy in government infrastructure.
    2. Develop regulations, policies and programs for biomass energy industry.
    3. Manage air quality to protect public/environmental health and safety.
    4. Facilitate private sector development in biomass energy.
    5. Ensure sustainable timber supply based on completed forest resources management plans.
    6. Ensure biomass fuel security and quality.

    Please identify which of these is most important to you and explain why:

    _____

    _____

    _____

    _____

    _____

    _____

    _____

    _____

18. Do you have suggestions or recommendations regarding any of the six priority areas noted above?

_____

_____

_____

_____

_____

19. Are there other priorities you think should be added to the draft Yukon Biomass Energy Strategy?

_____

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_____

Please use this space for any other comments or concerns on the draft Yukon Biomass Energy Strategy.

_____

_____

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_____

Thank you for participating and sharing your comments.

Please note: *By participating in this public consultation process and by submitting comments, you agree that the Yukon government may publish your comments and disclose any personal information these comments contain. The purpose for collecting your comments is to improve the draft Yukon Biomass Energy Strategy and to create a post-consultation report.*

If you wish to have your comments attributed to yourself, you must ***explicitly*** *indicate so by submitting your contact information below.*
Please submit your contact information here:
Name

_____
Address

_____
Phone

_____

If you have any questions about the collection of this information,
please call 867-393-7063 or 1-800-661-0408, ext. 7063.
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