



**Regulating air emissions  
from commercial and  
institutional biomass  
burning systems  
Discussion paper**

**September 2024**

## Introduction

The release of air pollutants in the Yukon is regulated through the *Air Emissions Regulations* under the *Environment Act*. The Government of Yukon committed to amending the *Air Emissions Regulations* to capture air emissions from commercial and institutional biomass burning systems by 2025 in [Our Clean Future: A Yukon strategy for climate change, energy and a green economy](#).

## Engagement process

The Government of Yukon wants to hear your input on the proposed amendments to the *Air Emissions Regulations*. This discussion paper provides an overview of the proposed amendments and poses questions to prompt your feedback.

This engagement is focused on commercial and institutional biomass systems used in places like businesses, offices, apartment buildings, schools and public facilities like government buildings. Residential woodstove use is outside the scope of this engagement as these amendments are focused on regulating larger biomass burning systems in the Yukon.

You can answer some or all questions as they relate to your interest or your organization, business or government. Please review the discussion paper and submit your feedback in writing to [envprot@yukon.ca](mailto:envprot@yukon.ca).

## Background

There is a growing interest in using biomass heating systems across Canada and the Yukon. Biomass burning systems use energy from the combustion of organic materials to generate heat and sometimes electricity. Biomass burning systems typically use wood, including cordwood, wood chips and wood pellets, as fuel sources. The proposed amendments are specific to wood burning biomass systems.

Biomass burning systems can release air pollutants of concern, such as particulate matter (PM), carbon monoxide (CO) and nitrogen oxides (NO<sub>x</sub>). Air pollutants of concern are typically released in higher quantities due to poor combustion from factors like low combustion temperatures, poor fuel quality, excessive moisture content in the fuel and/or improperly maintained equipment. Air pollutants may also be generated from the chemical elements present in the fuel itself.

The Government of Yukon is interested in regulating commercial and institutional biomass systems in response to the growing interest in these systems.

## Proposed amendments to the *Air Emissions Regulations*

The following amendments to the *Air Emissions Regulations* are being considered:

1. Require owners and operators of commercial and institutional biomass burning systems to obtain an air emissions permit under Schedule 1 of the *Air Emissions Regulations*;
2. Define commercial and institutional biomass burning systems in the *Air Emissions Regulations*; and
3. Define a biomass burning system in the *Air Emissions Regulations*.

To make these amendments, we are looking for feedback on the following:

- Defining commercial and institutional biomass burning systems as systems over 150 kilowatts of heat output.
- Permitting considerations.
- Understanding existing commercial and institutional biomass burning systems.
- Understanding future commercial and institutional biomass burning systems.

### 1.1 Defining commercial and institutional biomass burning systems as systems over 150 kilowatts of heat output

*This section includes questions for stakeholders and the public.*

The government's proposed amendments are focused on larger-scale systems greater than 150 kilowatts. These systems may produce emissions which are not captured under the National Building Code of Canada. These systems are often found in commercial and institutional settings rather than residential settings.

Most systems under 150 kilowatts of heat output already meet the minimum requirements set out by the National Building Code of Canada. This includes most residential biomass burning systems. That is why these systems aren't included in this engagement.

The Yukon government is looking for feedback on our proposal to define commercial and institutional biomass burning systems as systems over 150 kilowatts of heat output.

#### **Discussion Questions:**

1. What comments, concerns or recommendations do you have on the proposal to define commercial and institutional biomass burning systems as systems over 150 kilowatts of heat output?
2. Does using the 150 kilowatt heat output threshold effectively address the large-scale biomass burning systems used in commercial and institutional settings?

- Are there other factors beyond heat output that should be considered when it comes to defining large-scale systems?

## 1.2 Permitting considerations

*This section includes questions for stakeholders and the public.*

Air emissions permits outline specific operational conditions and may set maximum limits on the release of specific pollutants of concern. For permitting purposes, the Government of Yukon is considering adopting a framework developed by the Canadian Council of Ministers of the Environment (CCME). Specifically, we are considering adopting the three-tiered framework laid out in the CCME's [Guidance Manual on Managing Air Emissions from Small Solid Biomass Combustors \(2021\)](#).

The CCME's three-tiered framework sets out requirements based on the size of the biomass system, population density and existing air quality. The Government of Yukon is considering using the CCME's Tier 1 Requirements to regulate commercial and institutional biomass burning systems greater than 150 kilowatts. These requirements were developed for lower density populations in rural and northern communities and are included below for reference.

System Aspects	Tier 1 Requirements
<b>Table 9</b> <b>150 – 1,000 kilowatt systems</b>	
Particulate Matter Emissions	Meet standard EN 303-5 class 3 limit for PM (150 mg/m <sup>3</sup> )
Carbon monoxide emissions	Meet standard EN 303-5 class 5 limit for CO (500mg/m <sup>3</sup> , 6-hour average)
Operation	- Automatic fueling - Automatic emissions or combustion efficiency controls
Fuel Quality	As per manufacturer specifications
Tuning	Refer to manufacturer's recommendations
Stack testing	Complaint based testing only
<b>Table 10</b> <b>over 1,000 kilowatt systems</b>	
Particulate Matter Emissions	60 mg/m <sup>3</sup>
Carbon monoxide emissions	500 mg/m <sup>3</sup>
Other emissions	Nitrogen Dioxide: 400 mg/m <sup>3</sup> , or Screening-level dispersion modelling to assess impact
Operation	Automated fueling and combustion controls
Fuel quality	As per vendor specifications
Monitoring	Continuous stack monitoring of oxygen and carbon monoxide

Tuning	Annually
Stack testing	Commissioning test (carbon monoxide and particulate matter)

**Discussion Questions:**

1. If a permit is required for commercial and institutional biomass systems, do you have any comments or considerations on when the proposed permit requirement should come into effect for owners of existing biomass systems?
2. What comments, concerns or considerations do you have on meeting the requirements outlined in Tier 1 as outlined above? Are there any specific challenges to meeting manufacture specifications or performing maintenance (tuning) on biomass burning systems?
3. Should Yukon use Tier 1 of the CCME framework to regulate commercial and institutional biomass burning systems? If not, provide rationale.

### 1.3 Understanding existing biomass burning systems

*This section includes questions for owners of existing systems only.*

The Government of Yukon is aware of a small number of existing large-scale biomass systems in operation. The Government of Yukon operates the majority of known larger systems, with some being operated privately or by First Nation governments. We would like to hear from owners and operators of existing systems to understand how the proposed regulation amendments may impact you.

**Discussion Questions (for owners of existing systems only):**

1. What size, in kilowatts, is your system?
2. Does your system meet any Canadian Standards Association (CSA), Environmental Protection Agency (EPA) or European Norm (EN) standards? If yes, which?
3. Are you concerned that your equipment may not meet the CCME's Tier 1 requirements outlined above?
4. What challenges, if any, do you face for operating your biomass system in accordance with manufacturers specifications?
5. Was there any Yukon government funding provided and/or Yukon government partnership formed throughout the creation, installation or operation of your biomass burning system?

## 1.4 Understanding future commercial and institutional biomass burning systems

*This section includes questions for stakeholders and the public.*

The Government of Yukon understands that many users may be considering installing a biomass burning system in the future. We would like to hear from interested users to understand how the proposed regulation amendments may impact your decisions.

### **Discussion Questions:**

1. Have you thought about or do you have plans to install a biomass burning system in the future? If so, do you anticipate the system will be larger than 150 kilowatts and meet any of the following standards: Canadian Standards Association (CSA), Environmental Protection Agency (EPA) or European Norm (EN)?
2. Would knowing that certain biomass burning systems will be subject to regulation through the *Air Emissions Regulations* affect your decision to install one of these systems?

## How to provide feedback

The Government of Yukon wants to hear your input on the proposed amendments to the *Air Emissions Regulations*. Written responses can be submitted by email at [envprot@yukon.ca](mailto:envprot@yukon.ca) until November 18, 2024.