



bulkley valley - lakes district
airshed management society

COMMUNITY ACTION PLAN *for* CLEAN AIR

A five-year strategy

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RESIDENTIAL & COMMERCIAL SPACE HEATING

For full report, see www.cleanairplan.ca

LAST UPDATE: JUNE 1, 2006

Residential and Commercial Space Heating

8.1 Background

When used properly, wood can be an economical and comfortable heating strategy for a home or business. Unfortunately, many people fail to maximize their wood burning appliance's potential efficiency due to poor burning practices and having an older inefficient model (i.e. non-EPA emission certified appliance).¹ This often results in unnecessarily degraded air quality outside and inside the home. Smoldering, smoky fires that produce a plume of blue-grey smoke from the chimney are the main cause of wood heat-related air pollution. However, there are ways to control the amount of smoke generated from wood heating and these are promoted through Burn It Smart workshops, educational videos and brochures - all of which are available through the cleanairplan.ca website.

Although the number of homes heated with wood declined dramatically in the middle of the 1900s, many homeowners returned to wood heating in the 1970s when there were concerns about the price and availability of alternate fuel options such as natural gas. Now more than 400,000, or six percent, of all single family dwellings in Canada use wood as the primary fuel for heating. In addition, over 950,000, or 14 percent, use it as a supplementary heating fuel.

Of 11,500 homes in the plan area, approximately 7,200 are heating with wood. It is estimated that of these 7,200, there are 4,200 conventional technology (i.e. non-EPA emission certified appliance) wood burning appliances (58%) and 3,000 (42%) high efficiency (EPA emission certified appliance) appliances. A detailed breakdown of this emission source and the number of units in the BVL D is provided in Appendix H.

8.2 Significance of Source to Ambient Air Quality

Any poorly operated appliance burning uncured wood can produce a dense smoke plume (even an EPA emission certified one). In calm clear weather, such as during temperature inversions typical in the BVL D in winter, the atmosphere's capacity to disperse emissions is at a minimum. As a result, smoke plumes from wood stoves and fireplaces build up in the area causing local air pollution. To make matters worse, people often try to make their final load of fuel for the day last all night by **damping** the air supply as much as possible. The result is a smoldering fire and a great deal of smoke with all its pollutants. This harmful smoke tends to linger near its source, rather than dispersing outwards or upwards. It has the greatest impact near or even inside the homes that produce it.

¹ High-efficiency wood stoves, fireplaces or inserts that are certified as CSA B-415 or US Environmental Protection Agency (EPA) certified, when properly installed and operated, can cut emissions by up to 90 percent and burn up to a third less wood while delivering the same amount of heat.

Smoke particles can be small enough to seep into neighbouring houses - even around closed doors and windows. As anyone who lives near a chronically smoky wood stove knows, the emissions from even one household can pollute the surrounding neighbourhood for hours and even days, whenever the stove is used.

8.3 Emission Reduction Efforts to Date

Burn it Smart Workshops were put on in the Fall of 2003 in Burns Lake, Houston, Smithers and Hazelton. The attendance for each workshop respectively was 14, 19, 25 and 6 for a total of 64.

These workshops provide practical suggestions and demonstrate how to use wood burning appliances in a safe and efficient manner, to reduce pollution and help operators economize on the amount of wood that is burned.

8.4 Relevant Regulations and Community Plans

The BC Building Code specifies that a building permit can only be issued for **Canadian Standards Association** (CSA)² approved stoves. CSA approval is stated on the label of the wood stove or in the operator's manual. This safety standard is not an emission certification.

Under the Environmental Management Act (formerly the Waste Management Act), the Solid Fuel Burning Domestic Appliance Regulation specifies fine particulate emission limits (EPA emission certified appliances), labelling and testing requirements for new wood stoves, fireplace inserts and factory built fireplaces manufactured in BC, or sold or imported for use in BC.

Local Government Building Bylaws regulate the installation of wood burning appliances. Bylaws specifically related to air quality typically cover smoke opacity limits, fuel prohibitions, noxious odours, "no burn" periods, and removal of uncertified appliances upon the purchase and sale of a building. There are no specific bylaws in any of the BVL D communities at this time regulating the use of wood burning appliances. Other BC communities have passed bylaws; for example, the City of Prince George has a Clean Air Bylaw that prohibits the use of wood burning appliances, except as a sole source of heat, during Air Quality Advisories.

8.5 Goals, Indicators and Strategies

Goals

- To reduce or eliminate air quality episodes attributed to residential and commercial wood heating.

Indicators

- Percentage of **potential episode days** for the winter wood heating season where **PM10** 24 hourly averages are greater than 25 µg/m³ AND exclusive of days when winter "beetle wood" debris burning is occurring (i.e. March).

² Canadian Standard (CSA) means the Performance Testing of Solid-Fuel-Burning Stoves, Inserts, and Low Burn-Rate Factory Built Fireplaces CAN/CSA standard published by the Canadian Standards Association. At this time it is CSA 415.1

- Number of non-EPA **emission certified appliances** in each town in the BVL D **airshed** plan area, or number "turned in" during the wood stove exchange program.

Strategies

Four major strategies have been identified for reducing emissions from residential and commercial wood heating sources. These strategies and some preliminary thoughts on how to implement them are described in Table 8-1. Wood burning appliances that are targeted now include wood furnaces and outdoor boilers as per the 2005 Clean Air Plan Review.

8.6 Tools and Resources

- Burn it Smart
<http://www.burnitsmart.org/english/index.html>
- City of Prince George Clean Air Bylaw
<http://www.city.pg.bc.ca/cityhall/bylaws/bylaw7232.pdf>
- Wood Stove Exchange Website
<http://www.woodheat.org/changeout/index.htm>
- Residential Wood Burning Emissions in British Columbia (Revised May 17, 2005)
http://www.env.gov.bc.ca/air/airquality/pdfs/wood_emissions.pdf
- A Guide to Residential Wood Heating, Natural Resources Canada (2002)
http://www.canren.gc.ca/prod_serv/index.asp?CaId=103&PgId=576

TABLE 8-1 : Implementation Plan For Reducing Emissions From Heating Sources

Strategy	Description	Status
Wood stove change out program Goal: to change out all old-technology woodstoves	To provide incentives to homeowners to trade in conventional wood stoves for cleaner and safer alternatives.	Skeena-BVLD Woodstove Exchange Program delivered in 2004 resulting in 35 changeouts. A report summarizing this project will be available through the website. The Exchange program was put on hold to allow the Province of BC to conduct a pilot project in the BVLD composed of 1. Social Marketing Research to identify barriers 2. Design and delivery of a next generation exchange program. A presentation on this pilot project was given at the Smithers workshop on Local Government Actions to Reduce Emissions from Woodburning Appliances in May 2006. A presentation will also be given at the AMS AGM and Community Forum on June 15, 2006.
Community Education Program	Promotion and distribution of Burn It Smart materials Delivery of workshops Door to door education. Displays Website	A comprehensive education program based on social marketing is being developed that draws on the work completed in the overall Communications Strategy. This program will support bylaws currently being developed and will be completed by August 31, 2006. As part of Clean Air Day June 7, 2006 a display is being developed focusing on wood burning appliances. AMS had a booth at the Fall Fair 2005 and plans to have one again in 2006. The website now includes a section on neighbourhood air quality. AMS is part of a local network to promote energy efficiency and has attended meetings to ensure that the next woodstove exchange program is coordinated with home energy audit programs and available grants.
Local Government Toolkit	Model bylaws, examples of communication and policy tools.	Has been replaced by the Smithers workshop on Local Government Actions to Reduce Emissions from Woodburning Appliances in May 2006. All participants received copies of the Model Bylaw, and will receive a copy of the communications strategy being developed in support of the Smithers bylaw. The Town of Smithers hired Footprint Environmental Strategies to design and deliver the workshop, draft the bylaw, and produce the education program.
Lobby for local regulations and stronger provincial regulations.	Presentations detailing the problem and specific regulatory strategies.	See above. A presentation on outdoor woodburning boilers has been developed by MoE and will be available on the website.