



Tony Wakelin
B.C. Ministry of Environment

**Wood Stove Change-over Focus
Groups and Survey—Final Report**

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NRG Research Group

Alison Warner

www.nrgresearchgroup.com

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SECTION ONE: OVERVIEW OF RESEARCH

1.0 INTRODUCTION

The province of British Columbia is a nationally recognized leader for reducing emissions from residential wood heating. In 1994, the Solid Fuel Burning Domestic Appliance Regulation came into effect which required that all new wood burning appliances meet stringent U.S. EPA or equivalent Canadian emission standards. To date, B.C. is the only Canadian province with such legislation. While the regulation has had a positive effect, there are still a significant number of old technology stoves in operation that emit much more fine particulate (PM2.5) compared to alternative fuels (such as natural gas, and propane) and newer wood fired units that meet stringent emission standards.

In an attempt to further reduce emissions from residential wood heating, the Ministry has been involved in a number of wood stove changeout programs. Fifteen separate programs offered through the province have resulted in the removal of approximately 1200 old technology stoves. Survey results indicate that there are approximately 84,000 old technology units excluding the Lower Fraser Valley (LFV). When the LFV is included this figure jumps to 120,000. Therefore, to date approximately 1% of the old technology wood stoves in the province have been removed.

In addition to the changeout programs, the Ministry has sponsored Wood Energy Technicians of B.C. (WET B.C.) to deliver Burn-it-Smart public information workshops. While the workshops have received praise from those who have attended, it has been difficult to attract enough people to make the delivery worth the effort.

In June 2005, a workshop was held with 45 representatives from the hearth products industry, government, Terasen Gas, the Propane Gas Association of Canada, B.C. Hydro, pellet fuel producers, and home insurance agencies. It was agreed that the Ministry of Environment and WET B.C. would coordinate the development of a provincial program to changeout stoves and increase public education.

Community Based Social Marketing (CBSM) can be used to improve efforts around wood stove changeout and education. This typically involves four steps:

1. Identifying the barriers and benefits to an activity;
2. Developing a strategy that utilizes tools (such as commitment and incentives) that have been shown to be effective in changing behaviour;
3. Piloting the strategy; and
4. Evaluating the strategy once it has been implemented across a community.

The Bulkley Valley Lakes District is the selected pilot area for CBSM exploration. This part of the province has a Community Action Plan for Clean Air that considers wood burning

appliances to be an issue. In 2004, a changeout program was delivered which resulted in the removal of 35 old technology wood stoves. Burn-it-Smart workshops have also been delivered in 2003 and 2004 with the following turn out:

Community	2003	2004
Burns Lake	14	9
Houston	19	0
Smithers	25	13
Hazelton	6	Not offered
Total:	64	22

This report considers the results of a public questionnaire that was delivered in Smithers by B.C. Conservation Corps and Ministry staff and focus groups conducted by NRG Research in Burns Lake, Terrace and Smithers. In the CBSM context this report considers step one. It should be noted that the analysis presented only incorporates questionnaire results that can be linked to the discussion group findings. More information could be extracted from the questionnaire findings at a later date.

2.0 EXECUTIVE SUMMARY

The Province of B.C. has worked on a number of initiatives to reduce emissions associated with residential fuel wood heating. To date, programs aimed at changing out old wood stoves in favour of options that produce less air pollution have been met with limited success. In addition to changeout programs, Burn-it-Smart (BIS) workshops delivered by the Wood Energy Technicians of B.C. have also had limited attendance. A Community Based Social Marketing (CBSM) approach is being used within the Bulkley Valley Lakes District and Terrace (BVLD) to determine how to improve these programs.

As a follow-up to these initiatives, a research study was initiated by the Ministry between March and May 2006. The study has gathered observations and opinions from a total of 169 people in the Bulkley Valley region.

A quantitative study was conducted in Smithers. A total of 129 residents responded to the survey. Of these 129 people, 86 were regular wood-burners. Of the 86, 44 report using conventional stoves and 53 non-conventional stoves.

To complement this quantitative survey six focus groups were held in Burns Lake, Terrace, and Smithers involving a total of 40 participants – all of whom burn wood in appliances older than 1994.

1.1 Research results

Description of the wood stoves

- Almost all of the discussion participants have stoves dating prior to 1990, the majority dating from the mid 1970s to the mid 1980s. About half of the participants report that wood is their only source of heat. Others rely mainly on wood, but have a back-up of electric or gas heat.
- The RSF formerly manufactured in Smithers is the most common stove among those we spoke with—model number indicating size, varied. Other stoves mentioned include Blaze Kings, Woodchief, Fisher Mama Bear, and Komfort Kozies.

Attitudes toward wood heat and wood stoves

- All of the discussion participants like the warm, comfortable heat provided by wood stoves and say it is an inexpensive fuel compared to other sources available.
 - The main disadvantages of wood stoves are the mess and work involved in gathering the wood.
- The most common methods described to keep a fire burning properly include using dry wood, keeping the fire very hot, keeping the stove and chimney clean, and allowing the air to circulate.
- Although not wide-spread, some participants (or others within their household) use accelerants to light the fire and keep it going or use wet wood which creates more smoke than dry wood.
- Participants believe their household uses their wood stove properly even though some households use accelerants, wet wood and damp the fire. They have been using wood stoves and relying on wood heat for many years (or sometimes since childhood) and believe they know how to properly start a fire and keep it going.
- In the quantitative survey residents in Smithers report that:
 - The average length of time respondents who burn wood have heating their homes with wood is 18 years.
 - A strong majority (81%) say burning with wood is very enjoyable.
 - A majority of respondents (65%) who use wood indicate that heating with wood is necessary for their household.

- By far, the main reason households heat with wood is because it is cost efficient (78% agree). The respondents also agree that abundance of wood (49%) and the dry heat (47%) are reasons for burning with wood.

Attitudes toward wood smoke

- Overall, discussion participants do not feel wood smoke is a major contributor to air pollution. Although many acknowledge wood smoke contributes to poor air quality, industry and cars are believed to be causing most of the pollution. As well, BVLD is considered to have better air quality than most parts of B.C..
- Attitudes toward wood smoke depend on (1) the type of wood being burned and (2) lighting the fire properly and burning clean (no garbage or other materials). For most, if the wood is dry and no garbage or other materials have been added to the fire, wood smoke is not offensive.
- The unpleasant odour is the main reason wood smoke is disliked. Only a few people mention health as the reason they dislike wood smoke.
 - Health concerns were mentioned more often in Smithers, along with visibility. Smithers is located in a valley and more likely to have wood smoke in the air than Terrace or Burns Lake.
- Perceptions of whether or not their neighbourhood or community is smoky depend on the community and location within or outside the town:
 - Participants from Terrace and Burns Lake report that the town as a whole is sometimes smoky but not that often.
 - Smithers residents agree that the town as a whole is often smoky beginning in the fall and ending in the spring.
 - Rural participants do not feel their neighbourhoods are smoky, while those closer to town say that they have neighbours who produce a lot of smoke.
- The Smithers survey results support the discussion group findings:
 - A majority (58%) indicate they like the smell of wood smoke. Less than a third (30%) stated they do not like it. Respondents to the survey were far more decisive than those in the discussion groups and few answered 'it depends'.
 - Negative health effects (87% agree) is the main reason that wood smoke is not liked. Visibility (71%), odour (65%) and stains (36%) are also reasons that wood smoke is not liked by some.

- The majority of respondents report that they make an effort to reduce the amount of wood smoke produced by their household. Most common reduction measures include covering the wood (86%), seasoning the wood (86%) and burning hot (81%). Fewer say they 'don't damp' the fire (25%) or avoid burning during air quality warnings (21%).

Awareness of BIS and changeout programs

- Awareness of previous efforts to educate and inform the public about the changeout program is low. This indicates that further efforts to encourage a changeover, including by-laws, must be communicated effectively to maximize response. Those who had attended workshops say the information and demonstrations changed their attitudes and they began to think about an upgrade.
 - The survey revealed that less than 20% of respondents were aware of the previous changeout program or the Burn-it-Smart workshops.
 - In the discussion groups, only a few participants had heard of/ attended a BIS workshop or indicated they were aware of changeout programs.

Barriers to switching to a new technology

- Changeover programs can be effective. Close to half of the discussion group participants have already considered upgrading to a new technology stove—most in Smithers where there is more concern for the quality of the air, and a few from the other communities.
 - The main reason they are considering an upgrade is because they have heard that new stoves are more efficient as they heat quickly, are very warm, and use half of the wood required by the conventional stoves. A few express concern about the environment and air quality, particularly in Smithers.
 - Those who are not considering an upgrade say they do not believe that wood smoke is a problem in their area and they are happy with their current conventional stove.
- As well, changeover programs are likely to receive a more positive response than encouraging alternative energy sources. Interest in replacing wood heat with current energy alternatives such as gas and electricity is low. Residents feel they need to rely on wood heat because in the past alternative sources have not been reliable.

- Cost is, by far, the most common barrier to purchasing a new technology wood stove among those who are considering an upgrade. Installation and potential alterations to the home add to the cost and must be calculated into any incentive programs. Without a financial incentive many residents will not change over even if the desire is there—they have a working stove and a new stove will not be given financial priority.
- Participants in the discussion groups were unable to provide a precise financial incentive that would encourage them to upgrade to a new technology stove. Buy-back/ exchange programs, government grants, and tax refunds are mentioned as appealing financial incentives.
 - Inspectors would also be needed to provide advice on installation, house alterations and the size of the stove.
- Survey results also indicate that changeover programs are acceptable to the public. They are either planning/considering a change or would like to change/upgrade but again, are unable to due to the cost.
 - Further, the awareness of advanced technology stove is high among respondents. Close to three quarters are aware and over half know someone who installed a new technology stove.
- The perceived advantages of new technology stoves are: they use less wood and they are safer.
- Cash incentives and education receive the most support by the majority of respondents. Potential bylaws such as taxes and issuing tickets receive far less support.

Reaction to bylaws and communication statements

- Overall, reaction to the bylaws in the discussion groups was negative. Most feel it will have little impact on the community or their own behaviour. Many people in the region rely on wood stoves as a main source of heat and they are concerned about extra costs for people who cannot afford it.
 - In addition, residents feel the bylaws represent a loss of community control.
 - A positive approach through education and information rather than a punitive system is preferred.
- The communication statements about wood smoke and health risks were not well received in the discussion groups and not considered credible by most. Almost all

of the participants say this would have little impact on their behaviour or decision to upgrade to a new technology wood stove.

- A few of the participants acknowledge that their attitudes toward wood stove use shifted slightly during the course of the discussion. More information about the new stoves as well as education about how to burn efficiently would be appreciated.
- Results of the Smithers' survey differed slightly. A majority (60%) of respondents to the survey thought the health messages to be credible. The qualitative findings suggest that many of the facts are known to residents.

Communication

- Local newspapers were mentioned most often as the best means to communicate with the community. Discussion groups, burn-smart workshops, websites and newsletters were also mentioned. Important to residents is having the information come from a neutral source so it does not appear that someone is trying to sell them something.

Shifts in behaviour

- The research identifies three potential segments of wood stove users: (1) Hesitant: Would like to upgrade but are hesitating because of the cost (2) Resistant: Not interested in an upgrade (3) Unaware: Have not heard about new technology wood stoves and are not that aware that wood smoke contributes to poor air quality.
- The discussion group increased the interest in education and information about new technology wood stoves and in some cases, the effect of wood smoke on air quality, particularly among those who are hesitant about upgrading or were unaware of new technology stoves.

1.2 Recommendations

- Changing individual-level behaviour represents a serious challenge for the Ministry. Many people in these communities are satisfied with their current stoves and do not see a reason to change to a new technology stove. Cost is the most serious barrier to overcome even for individuals who would prefer to upgrade.
- Financial incentives will be crucial to changing over wood stoves. Both the qualitative and quantitative research reveal that from residents' perspective financial incentives are needed. Exchange programs are popular because

residents recognize that if one of the goals is to reduce wood smoke emissions, conventional stoves need to be out of circulation. Tax rebates through government programs would help as well.

- Discussion group participants were hesitant to suggest a monetary amount. From the quantitative results, however, a sizeable portion responded positively to a \$400 incentive.
- Financial incentives should consider all of the costs associated with the installing new technology stoves. In addition to the stove purchase, inspection and renovation costs should be factored in. Financial incentives may not work if all aspects of installing a new stove are not considered.
- In the long-term, alternative energy sources to wood need to be addressed as a policy and strategy issue. One of the issues continuously raised in the discussion groups is the difficulty of relying on gas and electricity because of cost and reliability. Many people, even those closer to towns, experience power outages which makes wood the most reliable fuel for their home. Residents would appreciate this issue be addressed.
- Education is a key factor for encouraging behaviour change according to this research. Those who have been exposed to workshops and information about the advantages of new technology stoves are more likely to be considering, or open to considering, upgrading their current stove. However, few people in the community were aware of the BIS or change-out programs.
 - In addition, more education is needed about the effects of wood smoke on air quality—wood smoke is not viewed as a serious contributor to poor air quality.
- The survey results suggest that residents are burning hot and dry and are seasoning firewood. However, the practices of burning only wood, not damping down at night, and refraining from burning during periods of poor air quality are less common.
- Education through workshops, community discussion groups, and newspaper articles would be the most effective means to communicate with the public. Newspapers, particularly local newspapers, are read by most of the residents we spoke with and are considered a reliable source of information. As well, residents regularly receive information about the community from the local newspaper(s).
- Workshops and discussion groups may have some success educating individuals. The challenge will be encouraging people to attend. For example, many say they are not interested when they see demonstration at community events. However, feedback about the workshops from those who attended was very positive. Of interest was the demonstration of the new and conventional wood stove which was

interesting and challenged people's knowledge and beliefs about the amount of pollution wood stoves produce.

- Based on previous initiatives in other areas, bylaws are likely an effective means to encourage behaviour change over the long-term. They have had success in other regions (see below). Effectively communicating the bylaws will help residents understand the purpose of the bylaws and will ease the transition. Immediately, the reaction in some communities is likely to be negative. Residents view bylaws as intrusive, ineffective for reducing wood smoke and impossible to implement. A few communication suggestions based on the research include:
 - Provide a rationale for the bylaw (see the point on communication);
 - Focus on the education aspects of the bylaw—residents responded positively to further education;
 - Residents may feel a bylaw represents a sudden change to their lifestyle—consider framing the bylaw in terms of long term objectives for air quality improvement;
 - Explain how the bylaw will affect individual households;
 - Explain how the bylaw will affect individuals who rely entirely on wood stoves for heat, particularly any allowances made for this group—this is a serious concern for residents who are worried that some households in the community will be penalized for heating their home.
- Effective communication is the key to understanding the effects of wood smoke on air quality. Most residents do not believe the air quality is poor in the region, and they do not believe individual wood smoke contributes to poor air quality. To communicate this, more specific and credible information is required. The statements presented were not well received because they were broad, conflicted with beliefs around air pollution and presented facts that can be disputed. A few suggestions to communicate effectively include:
 - Wood smoke is only one of several contributions to air pollution. When wood smoke is presented on its own, the focus group discussions shifted to pollution sources that are perceived to be more dangerous such as industry or cars. Framing wood smoke as one of several contributors may re-focus attention away from other sources. A pie chart of emission sources within the BVL indicating contributions from various source categories could do this. Where appropriate comments on how emissions relate to ambient air quality should be provided.

- Case studies in New Zealand offer further indication that wood smoke has consequences a Fall 2002 Health and Clean Air publication offers the following perspective:

A study from Christchurch New Zealand leaves little doubt that wood smoke is dangerous. A city of about 330000 Christchurch has an estimated 47000 wood burners and open fires almost all wood though some coal is used. There is no heavy industry and only local traffic but severe winter inversions can trap smoke and soot from wood burning. As levels rose slightly-about 5 percent-acute hospital admissions for respiratory disease increased by 3.7 percent and for pneumonia by 5.3 percent. Admissions for cardiovascular disease were also increased but to a lesser extent. See:

<http://healthandcleanair.org/newsletters/issue3.html>

- Focus on the impact of individual behaviour. For example, if each person reduces emissions by a small amount, the community would be less smoky. This is a strategy that has working for recycling campaigns and may be effective in this case because of the strong sense of community. A sizeable portion of wood users in the community are already making attempts to reduce wood smoke. An indication of the amount of wood smoke reduced by changing out an old wood stove may be effective.
 - An indication as to how wood stove emissions compare to other sources, examples:
 - *“wood stove sold before stiffer regulations took effect in 1992 can emit as much pollution as seven diesel buses”* Guillermo Cole of the Allegheny County, Pa., Health Department.
<http://www.poughkeepsiejournal.com/apps/pB.C.s.dll/article?AID=/20051120/NEWS04/511200332/1008/NEWS04>
 - *“While EPA certified stoves emit between two and five grams of fine particulate matter per hour, uncertified models can emit forty to eighty grams.”...“Another way to look at it is that a wood stove that is not certified emits as many fine particles into the air in nine hours as does a certified wood stove in 60 hours or a mid-size automobile traveling 18 000 km in one year.”*
http://www.ec.gc.ca/EnviroZine/english/issues/58/get_involved_e.cfm
 - Provide information and facts that are precise and relevant to the community wherever possible. In the long-term, studies that connect the effects of poor air quality to the community, such as increased respiratory problems among children and adults would further educate the community about air quality and the health

risks. A recent example where this has been used is the State of the Air 2006 in British Columbia report where the experience of a Port Moody resident with Chronic Obstructive Pulmonary Disease provides perspective <http://www.B.C..lung.ca/SOARReport2006.pdf>. A profile of a BVLD resident could provide a similar perspective.

- The positive aspects of heating with wood should be highlighted such as:
 - New certified wood stoves use 1/3 less wood compared to older stoves.
 - Finally, the accepted fact that wood heating is a carbon neutral source that does not contribute to global warming should be communicated.
 - Initiatives such as bylaws could be framed in a similar way: with an acknowledgement that this is one of several initiatives to tackle the problem of poor air quality.
- The time of year a changeout takes place will be important. Although many participants in this research do not have a preference, the discussion about installing wood stoves suggests that this is potentially a lengthy procedure. Spring and summer months for a changeout program would make the most sense.
- The Ministry may want to consider educating the public about the personal benefits of new technology wood stoves. The main source of information is currently from sales people.

3.0 PROJECT BACKGROUND AND OBJECTIVES

The main objective of the research is to determine barriers and solutions associated with the change from conventional wood stove technology to cleaner options such as advanced technology wood burning appliances, gas, propane, electricity, oil or other new technologies, and the application of clean burning practices.

Specific project objectives:

- Impressions as to whether wood smoke is a problem or not
- Feedback on perceived air quality within the community
- Efforts to control residential wood smoke both within the community and individually
- Perceptions for changing out conventional wood stoves for new technology wood stoves or cleaner heating options (such as natural gas, propane, oil or electricity)
- An indication as to the effectiveness of techniques for encouraging the change out of conventional wood stoves (financial incentives, bylaw options, or health messaging).

4.0 METHODOLOGY

4.1 Qualitative discussion groups

The following table indicates the number of people that participated in each town.

Burns Lake	◆ Group One: 5	◆ Total: 11
	◆ Group Two: 6	
Terrace	◆ Group One: 8	◆ Total: 12
	◆ Group Two: 4	
Smithers	◆ Group One: 8	◆ Total: 17
	◆ Group Two: 9	

Participants were recruited based on the following criteria:

- At least 20% of the heat in their home is from a wood stove;
- The wood stove in the home which dates prior to 1990 or 1994 without a label on the back indicating compliance with CSA / EPA emission standards; and
- They are 21 years of age or older.

Participants were recruited using the following methods:

- Random sample of residents from each town;
- List of residents who are known to burn wood; and
- Advertisements placed in the local newspapers.

A note on the qualitative findings

- The main findings in the report are based on the views expressed by the majority of participants. Exceptions are noted by indicating that 'a few' or 'one or two' participants hold a contrary view.
- Most of the quotations used throughout the report summarize the views of the group unless otherwise stated.
- Differences that occur across the communities or other sub-groups are noted in the text.

4.2 Quantitative survey

Sample details

- Survey was administered between 15 March—23 April 2006;
- Residents in Smithers and the surrounding areas who were at least 18 years of age and older qualified for the survey; and
- Both wood users and non wood users were sampled.

Sampling methods

The data was collected using the following methods:

- Door-to-door visit: Surveyors visited a household identified as wood users by their chimney smoke or firewood piles outside of their homes.
- Phone survey: Residents from a list of pre-identified wood users.
- Self-complete questionnaire: Questionnaire was filled out at the April 24, 2006 Smithers Trade Show.

The sample is a non-probability sample. The main disadvantage of this sampling technique is that the error on the sample is not known and we are unable to generalize the findings to the population. The results of the quantitative survey are meant to be directional only and add robustness to the qualitative findings.

Missing data

Response rate to some questions on the survey was low, resulting in a large proportion of missing data. Therefore, respondents to the questions are based on the number of respondents rather than the entire sample.

Sub-Group Analysis

Where appropriate results were analyzed across three sub-groups:

- Conventional wood users
- Advanced wood users
- Non-wood users

The sub-groups are small and the results are meant to be directional only. The table below shows the breakdown of the sub groups in the sample. Also included is the breakdown from a 2003 random sample of the BVLD. For further details on the quantitative survey, see Appendix One.

SECTION TWO: DETAILED FINDINGS

5.0 OVERVIEW OF WOOD STOVES AND WOOD STOVE USE

5.1 Age of wood stoves

Almost all of the discussion participants have conventional wood stoves dating prior to 1990. The majority have stoves that date from the mid 1970s to the mid 1980s. Two people report that they own a stove that is older than this—one prior to 1970 and one from the 1930s.

A few were unsure of the exact date the stove was made, but they say it was in the house prior to 1993 and does not have a label on the back indicating compliance with CSA / EPA emission standards.

5.2 Description of wood stoves

The RSF (Renewable Solid Fuel), formerly manufactured in Smithers, is mentioned most often as the brand of wood stove participants have in their home. They describe it as “*the RSF made in Smithers*”. Model number indicating the size varied between 65 and 85. Other brands of wood stoves mentioned include Blaze Kings, Kozi Komforts, Woodchief, and Fisher Mama Bear.

The most common description of participants’ wood stoves is “*brick lined with a front-loading box*”. Typically, the stove is located near the centre of the house because this location maximizes the heating capabilities.

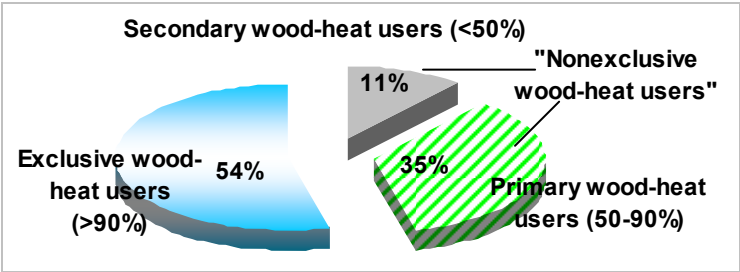
5.3 Prevalence of wood as source of heat

Wood heat is considered the main source of heat for the majority of participants in the discussion groups. About half report that wood is their only source of heat and no alternative heating source has been installed in the house. Those with alternative sources of heat report that they rely on wood, on average, for at least half of their heating needs. Gas or electricity were reported most often as the alternative heat source for those who do not rely entirely on wood. Only one participant reported using a pellet stove as a back-up.

Survey respondents in Smithers were asked how much they rely on wood heat, wood users were asked to classify themselves as exclusive (greater than 90%), primary user (50-90%), or nonexclusive (less than 50%).¹ Wood is the most important source of heat for the majority of these wood users. More than half (54%) rely exclusively on wood (more than 90%) and a third rely on wood heat for 50-90% of their heat. Few (11%) of the wood users rely on wood heat for less than 50% of their heating needs.

Wood heat in household heat consumption

3. How much of your household heat comes from wood?



Base: Wood users, N=86

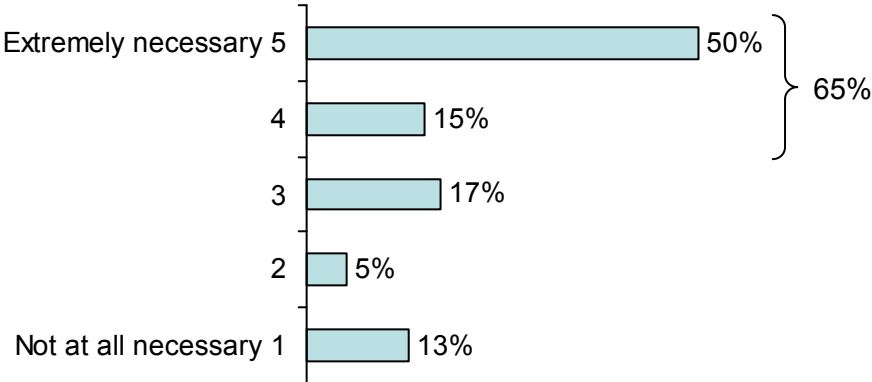
The survey also asked Smithers residents how necessary wood heat is to their household. Burning with wood is not viewed as a choice by most respondents. A majority (65%) say that heating with wood is necessary for their household, rating the necessity a four or five on a one to five point scale. Less than a fifth of wood users say wood burning is not necessary.

1. Classification based on data from “Residential Wood Burning in British Columbia—Public Opinion and Behaviour.”

This is consistent with views expressed during the discussion groups. For most, wood heat is necessary because 1) there is no alternative heating system in the house or 2) gas and electricity prices are considered high.

Necessity of Wood Heat

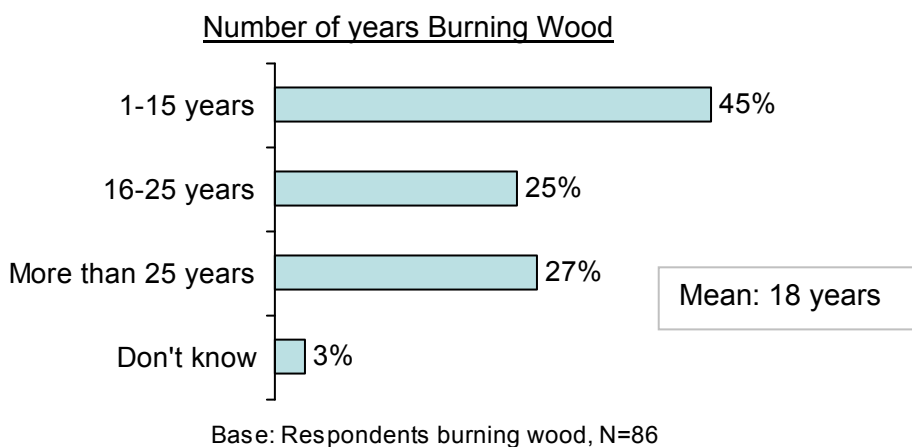
7. Is heating with wood a necessity for your household?



Base: Wood users, N=86

5.4 Length of time residents report they have used wood stoves

In the quantitative survey, Smithers' residents were asked how long they have been burning with wood. The average number of years reported by respondents is 18 years.



5.5 Burning practices

Wood burning practices were discussed in-depth during the discussion groups. The following topics were covered:

- Proper operation of a wood stove
- Lighting and keeping a fire burning well

Almost all of the participants in the discussion groups believe their household knows how to properly operate a wood stove and use the most efficient means possible to start the fire and keep it going. Most have been using wood stoves and relying on wood heat for many years (sometimes since childhood) so it is part of their routine.

The most common methods used to keep a fire burning well include:

- Burning dry wood only because it burns much longer;
- Seasoning the wood—cutting it one or two seasons in advance;
- Adding kindling/ paper (mainly newspaper)/ wood chips/ dry hemlock to start the fire and keep it going;
- Leaving the damper open so the air circulates and the fire burns hot;
- Cleaning both the chimney and stove on a regular basis

- ‘Burning hot’ meaning starting the fire quickly and adding dry wood so the fire does not smolder—some burn hot by leaving the door of the stove open to allow air to circulate;
- Using hard wood when available; and
- Stacking the wood tightly in the stove, so it will last and not smolder.

Although not wide-spread, some participants (or within their household) report using the following methods to keep their fire burning well:

- Diesel fuel;
- Mixture of diesel fuel and sawdust;
- Liquid accelerant that is normally used to start an outdoor BBQ or camp fire (unsure of brand);
- Damp wood or a mixture of wet and dry wood with the wet wood on the top is believed to keep the fire burning longer;
- Wet hemlock on top of the fire;
- Fire-starters—Zip cubes are mentioned; and
- Bacon fat, lard and cooking oils.

5.6 Conclusions and recommendations

- Wood burners often to rely on wood as their only source of heat or for the majority of their heating needs and other heat sources are considered a back-up. Further, wood heat is considered necessary for many households.
- The majority of participants say they know how to operate a wood stove properly and believe they use the most efficient methods to light their stoves. That said, many (not all) say they would be open to receiving additional information about burning efficiently.
- To keep the fire burning well, most participants use dry/ seasoned wood, start their fire using some type of kindling such as newspaper or wood chips and allow air to circulate.
- Although not wide-spread, some participants use wet/ damp wood or kindling or add an accelerant or fire starter. These participants are aware that this may not be good for the environment but they have been using these methods for a long time

and believe that overall wood smoke is not causing a great deal of harm to air quality.

- Several participants say they would be open to receiving additional information about how to use a wood stove more efficiently. A few participants have encountered education programs, such as burn-smart workshops, designed to educate residents about wood smoke and how to burn properly.

“I know how to use my stove but I guess there can always be improvements.”

- Some have concern about neighbours who are new to the area and have not used wood stoves in the past. They may need information about how to burn efficiently and what should and should not go into the fire.
- These findings suggest the following:
 - Future policies and changeout plans should take into consideration that wood is the either the main or only source of heat for many residents in the BVLD. This means that many households will not be willing/ able to change to alternative heating sources currently available.
 - Further education on how to burn smart is needed. Despite the confidence that their households know how to start and keep a fire going in the most efficient means possible, some households are adding non-wood material to the fire.

6.0 ATTITUDES TOWARD WOOD HEAT AND WOOD STOVES

6.1 Positive aspects of wood stoves

The discussion groups were an opportunity to explore in-depth wood users reasons for relying on wood as a main source of heat. Overall, participants were content with their wood stoves and have a positive attitude about burning with wood, in general.

The most common reasons participants like their stove include:

- **Dry, warm heat:** Participants report that other sources of heat such as electric or gas do not warm the house/ person in the same way. The heat is described as “warm”, “cozy”, and “comfortable”:

“It’s hard to describe. Electricity or gas just doesn’t warm you up the same way.”

- **Inexpensive:** All participants agree that wood is less expensive than gas or electricity to heat their homes. A few have relied on gas in the past but they claim gas prices have increased so they began to use wood more often.
- **Consistent heat:** Wood heat provides a warm heat throughout the day with little variation in temperature. Gas and electric heat respond to the temperature in the house which means cooler periods throughout the day.
- **Independence:** Many participants feel wood allows them to be independent. They do not have to rely on the government or a company to provide heat. It has become a lifestyle choice and in some cases, reflects why the person chooses to live in Northern B.C.. Rural residents say they would not be able to live where they do without a wood stove.
- **Reliability:** Power outages make it necessary for some residents in these communities to rely on a wood stove for heat during the winter. Although power outages occur less often than in the past, loss of power is still a reality and happens a few times over a winter.
- **Heats entire house:** Wood warms the basement and floors which are difficult to heat using other methods.
- **Exercise/ social outing:** Gathering wood has become part of the family routine for many residents. Some families gather wood together; it is a chore for older children; and for some, it is one of their main forms of exercise.
- **Renewable Resource:** Many participants consider wood a renewable resource and therefore believe they are causing less harm to the environment by burning wood. As well, some people collect wood that is dead or left from logging, so they feel they are using materials that would otherwise go to waste. They also feel that other sources of heat, such as gas and oil, cause far greater damage to the environment than wood burning.

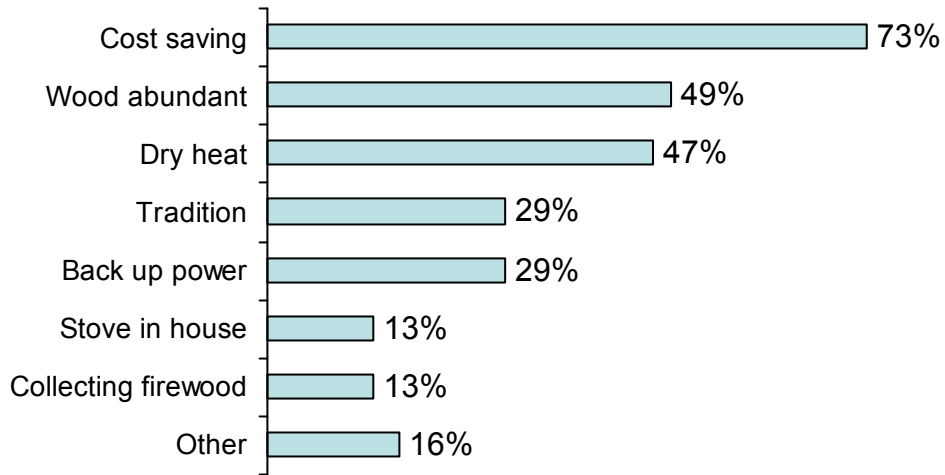
A few other reasons residents like burning with wood include: enjoyment from watching the fire (*“it’s hypnotic and I like to just watch it”*), no concern about CO₂ emissions and a few say they like starting fires because it involves working with their hands.

Wood users in Smithers were presented with a similar list of reasons for heating with wood in the quantitative survey. Cost saving (73%) is mentioned most often as the reason wood is used for heat (see chart below). Many also mention the abundant wood supply (close to half at 49%) and the dry heat (47%) as reasons they burn with wood.

In the discussion groups, those who say abundant wood supply mean the low cost because wood is readily available in the forest and they do not have to buy it and that it is a renewable resource—they are using *“slag wood from logging sites”* that would go to waste if not burned.

Reasons for choosing wood heat

57. What are the reasons you choose to heat your house with wood? (Multiple response)

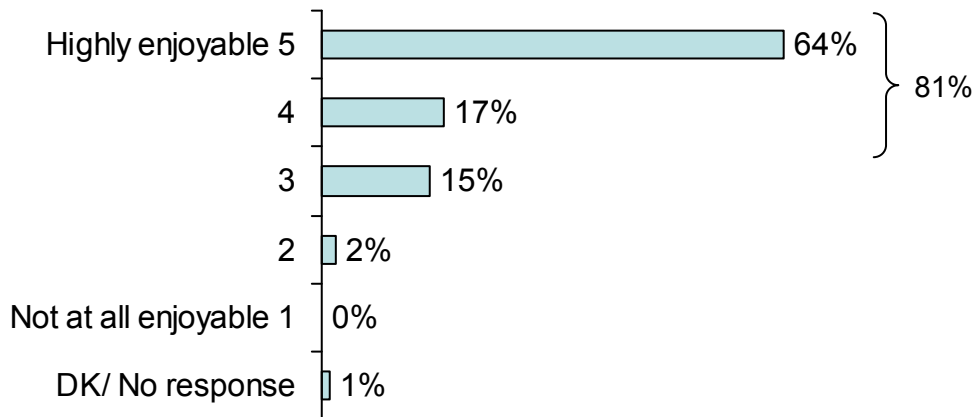


Base: Respondents using wood, N=86

In addition, a strong majority (81%) of respondents say that burning wood is enjoyable for their household, rating it a 4 or 5 on a one to five point scale.

Enjoyment of Wood Heat

8. Is heating with wood something enjoyable for your household?



Base: Wood users, N=86

6.2 Negative aspects of wood stoves

Discussion group Participants were probed about the negative aspects of burning with wood. The reasons participants dislike their wood stove varied broadly across the participants. The most common dislikes include:

- Mess both inside and outside the house including wood chips around the wood stove and yard and ash and dust in the house;

“It can be a dirty job cleaning [the wood stove] on a regular basis.”

- Smell throughout the house which gets into clothes and furniture;
- Smoke stains on the ceiling and walls;
- Smoke in the house when the fire is first lit;
- Those who rely entirely on wood stoves for heat need a house-sitter if they leave home in the winter so the pipes do not freeze;
- Work involved in gathering wood (most often a positive, but a few find it a lot of work in general or because they have injuries/ aging);
- Not as convenient as being able to turn up a thermostat;
- Safety concerns—although most feel that they are experienced and know how to build a fire, the risk of having a chimney fire is acknowledged and burns, especially when children are around the stove, are a concern;

“I don’t like the fact that it is the most volatile of all forms of heat. You need to be there to tend it. And you need to have someone there when you’re away.”

- Fires die down, especially in the morning and can take awhile to re-start the fire and warm the house; and
- Wood is expensive to buy and gathering wood means an expense for gas to drive to the woods, wear and tear on a vehicle, and chain saw repair.

6.3 Conclusions and recommendations

- Wood stove users say wood is inexpensive and abundant and they like the warm, comfortable heat they provide. A few participants in the discussion groups say there is nothing they do not like about their wood stove.

- Negative aspects of heating with wood are a trade-off for most. The advantages of wood heat—cost, dry, warm heat—far outweigh the negative aspects such as the mess and gathering wood. In addition, some of the negative aspects such as gathering the wood, are positive for many.
- These findings suggest:
 - Marketing the negative aspects of burning with wood is unlikely to convince residents to upgrade their conventional stove with another energy type such as natural gas or electricity.
 - The positive aspects of a changeout to other wood options could be used to influence behaviour such as: New stoves use less wood, pellet stoves can be equipped with a thermostat.

7.0 ATTITUDES TOWARD WOOD SMOKE

7.1 The smell of wood smoke

For most, attitudes toward wood smoke depend on:

- The type of wood being burned; and
- Burning properly with dry wood and no foreign materials.

Some wood smells more pleasant than others—hard wood such as poplar and alder was often mentioned as pleasant-smelling. For most, if the fire is started with dry wood and no garbage or other materials, wood smoke has a “pleasant” smell described as “sweet” and “homey”.

“[The smell] depends on how well the [stove] is burning and whether the wind is blowing or if it’s settling on the ground.”

Almost all of the participants say they dislike the smell of wood smoke when garbage or wet wood is in the fire. The smell is then described as “strong” and “overwhelming”.

A few dislike the smell of wood smoke in general, and say it is “dirty” or “smells like burning leather”. The smoke permeates their homes and clothes. One participant has asthma and the smell is associated with breathing problems and using an inhaler.

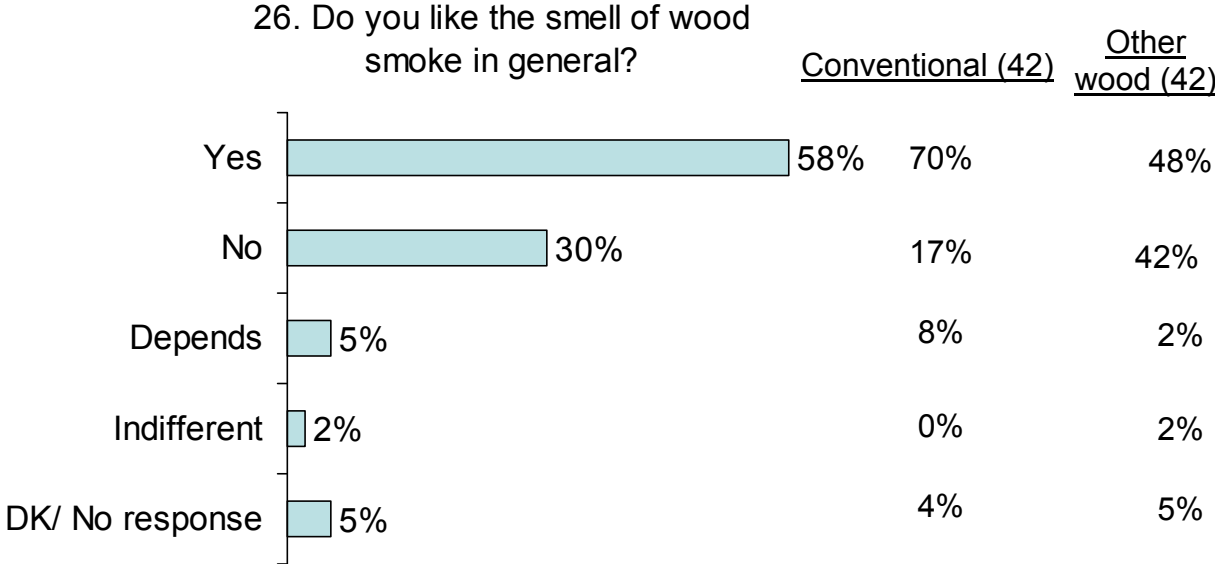
However, participants who do not like the smell of wood smoke adjust to it quickly and do not believe it is a reason to switch from wood to alternative fuel options. Wood smoke is part of the environment and they are used to it.

Surveyed Smithers residents, regardless of whether or not they use a conventional wood stove were asked if they like the smell of wood smoke. Wood smoke is not considered

offensive by most respondents. More than half (58%) say they like the smell of wood smoke and less than a third (30%) do not like the smell of wood. Survey respondents were far more decisive than participants in the discussion groups and few say responded that it depends.

A small difference occurs between conventional wood stove users and other wood burners. Respondents who identified as conventional stove users are more likely say they like wood smoke compared with other wood users. This may suggest a higher tolerance to the smell of wood smoke than other wood users.

The Smell of Wood smoke



Base: All respondents, N=129

7.2 Reasons participants like the smell of wood smoke

Residents like the smell of wood smoke for several reasons:

- The smell of wood smoke is nostalgic for some and reminds people of their youth and camping trips. They describe the smell as “comfortable” and “familiar”. Many participants who have used for a long time consider the smell part of their environment.

“I love the smell of wood smoke. I have many fond memories of gatherings around central wood heat. I grew up with wood heat.”

- They associate the smell with living in a rural area and a healthy lifestyle. It gives them a “*connection to the outdoors*”.
- Some cook with wood stoves and smoke fish, so the smell reminds them of food and evokes a comfortable and pleasant feeling.
- Smells pleasant, particularly with certain types of wood.

7.3 Smoke in the Community

Perceptions of whether or not the community is smoky are dependent on the community. All of the discussion participants from Smithers say the town is *often* or *sometimes* smoky beginning in the fall and ending in the spring. One participant described it this way, summarizing the other participants:

“When I come into town, once I’m on the top of the hill, I can look down and see a blue haze hanging over the town. It’s the smoke from the chimneys.”

Burns Lake and Terrace participants do not believe their towns are very smoky. Most admit it is *sometimes* smoky and a few say *never*. In Terrace they say the wind blows the smoke away from the town and toward Smithers where it is trapped in the valley.

Perception of the level of smoke in participants’ immediate neighbourhoods, varied. Those in rural areas are more likely to say their neighbourhoods are *never* smoky. They do not have neighbours close by and they have enough space so they do not notice smoke from their own chimneys. Occasionally, if there is no wind, a few from Smithers say the smoke will settle in their own yard but this is unusual.

Those who live closer to town admit that their neighbourhoods are *sometimes* smoky. Several participants in these communities say that they have neighbours who produce a lot of smoke. These neighbours are suspected of burning garbage or they have stoves that are too big for their homes. Smoky houses are easy to identify because smoke billows out of the chimney consistently or puffs of black smoke are periodically emitted indicating the person is burning garbage.

Some have grown up with the smell of wood smoke and are not that aware of it—they “*never smell it*”. They occasionally note smoke coming from neighbours’ chimneys but they do not describe their neighbourhood as smoky.

The table below summarizes the overall responses by the town:

	Level of smoke in the community/ town	Level of smoke in the neighbourhood
Burns Lake	◆ Sometimes smoky	◆ Rural: Never ◆ Town: Sometimes
Terrace	◆ Never-sometimes smoky	◆ Rural: Never ◆ Town: Sometimes
Smithers	◆ Sometimes-often smoky	◆ Rural: Sometimes ◆ Town: Sometimes-often

7.4 Downside of wood smoke

Although participants do not find wood smoke offensive, they agree there are downsides. These include:

- **Health risks:** Wood smoke can exacerbate respiratory conditions such as asthma. One woman heard that wood smoke/ air quality has meant an increase in ear infections in young children.
- **Air quality:** Participants, despite the wide-spread belief that wood smoke is not a main contributor to air pollution, acknowledge that wood smoke contributes to poor air quality.
- **Visibility:** In Smithers, a few participants say that at times it is smoky enough in the community to affect visibility.

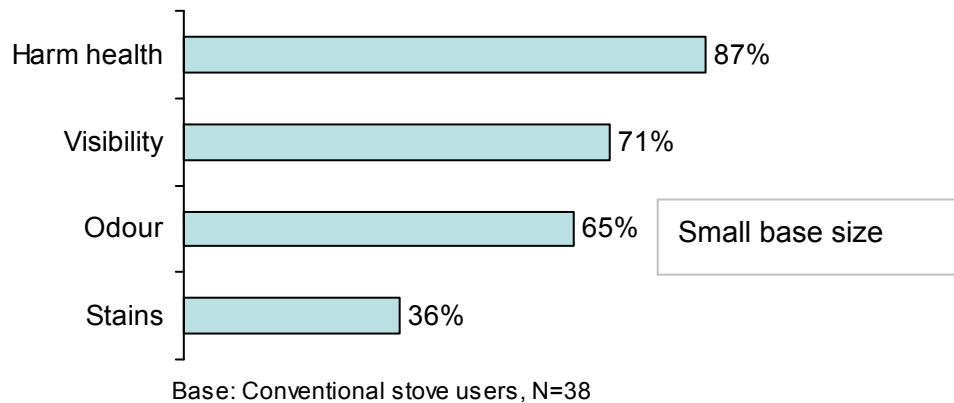
Also mentioned as a downside of wood stoves in the previous section are the odour and stains because of wood smoke.

In the quantitative survey, health risks (87%) and visibility (71%) are the main reasons why some respondents who use conventional stoves dislike wood smoke, followed by odour (65%) and stains (36%).

In the discussion groups in Smithers, health was slightly more ‘top of mind’ but still not mentioned as often as the mess in and around the house, which the majority of participants agreed was a problem. Visibility was mentioned only in Smithers by a few participants. Participants described Smithers as being located in a valley and the wood smoke tends hang over the town and surrounding area.

Reasons for Not Liking Wood smoke

27. Please rate the following reasons for not liking wood smoke on a 1-5 scale (Percent who agree (4-5)).



7.5 Reduction of wood smoke

As discussed, participants believe they know how to light their wood stoves properly. If a wood stove is lit properly, it will produce as little smoke as possible as well as heat the house quickly and last for a long period of time. Efficiency and habit, rather than a conscious effort to reduce smoke, motivates people to burn properly. Only a few say they make a conscious effort to reduce smoke. That said, most are conscious of smoke disturbing their neighbours.

The methods employed to reduce wood smoke are often the same tricks used to keep fires burning well. The most common means of producing less wood smoke includes burning only dry/ seasoned wood and ensuring the fire has proper ventilation.

“To reduce the amount of wood smoke, I leave my stove door open and use very dry wood. I don’t fill it too full and clean the stove pipe regularly.”

Participants say they consciously avoid certain behaviour that increases smoke. This includes:

- Adding garbage such as card board, too much paper or bark from trees (sometimes logs are peeled) to the fire;
- Continuously stoking the fire; and
- Allowing the fire to smolder because this increases the amount of smoke.

In addition, during air quality warnings some participants either cut back on the use of wood or stop burning it altogether if they have an alternative heating source. A few stop burning wood once the weather starts to warm up (usually near the end of April) and wear

warm clothes if the temperature drops. It was mentioned that some households (mainly Smithers and Terrace) burn so much wood that they have to open their doors and windows in the middle of the winter and this is considered wasteful by a few.

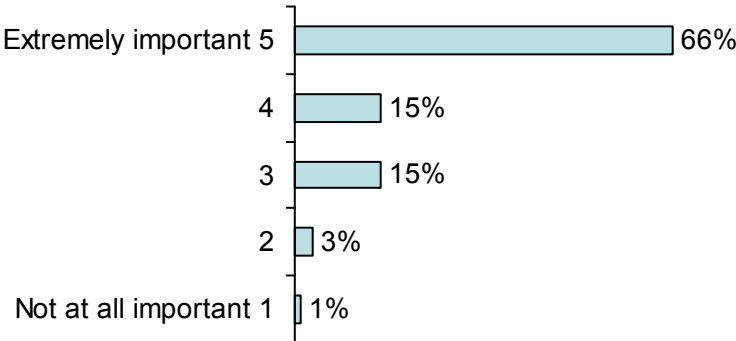
Asked if there is anything else they could be doing, some say “burning with a new technology stove.” Many are aware or have heard that new technology stoves produce less smoke than conventional wood stoves.

Participants also discussed how and where they stored their firewood once collected. Most say they keep the wood in a dry place, either in the basement or outdoor shed. A few store it outside where it is either covered or brought in to dry out.

Air quality is important to residents in Smithers. A strong majority (81%) of survey respondents rate air quality a four (15%) or five (66%) on a scale of one to five. This finding is consistent across all sub-groups.

Importance of Air Quality

60. How important is air quality in your neighbourhood?

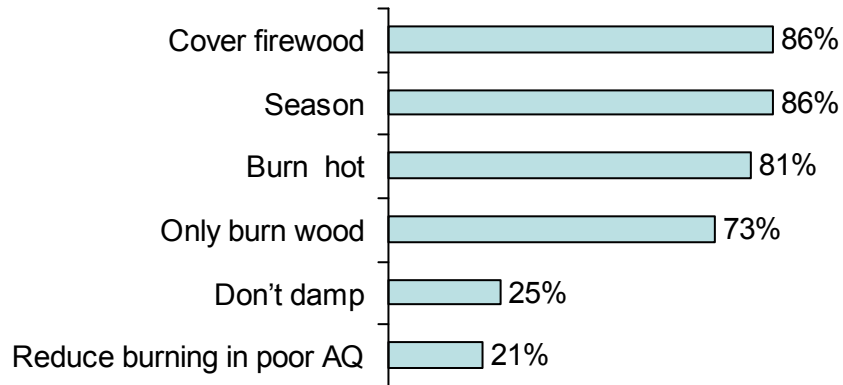


Base: Respondents answering question, N=74

As well, a large majority of respondents to the survey take some action to reduce wood smoke. Most say they cover the firewood (86%), season (86%) and burn hot (81%). Fewer, approximately a quarter, say they do not damp the fire (25%) and the reduce burning during poor air quality (21%).

Voluntary Wood Smoke-reduction Actions

31. Has your household taken any of the following action to reduce wood smoke?



Base: Wood users, N=86

7.6 Reasons for smoke reduction

Participants say they are concerned that neighbours may complain if they produce too much smoke. Most have not had a complaint about their own wood stove but say that neighbours who regularly produce a lot of smoke often receive complaints. As well, participants are concerned about neighbours who do not burn with wood because smoke can drift into homes and cause laundry drying outside to smell like smoke.

A few participants have received complaints about the amount of wood smoke they produce. They say that when they first light the stove it initially produces a lot of smoke and then dies down so it is barely noticeable. They acknowledge that the complaints are legitimate, but they also see this as a normal part of burning wood which they consider necessary and wide-spread in Northern B.C..

Only a few mention a concern for the environment as a reason to reduce wood smoke. Although most participants are concerned about the environment in general, they do not believe their community has serious air quality problems. Air pollution in the North is attributed to industry and not individual wood stoves. Further, wood is thought by many to be a renewable resource.

“Home wood smoke is not the issue when it comes to air pollution. [The government] needs to re-focus.”

7.7 Conclusions and Recommendations

- Wood smoke is not offensive to most people. The majority of participants believe that if you are burning wood properly, the smell is generally pleasant. They associate it with a healthy lifestyle and the outdoors. It is also part of the environment and most are used to it.
- Most discussion group participants admit that their community or neighbourhood is sometimes smoky. Smithers' participants are concerned more than the other communities about the smoke. They have problems with visibility and as a result, negative health consequences are more of a concern.
- Most residents say they are making efforts to reduce wood smoke. They cover the wood, season it and burn hot. They also avoid behaviours that may increase the amount of smoke from the chimney such as stoking or adding too much garbage.
- Concern about bothering neighbours is the main reason some participants consciously reduce wood smoke. A few report that they have neighbours producing too much smoke and it bothers them. As well, a few have received complaints. They are aware that not everyone burns with wood and too much smoke can bother some households.
- Although air quality is a concern of residents, the discussion group findings suggest that most do not believe wood smoke is directly responsible for air pollution. They believe that other polluters such as industry and cars create more air pollution.
- The findings suggest the following:
 - Further education in the following areas:
 - Reminders for how to burn smart including avoiding behaviours such as:
 - Damping the fire
 - Adding accelerant or household materials to the fire
 - Adding even small amounts of garbage such as newspaper or cardboard to the fire
 - Burning during poor air quality warnings
 - Many discussion group participants often do not believe wood smoke has a direct impact on air quality (some do not feel the region has an air quality problem). Further education is needed on this issue. The impact of other contributors to pollution cannot be avoided. Residents are aware of the effects

of car exhaust and industry in the area. Acknowledging this, and framing wood smoke as one of several contributors, is one way to deal with this issue.

- The results also imply that focusing on individual behaviour may have an impact on behaviour. Discussion group participants are generally concerned about neighbours and make an effort to reduce wood smoke (or burn efficiently). Tying these actions to a result such as reducing some of the air pollution is a means of communicating the importance of the negative environmental effects of wood smoke.

8.0 BARRIERS TO SWITCHING TO A NEW TECHNOLOGY

8.1 Plans for upgrading current conventional stove

Close to half of the participants are considering an upgrade to a new technology stove—most of the participants in Smithers and a few from the other communities (Burns Lake was the most resistant). The main reason they are considering an upgrade is because they have heard that the new stoves are:

- More efficient;
- Heat quickly;
- Very warm; and
- Use half of the wood required by the conventional stoves.

A few express concern about the environment and air quality, particularly in Smithers.

The age of the stove was not a strong reason for an upgrade. However, a few say they have had their stove for a long time and it is time to upgrade to a model that is more efficient and modern.

Only one person was considering a new stove because their conventional stove has worn out:

“My stove has holes in the side and I’m really worried about it being a fire hazard. I have kids at home.”

The participants considering new technology stoves are at the stage of doing research into types of stoves, comparing costs, and accounting for the cost of installation (this includes installation of the stove and any adjustments to the chimney or house that may be required).

Participants who are not considering replacing their wood stove have most often been burning with wood for a long time with the same stove and have no reason to upgrade.

They feel their stove is efficient. In particular, participants who upgraded to new stoves in the mid 1980s feel that improvements cannot be made to this technology (particularly the Smithers RSF). They say these stoves were a great improvement over their previous stoves.

“My stove works perfectly. It never breaks and it heats the house fine. I got it in 1985 and it was better than the old one. I don’t think they can make a stove any better.”

Further, these participants do not believe there is a pollution problem because of wood smoke. They attribute poor air quality in the region to industrial plants, beehive burners, and car exhaust. A few say they even mistrust the air quality readings. They believe that compared to other areas of the province, Northern B.C. has relatively clean air.

“It’s not the North who has the [air pollution problem]. Our air is clean. Other parts of B.C. have more air pollution because of car exhaust.”

A few participants say they did not know about new technology stoves. The discussion was the first time they were aware that more efficient stoves are available. After the discussion they were unsure about an upgrade because of the expense and uncertainty about the advantages. They would be interested in more information.

8.2 Barriers to upgrading to new technology stoves

Cost is, by far, the most common barrier to purchasing a new technology wood stove. Most say new stoves cost at least \$3,000. This amount is hard to justify when their current stove works well. A few participants use their stoves for cooking at least some of the time and the cost of a new technology cook stove is even higher than a regular stove, but they want/ need this option. As well, a new wood stove means installation costs discussed below.

Few participants consider the cost-saving over time. The initial cost for the actual stove remains the main barrier. As well, some participants question the cost saving because they are collecting their own wood either from their property or in the woods, and it does not matter how much wood is burned so using less does not matter.

A few other barriers include:

- **Installation:** Some are concerned about the installation of a new stove. Installations and alterations to the house cost money in addition to the purchase of the stove. The size of the house and chimney determine the size of the stove, and there is concern that chimneys may have to be wider and longer. Stoves may also need to move from the centre of the room so it is closer to the wall.

➤ A few mention that the work involved for an installation is a deterrent.

- **House inspection:** An Inspector may need to come to the house and make recommendations about house renovations before the new stove is installed. This is a further expense and, according to participants, inspectors are not readily available in Northern B.C.. One of the reasons is because inspectors are liable for their recommendations and this is a big responsibility.
- **Insurance:** A few are worried about changes to their insurance. Insurance is high for wood stove users and they are worried about having a change in their rates. Even if a new technology stove would most likely mean less insurance cost because it is safer, an insurance adjuster may need to come to the house and re-evaluate rates. Wood stove users have often had difficulties finding reasonably priced insurance and do not want to interfere with current insurance policies.
- **New technology may not reduce wood smoke:** Some participants believe that a new stove will produce as much smoke as conventional stoves if not installed properly.
- **Technology upgrade:** Concern that as soon as an upgrade to new technology is made, better technology will be available and again pressure to upgrade.
- **Lack of personal benefits:** Some participants do not believe there is a personal benefit to upgrading to a new technology stove. They do not believe an air quality problem exists in the region so there is no reason for them to upgrade unless a new stove would improve their quality of life.
- **Old stove works well:** Many of the participants feel that their conventional stove works well and they see no reason to replace it. They have been using the stove for many years with few or no problems.
- **Mistrust of the new technology:** A few participants have neighbours who installed new technology stoves. They report that the stoves regularly require repairs. This, combined with a stove that has worked properly for twenty-five years, makes a new technology stove less appealing.

8.3 Financial incentives

Participants were unable to provide a precise financial incentive that would encourage them to upgrade to a new technology stove. Those already considering an upgrade mention:

- Buy-back/ exchange programs;
- Government grants;
- Subsidies; and
- Tax breaks.

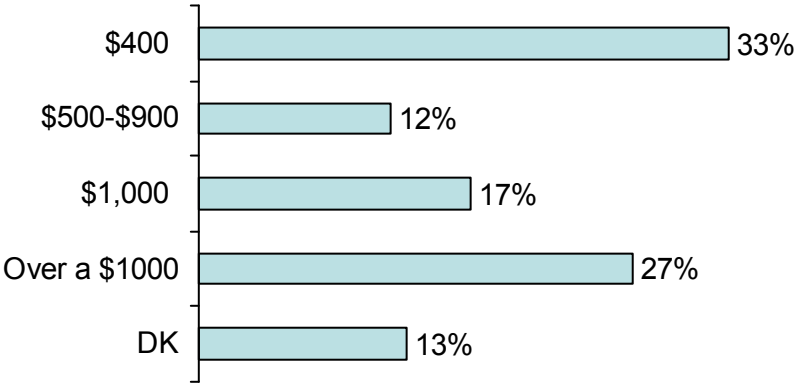
A federal government heat rebate program was suggested. Currently, a government program is in place that sends an inspector to a home to assess and make recommendations about where the household can better insulate their home to save on heating costs. Homes that meet certain requirements are given a tax rebate.

Some also feel that if financial incentives are to work properly, the government needs to consider all of the costs involved in upgrading to a new technology stove. In addition to financial assistance, inspectors would be needed to ensure people are choosing the right stove for the size of the house.

The questionnaire asked conventional stove users to indicate the financial incentive that would encourage them to upgrade. A third say that \$400 would be adequate. Just over a quarter say they would need an incentive in excess of \$1000.

Size of financial incentive for an effective changeout

70. Various forms of financial aid are being considered to help your household replace your old wood stove/fireplace insert, as long as you agree to trade in your old appliance. These financial aids may include 15% and more discount on the purchase price of a new heat appliance, waiver of permit charge, low interest loans. 70.1 Will a financial aid valued at \$400 be enough for your family to get a new heat appliance which costs about \$2000-3000?

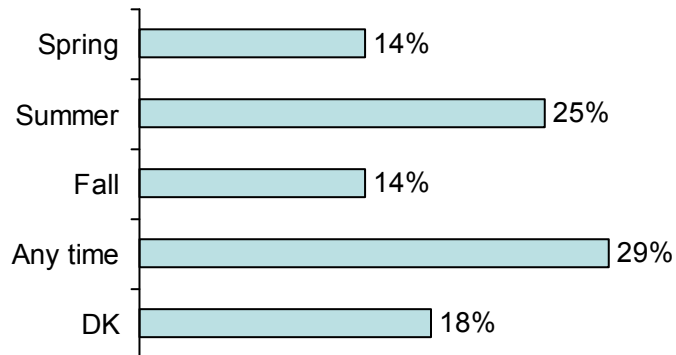


Base: Conventional stove users, N=53

Conventional appliance users were also asked if they have a preference for the best season to financially afford a changeover. Close to a third (29%) say 'any time'. A quarter would prefer the changeout take place in the summer.

Financially Best Time for Changeout

73. In regard to purchasing a new appliance, is there a time of the year your family would be more financially able to make such a purchase?



Base: Conventional stove users, N=42

8.4 Conclusions and recommendations

- Approximately half of the participants are considering switching to a new technology stove because they are more efficient, heat quickly, are very warm and use less wood. A few also express concerns about environment and air quality, particularly in Smithers.
- Financial incentives were indicated to be important if residents are going to upgrade conventional wood stoves. Other barriers related to installation, inspection and insurance were mentioned.
- The findings suggest:
 - A financial plan that encompasses all the costs to upgrading to a new technology stove needs to be part of the changeover strategy. The survey of Smithers residents suggests that huge financial incentives may not be necessary, but additional costs such as installation and inspection need to be considered. This may require partnership with other government agencies or local businesses or groups.
 - Although many have no financial preference for the time of year that a changeover would take place, the discussion during the groups suggest a changeover would take more than a day which could mean some houses would be without heat. A changeover during the winter, too early in the spring or late in the fall would not be realistic.

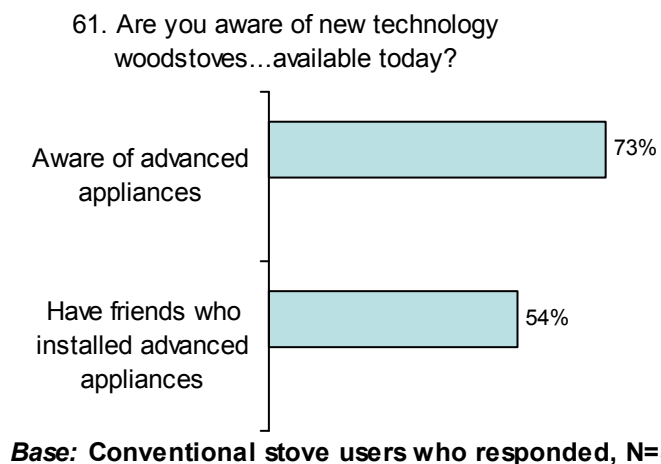
9.0 ATTITUDES TOWARD NEW TECHNOLOGY STOVES AND AWARENESS OF PREVIOUS PROGRAMS

9.1 Knowledge of new technology stoves

Most of the participants in the group are aware of new technology stoves. Many of the participants have neighbours and/ or friends who have switched to advanced technology. A few have also attended a burn-smart workshop and saw the benefits of the new technology demonstrated, and were very impressed.

In addition, awareness of advanced technology stoves is high among respondents to the quantitative survey. Close to three in four (73%) say they are aware and more than half (54%) have friends who have already installed new technology.

Conventional Appliance Users Aware of Advanced Wood stoves



Positive descriptions about the stoves include:

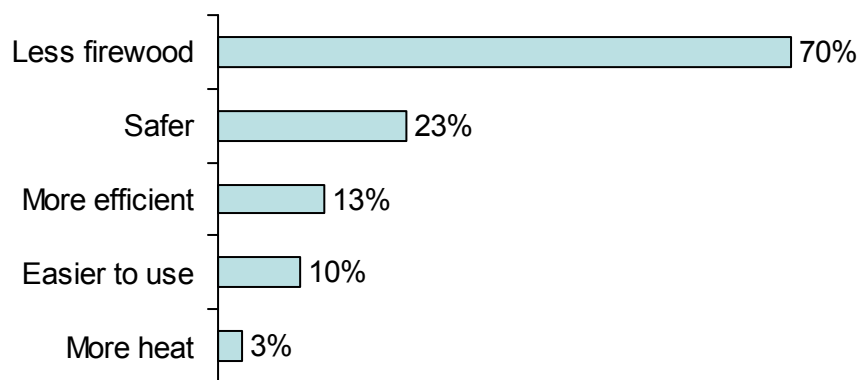
- **New stoves use far less wood**—“*about half a cord less*”: This is appealing to many participants because it means cheaper fuel. It also means that wood stocks will last longer and people will have less work gathering wood.
- **Efficient:** The new systems rely on forced air so the ventilation is good and the stoves heat quickly and burn well.
- **Esthetic appeal:** A few say the new technology stoves “*look good*”.
- **Safer:** The new technology stoves are considered safer. Part of the reason is that they are closer to the wall than the conventional stoves and this means less chance for a fire.

- **Less smoke:** They produce less smoke than conventional stoves and are better for the environment.
- **Less cleaning:** Chimneys and the stove itself need less cleaning. Some have neighbours who have had the stove for more than a year and have not cleaned the chimney or box yet.

In the Smithers survey, conventional stove users who were aware of new technology stoves were presented with a list of positive aspects of the stoves and asked to indicate what they heard was the main advantage. A majority say ‘using less firewood’ is the perceived major benefit of the advanced appliances, followed by ‘safer to burn’.

Perceived Advantages of Advanced Wood stoves

62. Based on your understanding, how do these new technology stoves...differ from the appliance you use?



Base: Conventional stove users, N=53

9.2 Negative aspects of new technology stoves

A few people in the discussion groups have heard negative descriptions of the new technology stoves. The main problem is that they require more maintenance. In particular, they have heard that catalytic converters break down and need to be replaced. Someone also mentioned that the augers regularly break but was unsure of the details. This implies that new technology stoves require more maintenance which costs money and could potentially disrupt heat in the house.

“No [I wouldn’t switch]. Like I said, you never know, it might not work and would probably break down. Rather stick to ‘old school’.”

One participant has a neighbour with a new technology stove who receives numerous complaints because the household produces more smoke compared to the other homes.

This participant believes the stove is too large for the space and the chimney is too short. The belief is that reducing smoke is dependent on other factors besides the stove.

9.3 Alternative Energy Sources

During the discussion, some participants (mainly in Smithers) report that they have considered alternative heat sources. They are concerned about air quality because their community is smokier than Terrace and Burns Lake and are interested in alternative energy sources that are easy to use, reliable and safe. The main reasons they have not yet followed through are expense and concern about the reliability.

A few have considered changing to a pellet stove (two participants thought pellets could potentially be burned in their conventional stove). Pellet stoves are appealing because they are thought to be an environmentally friendly alternative to wood and they are easy to use. The barrier to using pellets is the expense when wood is readily available. As well, electricity is needed for many pellet stoves, so it may not be reliable during a power outage.

New technology wood furnaces are mentioned as an alternative to the conventional wood stove. The furnaces are located outdoors and heat not just the house, but also the hot water. They are appealing because they would not make a mess in the home.

Two participants in Smithers say they explored the possibility of geothermal heat, mainly because it is environmentally friendly and allows for independence if you live in a rural area. At this point they say it is too expensive.

Gas and electricity, the main secondary sources are not appealing options. Most participants do not plan to replace wood with gas or electric heat. The main reason is the cost. Gas was installed by some because they were lead to believe that the cost would remain stable. Over the past few years, however, they say gas prices have increased considerably and in response they use their gas less often. The increase in price has resulted in mistrust for the gas company.

9.4 Awareness of Burn-it-Smart workshops and Changeout program

Awareness of programs to educate the public about wood smoke and pollution is low-- Less than a fifth of respondents to the survey are aware of the change-out program or the burn smart workshops. As well, few discussion group participants were aware of these programs. Three participants in Smithers say they attended a BIS, but others were not aware.

The discussion revealed that these programs were appreciated by the participants. They brought it up during the discussion several times and indicated they would like to see an expanded demonstration. The results challenged the beliefs about conventional and

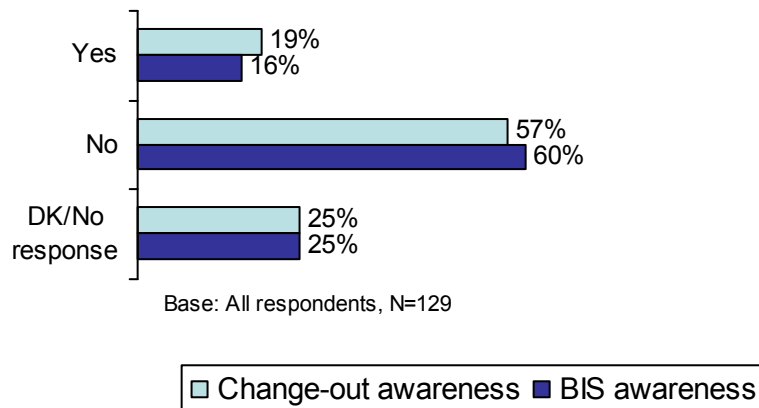
advanced wood stoves previously held. The physical demonstration was effective at communicating differences.

However, awareness of these programs is low among respondents to the survey in Smithers, one of the towns where these programs have taken place. Less than a fifth say they have heard of either the change-out program (19%) or the BIS (16%).

Respondents from the quantitative survey who answered 'yes', they had heard of the changeout program were asked where they got their information (no chart—N is too low). The majority learned about the changeout program through friends, neighbours or relatives or in the local newspaper. Other information channels are less effective, including fair-show, posters, internet and radio.

Awareness of the BIS and Changeout program

21. Are you aware of the 'Bulkley Valley and Lakes District Woodstove Changeout' program that operated in 2004?
23. Were you also aware of 'Burn it Smart' (BIS) workshops offered in your area?



9.5 Conclusions and recommendations

- Overall, awareness of new technology stoves is high. Many participants in the discussion groups have friends who have installed advanced technology stoves. As well, the survey results from Smithers indicate a high awareness of these new stoves. They are believed to be more efficient, economical and environmentally friendly than older conventional wood stoves.
- Level of awareness of BIS programs is low in the discussion groups and in the Smithers survey.

- The findings suggest:
 - Most have heard about the positive aspects of advanced technology stoves. Continuing to promote the benefits with educate those who are unaware of these stoves as well as reinforcing the positive for those considering an upgrade.
 - More awareness of the BIS and changeover program is needed. Those in the discussion groups who had more knowledge about these programs were more open to upgrading to newer technology.

10.0 REACTION TO BYLAWS AND COMMUNICATION STATEMENTS

10.1 Reaction to bylaws

Overall discussion group participants do not believe that bylaws will be effective to reduce wood smoke in the community. They would prefer programs to educate households about how to burn properly.

The questionnaire and focus group findings represent initial public reaction. For actual changeout programs, experience in US is that bylaws have a dramatic effect on the level of success. Some of the bylaw options presented in both the questionnaire and the focus groups have resulted in the delivery of programs where all old technology wood stoves have either been changed out or made permanently inoperable.

Participants were presented with three bylaw options and asked to evaluate the impact each would have on the reduction of wood smoke in the community and their household. Overall, reaction to the bylaws was negative. Most felt they will have little impact on the community or their own behaviour for several reasons:

- Many people in the region rely on wood stoves as their main source of heat and they are concerned about extra costs for people who cannot afford it. They have no choice except to burn wood.

“What about those people who can’t afford to replace [their stoves]? What about 40 below weather? Heating is a matter of life and death.”

- The bylaws are thought to be difficult to implement. A few compared it to the gun law registry which in their opinion, was not administered effectively and interfered with peoples’ way of life.

A few say the bylaws may help reduce wood smoke in the long-run, but they also feel that this system punishes people who cannot afford it.

“Charging monthly fees is not fair. It would possibly reduce wood smoke if the cost [of the wood] was comparable to natural gas or electricity. It would then be easier to turn up the thermostat.”

In addition, residents feel the bylaws represent a loss of community control. People have been relying on wood to heat their homes “forever” and these bylaws represent further interference from the provincial government. The North has a unique identity and there is a general feeling that the provincial government does not understand the community.

Residents would prefer a positive approach rather than a punitive system—further education about how to burn smart, for example. Approaching households that are producing too much smoke was thought to be the only potentially effective means of reducing wood smoke. Adding a fine for non-compliance to the bylaw is considered unfair.

“Education would encourage the wood stove user to [seek further information].”

Although reaction to the bylaws was similar in each community, a few Smithers participants had heard that bylaws to reduce wood smoke may soon be implemented. In general, the awareness of air pollution is higher since the town is often smoky, so they are resigned to the efforts being made to reduce wood smoke.

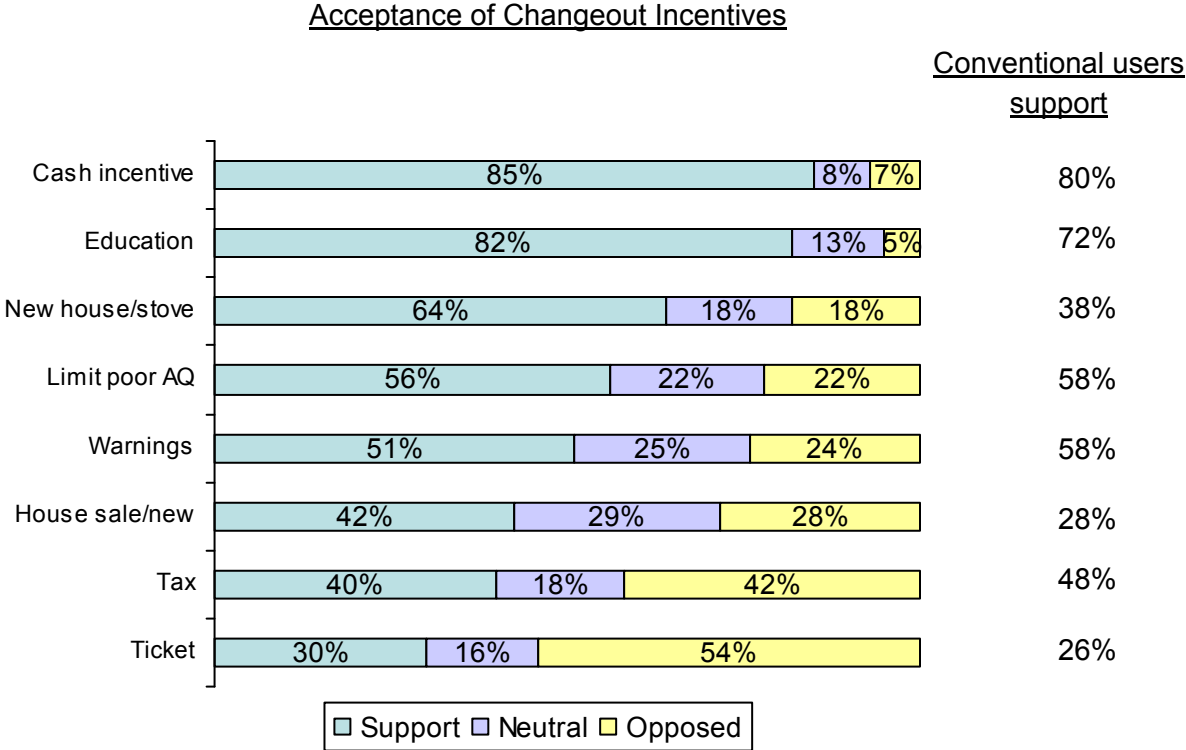
The overall reaction to the bylaw by community is summarized in the following table:

Bylaw	Burns Lake	Terrace	Smithers
<i>Limit wood stove use during air quality warnings</i>	<ul style="list-style-type: none"> • Unfair to residents relying solely on wood heat • Will not reduce wood smoke • Will not encourage upgrade 	<ul style="list-style-type: none"> • Unfair to residents relying solely on wood heat • Will not reduce wood smoke • Will not encourage upgrade—those who want to upgrade are unaffected 	<ul style="list-style-type: none"> • Unfair to residents relying solely on wood heat • May mean limited reduction of wood smoke • May encourage those already considering an upgrade
<i>Door-to-door warnings and education plus fines</i>	<ul style="list-style-type: none"> • Fines unfair and financial hardship for some; make it harder to find money to upgrade if fined • Will not reduce wood smoke • Will not or encourage upgrade 	<ul style="list-style-type: none"> • Fines unfair and financial hardship for some • Education a positive • Mixed response to reduction of wood smoke • Will not encourage upgrade—those who want to upgrade are unaffected 	<ul style="list-style-type: none"> • Fines unfair and the wrong way to encourage an upgrade • Education a positive • Doubtful it will reduce wood smoke • Education may change behaviour
<i>Monthly fees</i>	<ul style="list-style-type: none"> • Fees unfair and a financial hardship for some; make it harder to find money to upgrade if fined • Will not reduce wood smoke • Will not encourage upgrade 	<ul style="list-style-type: none"> • Mixed: some say unsure and some unfair • Most unsure of impact • Will not encourage upgrade—those who want to upgrade are unaffected 	<ul style="list-style-type: none"> • Mixed: some say unsure and some unfair • Most unsure of impact • May encourage those already considering an upgrade

Questionnaire respondents in Smithers were presented with a list of potential actions that may be taken in the community to reduce the amount of wood smoke and asked how much they support or oppose each on a one to five scale (See appendix four questions 10 to 12 for wording). Included in the list are the potential bylaw actions presented in the

discussion groups. Cash incentive (85% say 4 or 5) and education (82%) received the most support. Fewer respondents support taxing residents (40%) or issuing a ticket (30%).

Also shown is the support for the actions among conventional stove users. They are less supportive of requiring a new stove with a house sale or new home compared to other user groups. The results from the qualitative research suggest that many conventional stove users believe wood smoke is not because of the stove, it is because of household burning practices. This group is equally supportive of education measures and cash incentives to assist with the changeover.



10.2 Reaction to the communication statements

Participants were presented with two communication statements which were written down and read to each group. The first statement connects wood smoke with poor air quality and health risks. The second statement states that the health officer has recommended action be taken to alleviate the air quality issue.

Overall, the statements were not well received and not considered credible. Almost all of the participants say this would have little impact on their behaviour or decision to upgrade to a new technology wood stove.

Many of the participants were aware of some of the facts presented, including the high cost of healthcare and the poor air quality in many regions of B.C.. However, they feel that

air pollution because of wood smoke is either not a problem in their area or only a small part of the problem. Further, they do not feel that the deaths are related directly to wood smoke. Overall, the statements sound like a “government scare tactic”.

In all groups, participants questioned some of the facts presented. The 25-250 seems too broad. One participant pointed out that an increase in deaths due to respiratory problems could be a result of a unique event such as a forest fire and could account for the broad range.

The reference to a health officer is interpreted as government interference. Participants do not consider the health officer as part of the community and associate the position with further control from the provincial government.

“It is far easier for the provincial health officer to penalize wood burners and say he is doing something about air pollution than to tackle corporations who are profiting from polluting the air.”

Reaction to the statement was consistent across all three communities. The table below summarizes the reaction:

Statement:	Reaction:
<p>Wood smoke contains many toxic pollutants. Several studies have related wood smoke to respiratory (lung) symptoms such as coughing, asthma, congestion, and wheezing. In British Columbia, air pollution is estimated to account for 25 to 250 deaths per year, and costs our health care system \$85 million per year. Health risks are higher for pregnant women, children, elders and those with existing heart and lung problems.</p>	<ul style="list-style-type: none"> • Overall, not credible and thought to be a “scare tactic” • Genuine concern about deaths and health risks • Most were aware of the high cost of the healthcare system and increased respiratory problems • 25-250 deaths too broad a range to have an impact • Not credible that wood smoke is causing the deaths • Not credible that wood smoke is costing the healthcare system money directly or indirectly

Statement:

Air quality in Smithers/ Hazelton/ Telkwa is negatively affected by residential wood smoke. The provincial health officer has recommended that action be taken to reduce wood smoke emissions.

Reaction:

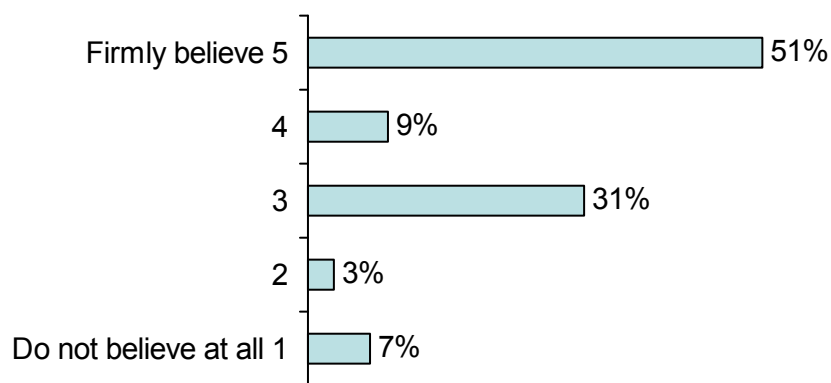
- Considered exaggerated because wood smoke is less of a problem than other pollutants such as industry
- Health officer not credible—part of the government and Victoria
- Health officer is targeting wood stove users rather than industry

General statements regarding air quality and health effects were included in both the questionnaire and the discussion groups. These two investigations resulted in different conclusions. From the questionnaire, the health messages are credible to the respondents. Over half (60%) firmly believe the messages, rating them a four or five. Few say they do not find the statements credible.

However, in the discussion groups participants say they believe that air quality has a negative impact on health. In Smithers, in particular, there is more concern about health issues due to wood smoke. During the in-depth discussion, the issue is that these statements, while perhaps true, are broad and directly tied to wood smoke.

Acceptance of Health Messages

42. Do you believe [these facts]?



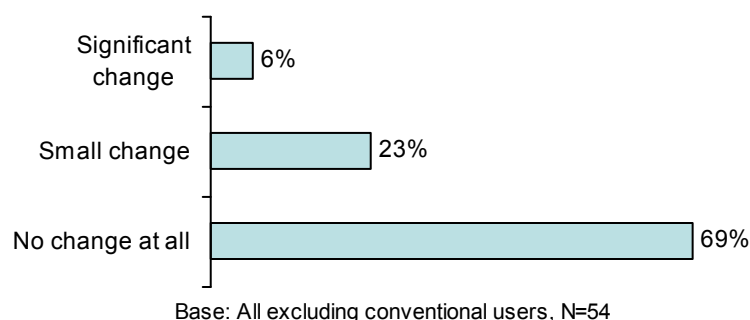
Base: N=75

The questionnaire also asked if the health facts will have an impact on their perception of wood smoke. A majority (69%) indicate no impact. Just over a quarter (29%) say their perceptions will change either significantly (6%) or a small amount (23%). The results from

the qualitative research suggest that many residents are aware that air pollution causes health risks, but they are hesitant to accept that wood smoke is the main cause compared with other sources of pollution.

Changes in Perceptions of Wood Smoke after Health Messages

42. Do these facts change your perception of wood smoke? Please respond using a 5-point scale where 1 means not changed at all, 5 means significantly changed, and the mid-point 3 means slightly changed.



10.3 Conclusions and recommendations

- Overall, reaction to the bylaws was negative. Most participants are concerned about the effects of fines and taxes on those who rely entirely on wood as a source of heat and feel this system would punish those who are the least likely to afford it. Many discussion group participants see this as interference from the provincial government. Education on proper wood stove use would be preferred.
- Overall, the health messages were considered broad by discussion group participants and many raised concerns that the messages were misleading because they imply wood smoke is a main contributor to poor air quality and results directly in deaths.
- The findings suggest:
 - Effectively communicating the bylaws will help residents understand the purpose of the bylaws and will ease the transition. Immediately, the reaction in some communities is likely to be negative. Residents view bylaws as intrusive, ineffective for reducing wood smoke and impossible to implement. A few communication suggestions based on the research include:
 - Provide a rationale for the bylaw and why it is being implemented;

- Focus on the education aspects of the bylaw—residents responded positively to further education;
 - Residents may feel a bylaw represents a sudden change to their lifestyle—consider framing the bylaw in terms of long term objectives for air quality improvement;
 - Explain how the bylaw will affect individual households;
 - Explain how the bylaw will affect individuals who rely entirely on wood stoves for heat, particularly any allowances made for this group—this is a serious concern for residents who are worried that some households in the community will be penalized for heating their home.
- The relationship between wood smoke and poor air quality needs further explanation. To communicate this, more specific and credible information is required. The statements presented were not well received because they were broad, conflicted with beliefs around air pollution and presented facts that can be disputed. A few suggestions to communicate effectively include:
 - Wood smoke is only one of several contributions to air pollution. When wood smoke is presented on its own, the focus group discussions shifted to pollution sources that are perceived to be more dangerous such as industry or cars. Framing wood smoke as one of several contributors may re-focus attention away from other sources.
 - Provide information and facts that are precise and relevant to the community wherever possible. In the long-term, studies that connect the effects of poor air quality to the community, such as increased respiratory problems among children and adults would further educate the community about air quality and the health risks.

11.0 COMMUNICATION

More information about the new technology stoves would be appreciated. Participants say that the only information they are receiving about new wood stoves is coming from sales people. Important to residents is having the information come from a neutral source so it does not appear that someone is trying to sell them something.

Newspaper articles were mentioned most often as the best means to communicate with the community. They are accustomed to receiving community information from local papers and it is a trusted, reliable source of information widely read throughout the community.

They would also like more discussion groups and those who attended a burn-smart workshop in the past, found it very effective for educating them about wood stoves/ new technology. In particular, the demonstration of new/ old wood stoves was appreciated.

Flyers received a mixed response. Some say if they received a flyer with information about proper burning methods, they would read it. Others dislike this form of unsolicited communication (Some joke they would *“throw it in the fire”*).

Newsletters and websites, such as the weather forecast site, were mentioned as potential means for communication. Several say they regularly check the weather on these sites.

In summary:

- ✓ Local newspapers
- ✓ Workshops and town meetings
- ✓ Flyers
- ✓ Local newsletters
- ✓ Web sites

11.1 Conclusions and recommendations

- Most discussion group participants are open to additional information.
- Articles in the local paper is a means to educate residents about the changeover programs and the effects of wood smoke on the environment. It is unlikely that all residents will read notices/ articles on the topic but some will.
- Groups and workshops are mentioned, but the challenge will be turn-out. Many admit they do not stop at displays in malls, for example. Actual demonstrations of conventional wood and advanced wood stoves appealed to those who previously attended workshops.

12.0 CONCLUSION: SHIFTS IN ATTITUDE

Several participants acknowledge that their attitudes shifted slightly during the course of the discussion. These participants have not decided to upgrade to a new technology, but they say they would like more information.

Identifying wood users is not an easy task. Demographics such as age and gender did not stand out as being a significant predictor of attitudes. As well, attitudes toward the environment do not seem to make much difference when communicating the impact of

wood smoke on air quality and health. A few of the people who are resistant are environmentally responsible. For example, one participant who identified as an environmentalist (composting; recycling, etc.) does not believe that burning wood is as harmful as other methods of heating homes.

Potentially an urban/ rural split is present with participants living close to town being more willing to consider a change-over because they encounter smoke more often (several rural residents are considering an upgrade).

Based on the qualitative research, three types of wood stove users emerge:

- ◆ **Hesitant:** considering wood stove change-over or alternative energy sources but are hesitating because of the barriers previously discussed:
 - ◆ “If you had the money, who wouldn’t upgrade? The new stoves are way more efficient and you use less wood.”
 - ◆ **Benefits of new technology could be reinforced, particularly from a source that can be trusted.**
 - ◆ **Resistant:** Happy with their own stove and not interested in a change-over:
 - ◆ “I’ve had the same stove for more than 40 years and I’ve never had to do [any maintenance]. I just light it and it heats the whole house. Why would I consider changing?”
 - ◆ **Difficult group to encourage an upgrade—continuous education and personal benefits of new technology may eventually have an effect but may be limited at first.**
- Would like to upgrade to a new technology stove for efficiency reasons.
 - Main barrier is the cost.
 - A few are exploring alternative energy sources.
 - More likely to live closer to town and have a greater awareness that wood smoke can be a problem (a few are rural as well).
 - More likely to have encountered education about new technology stoves.
 - Have relied on wood for decades or since childhood—wood use is partially a lifestyle choice.
 - Do not believe there is a major air pollution problem due to wood smoke.
 - Often believe that conventional stoves cannot be improved—experienced upgrade in mid 1980s
 - Consider government efforts to tackle air quality by limiting wood smoke as the wrong focus.
 - Most have not encountered and are resistant to, education about new technology wood stoves.

- ◆ **Unaware:** Do not know about new technology stoves and are interested in more information:
- ◆ *“I didn’t know about these new technology stoves. I’d like to get more information...”*
- Have not encountered information about new technology wood stoves or the harm to air quality from conventional stoves.
- They are surprised to hear that better stoves exist that could make their life easier.
 - ◆ **Reinforce education and personal benefits.**

APPENDIX ONE: RESEARCH METHODOLOGY

Breakdown of Respondents

	Total	Nonusers ¹	Wood users	
			Conventional ²	Wood users exclu. Conventional ³
No. of household-respondent	129	32	44	53

Note: ¹ “Wood users” include pellet-stove users

² “Conventional” includes all households who use conventional wood stoves or fireplace inserts

³ also called “non-conventional” or “other” appliance users in the following texts

Breakdown of Sampling

	Total	Door-to-door visit	Random phone call	Self-filled-in
No. of household-respondent	129	38	2	89

Composition of wood users, nonusers and the conventional appliance users in BVL.D, Skeena and the province¹

	Total no. of hhs ³	Wood users % all hhs ⁴	% all wood users	
			Conventional	Wood users exclu. conventional
BVL.D²	13,621 ⁵	39.8	35.2	64.8
Skeena	37,262	26.8	36.3	63.8
B.C.⁶	729,3441	28.6	36.1	63.9

Note: ¹ Source: Residential Wood Burning in B.C.—Public Behavior and Opinion (2006)⁴

² Including Town of Smithers, Terrace and Burns Lake

³ Source: Statistics Canada (2002)⁵

⁴ “Wood users” include pellet-stove users

⁵ including 2195 households of Town of Smithers (2001), 16% of BVL.D’s (Source: B.C. Regional Index Online, B.C. Stats)⁶

⁶ “B.C.” excludes Kelowna and the Canadian Lower Fraser Valley

The table below shows the breakdown of wood heat users groups based on the survey and a random sample of BVL D residents in 2003.

Wood heat user groups in Smithers

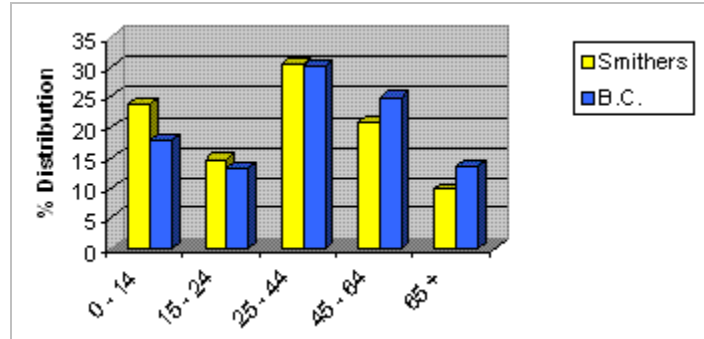
	Percent of households burning wood in					Total
	<i>Conventional</i> ¹	<i>Advanced</i> ²	<i>Fireplace</i> ³	<i>Furnace</i> ⁴	<i>Multiple</i> ⁵	
Wood users 2003 ⁶	42.2	24.1	6.0	22.9	4.8	100
Wood users 2006	33.9	47.4	3.2	11.1	4.5	100
<i>Conventional 2006</i>	96.2	0.0	0.0	0.0	3.8	100
<i>WoodU exclu. conventional 2006</i>	0.0	73.2	4.9	17.1	4.9	100

- Note:
- ¹ 'Conventional stove/insert' includes conventional stoves and fireplace inserts only.
 - ² 'Advanced stove/insert' include the advanced technology stoves/ fireplace inserts and the catalytic stoves/inserts.
 - ³ Includes open hearth, glass door or advanced technology.
 - ⁴ Wood burning furnaces, typically located in basements.
 - ⁵ More than one wood burning appliance.
 - ⁶ Source: Residential Wood Burning in B.C.—Public Behaviour and Opinion (2006)³

APPENDIX TWO: DEMOGRAPHICS

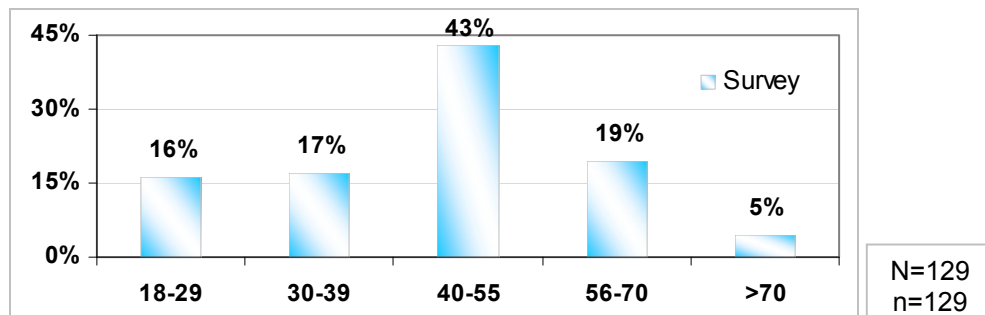
These results were obtained from the Smithers survey.

Figure 1: Town of Smithers Age Distribution (2004)*



Note: * Source: Demographics, Town of Smithers⁸

Figure 2: Age distribution of survey respondents (2006)*



Education level of survey respondents*

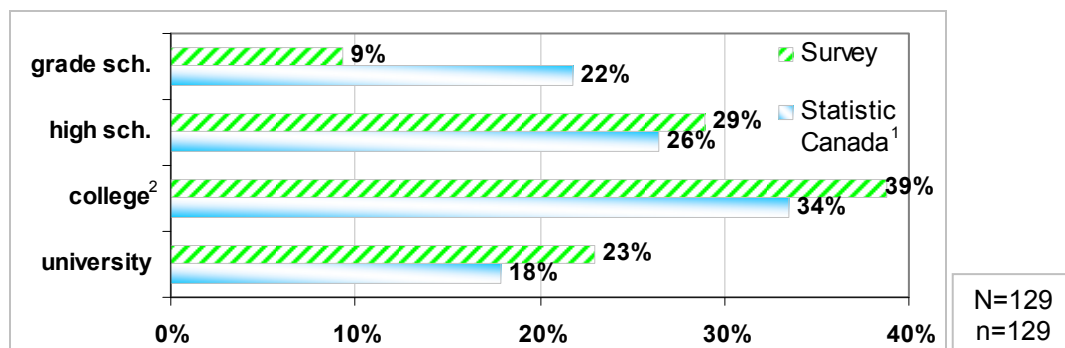


Table 1: Household size between the groups surveyed*

	All households		All wood users		Total
	<i>Nonusers</i>	<i>Wood users</i>	<i>Conventional</i>	<i>Wood users exclu conventional</i>	
Average hh size¹	2.7	3.5	3.4	3.5	2.9
No. of response	32	74	32	42	111

Table 2: Household statistics compared with B.C. Stats*

	% all household-respondents				Average hh size
	<i>Male</i>	<i>Female</i>	<i>Own</i>	<i>Rent</i>	
Survey	53	47	86	14	2.9
B.C. Stats	49	51	67	33	2.6

APPENDIX THREE: SCREENER

**Ministry of the Environment
Wood stove Change-out Focus Groups
Recruiting Screener (#005-05-0287)**

Recruit 10 for 8 to show per group

Interviewer Name and No:

COMPLETE THIS SECTION ONCE THE PERSON QUALIFIES AND AGREES TO ATTEND

Participant Name: _____

Participant Address: _____

Participant Home Phone: _____ Work Phone: _____

Email: _____

Burns Lake

- Group 1 - Tuesday April 25th @ 5:30 pm
- Group 2 – Tuesday April 25th @ 7:45 pm

Terrace

- Group 1 - Wednesday April 26th @ 5:30 pm
- Group 2 – Wednesday April 26th @ 7:45 pm

Smithers

- Group 1 - Thursday April 27th @ 5:30 pm
- Group 2 – Thursday April 27th @ 7:45 pm

Hello, may I please speak with [READ FULL NAME FROM LIST]?

IF RESPONDENT UNAVAILABLE/NOT AT THIS NUMBER: **CONTINUE WITH RECRUIT**

- My name is _____ with NRG Research and I am calling on behalf of the Ministry of the Environment. We are calling residents of Smithers who use wood stoves to participate in a focus group. The purpose of the focus groups is to

discuss the use of wood stoves in your community. At no time during or after the group will anyone try to sell you anything. All participants will receive \$50.00 to thank you for your participation. The group will last about 1 ½ hours. Some refreshments will be provided.

Would you be interested in attending a discussion like this? [IF YES CONTINUE]

IF YES: CONTINUE

IF NO, NOT INTERESTED/ UNAVAILABLE: Would someone else in your household who is 21 years of age or over, be interested in attending the group? IF YES: Ask to speak with the person and continue with questions in SECTION ONE.

IF ANSWERING MACHINE: My name is _____ with NRG Research and I am calling on behalf of the Ministry of the Environment. We are conducting research into wood stove use in your community. We offer a \$50 thank you for your participation. The groups are being held on Thursday April 27th. If you are interested in attending or receiving more information, please phone us at 1-866-400-6166. [PLEASE READ NUMBER SLOWLY]

ONLY IF MORE INFORMATION IS NEEDED:

The purpose of the focus groups is to discuss the use of wood stoves in your community. At no time during or after the group will anyone try to sell you anything. All participants will receive \$50.00 to thank you for your participation. The group will last between 1 ½ - 2 hours. Some refreshments will be provided.

Would you be interested in attending a discussion like this? [IF YES CONTINUE]

[IF NEED MORE INFO ON FORMAT] *Focus groups are a way of conducting MARKET RESEARCH. The intent of a focus group is to get your feeling and impressions on a particular topic. Focus groups are NOT SALES MEETINGS. A focus group is a small informal information sharing meeting where people get together with a research professional to discuss a particular topics and issues. In these groups we are discussing issues that affect your community. We are inviting you to get your input.*

[IF NEED TO VERIFY AUTHENTICITY OF THE RESEARCH]

Should you have any concerns about this research or would like to confirm the legitimacy of this research, please do not hesitate to contact: Ben Weinstein, Air Quality Meteorologist, Ministry of Environment, Smithers Office (250) 847-7224.

SECTION ONE:

That's great. First, I have a couple of questions for qualifying purposes.

1. Do you currently burn wood to heat either part or all of your home?

- Yes
- No

[CONTINUE]
[THANK AND TERMINATE CALL]

2. How much of your household heating would you estimate comes from wood? Would that be:

- Less than 20% [THANK AND TERMINATE CALL]
- 20 to less than 50% [CONTINUE]
- More than 50% [CONTINUE]

[IF RESPONDENT IS UNSURE PLEASE EMPHASIZE BEST ESTIMATE]

3. What do you burn your firewood in? [READ LIST]

- ② Advanced technology wood stove fireplace insert that was purchased and installed after 1995 [THANK AND TERMINATE CALL]
- ③ Conventional wood stove/fireplace insert that was purchased and installed before 1995 [INVITE TO FOCUS GROUP]
- ④ Furnace [THANK AND TERMINATE CALL]
- ① Open fireplace [THANK AND TERMINATE CALL]
- ⑤ Outdoor Boiler [THANK AND TERMINATE CALL]
- ⑥ Other or don't know [THANK AND TERMINATE CALL]

4. Please tell me if you or any members of your immediate family hold jobs with any of the following? [READ LIST]

- Government Ministry (provincial or federal) [THANK AND TERMINATE CALL]
- News Media [THANK AND TERMINATE CALL]
- Market research [THANK AND TERMINATE CALL]

5. [From voice indicate whether male or female] RECRUIT A GOOD MIX FOR EACH GROUP

- Female
- Male

6. Please tell me which age category you fall into?

- Below 21 [THANK AND TERMINATE—SAY WE HAVE RECRUITED ENOUGH PEOPLE IN YOUR AGE CATEGORY]
- 21-34 [RECRUIT FOR EITHER GROUP]
- 35-44 [RECRUIT FOR EITHER GROUP]
- 45-59 [RECRUIT FOR EITHER GROUP]
- 60+ [RECRUIT FOR EITHER GROUP]

7. Do you own or rent this residence?

- Rent
- ② Own

8. Have you ever attended a discussion or focus group?

- Yes
- No [skip to Q.9]

9. If yes, how long ago? _____ [TERMINATE CALL WITH THANKS IF IN THE LAST 4 MONTHS]

Based on the answers you have provided, we would like to invite you to participate in our focus group which will last approximately between 1 ½ - 2 hours and for which you will receive **\$50** as a thank you for your participation.

Are you interested in helping out by attending this research discussion group?

Yes **That's great.**

No **[THANK AND GOOD BYE]**

SECTION TWO: START HERE FOR THOSE WHO AGREE TO PARTICPATE:

Would you be able to participate in the discussion group, which will be held on

PLEASE FILL 5:30 GROUP FIRST—RECRUIT TO 8 PARTICPANTS AND THEN START RECRUITING FOR THE SECOND GROUP. IF PARTICPANT HAS A PREFERENCE, PLEASE PLACE THEM IN THE GROUP THEY PREFER]

Burns Lake

- Group 1 - Tuesday April 25th @ 5:30 pm
- Group 2 – Tuesday April 25th @ 7:45 pm

Terrace

- Group 1 - Wednesday April 26th @ 5:30 pm
- Group 2 – Wednesday April 26th @ 7:45 pm

Smithers

- Group 1 - Thursday April 27th @ 5:30 pm
- Group 2 – Thursday April 27th @ 7:45 pm

The group is being held at:

Burns Lake

College of New Caledonia, Room 109, 545 Hwy 16

Terrace

The Terrace Fire Hall - Training Centre, #3--3215 Eby St.

Smithers

Smithers Town Hall which is located at 1027 Aldous Street.

We ask that you arrive 15 minutes before the start of the group so that you have time to check in with the hostess and find the meeting room. If you need reading glasses please bring them as well. Light refreshments will be provided.

If you have any questions or are unable to attend, please call our office as soon as possible so we will have time to recruit a replacement. Our toll-free office number is **1-800-265-2422**. Thank you very much for your time and cooperation. Someone from our office will call prior to the groups to confirm your attendance.

What time of day would be good to call you the day before the group? _____
What ph. #? _____

APPENDIX FOUR: DISCUSSION GUIDE

Wood stove Change-out Focus Group Protocol —focusing on barriers and opportunities

[Participants: the conventional wood burning appliance users]

GENERAL PROTOCOL

- 3) A response is obtained from each participant on every question, and each person has an equal opportunity to share his or her views and perspectives;
- 4) The discussion is focused on the topic/question at hand, and is commenced and completed on time (2-2.5 hour meeting duration);
- 5) Each participant has a pen/pencil and paper;
- 6) The note-taker records the full range of responses for each focus group question, enabling frequencies to be easily determined for the purposes of preparing the meeting summary;
- 7) The note-taker and facilitator keeps an eye out for potential geographic or demographic differences in response to the focus questions.
- 8) In addition to the verbal responses of the participants, the note-taker also observes and records when possible facial expressions, body language and voice intonation.

OPENING REMARKS AND INTRODUCTIONS (5-7 minutes)

Hello, my name is Alison Warner. I work for NRG Research Group. We're an independent research company. My job is to chair the meeting on behalf of the Ministry of the Environment. I do not work for the Ministry or the provincial government.

Before we start, I'd like to thank you all for coming and we look forward to hearing your ideas and perspectives during the meeting.

So why have we asked you here?

We'd like to get a sense of what B.C. residents know and think about wood stoves and how they use them.

Before we start, I'd like to bring a few things to your attention...

First, this meeting is one of several meetings that are being conducted with B.C. residents on this topic.

Second, if you have any questions that go beyond this specific project we will take your name and number after the meeting and have a representative contact you.

Third, during the session my colleague will be taking notes. These notes will help ensure that we have an accurate record of what was said during the meeting. In addition, for most questions we will also be asking you to jot down in point form your responses on the provided paper prior to sharing them with the group. When you are asked to respond to a question I would like you to use these notes as a guide for your comments. At the end of the session I will ask you to turn in your notes so that we can refer to them when we prepare the report. You should know that anything you

say or write will be treated in confidence. We will use our notes and your written responses to prepare our report on this meeting, but no names will be used. So, please feel free to speak frankly.

I will also be recording the session. I use the tapes to write my report, and once I'm finished, I destroy all the tapes.

You were chosen to attend this focus group because you heat your home with wood. There are no right or wrong answers to the questions we will be exploring. We are seeking opinions only.

We have a limited amount of time and I need to hear from everyone this evening, so I might have to interrupt from time-to-time to keep things moving. I would also like you to speak one at a time so I can hear what everyone says and your responses can be recorded.

FOCUS GROUP QUESTIONS

Opening question

We are going to run a brief introduction around the table. Please tell everybody your name, and where you are from.

Introductory questions

- (Warm-up question) First, let's start by talking about the wood stove* you have in your house. I'd like to ask everybody to write down:
 - 1) A description of the wood stove/fireplace insert you have in your house (if you have both more than one of them, please describe the one that is used most), and
 - 2) The tricks used in your household to keep a wood stove fire burning well.

Give people two minutes to write down their answers, and then ask each person to share their responses [10 minutes]

- * Mention that "wood stove" used throughout the evening also includes wood burning fireplace inserts

Main questions

- Name two to three things you like most about your wood stove? What are two to three things you don't like about your wood stove?

Give people a minute to write down their answers, and then ask each person to share their responses. [10 minutes]

- Do you like the smell of wood smoke or not? If you do, please write down up to three reasons why you like it; or if you dislike it, please explain why you don't like it with up to three reasons.

Give people a minute to write down their answers, and then ask each person to share their responses. [10 minutes]

- a. Is wood smoke ever a problem in your neighbourhood? That is, is it ever too smokey?

b. How frequently would you describe your community as being smokey? ❶ *very often*, ❷ *sometimes*, or ❸ *never*?

- Do you perceive there being a downside to wood smoke or not?
- Do you do anything to reduce the amount of wood smoke you produce? If so, what do you do? Why did you decide to reduce the amount of wood smoke you produced? Are you aware of anything else people could be doing to reduce wood smoke?

Give people a minute to write down their answers, and then ask each person to share their responses. [10 minutes]

- Do you think your household knows how to operate a wood stove in a way that produces as little smoke as possible? If not, are you interested in receiving more information? What format would be most desirable for this information
- Do you have any plans to purchase a new technology wood stove in the near future? Why or why not? If you'd like to get a new technology unit, but have been unable to do so, what limits your ability to act (*Give people a minute to write down their answers*)? (IF NOT MENTIONED PROBE FINANCIAL ISSUES) What type of financial incentive would be helpful?

Give people a minute to write down their answers, and then ask each person to share their responses. [20 minutes]

- Have any of your friends installed a new wood stove since 1995? Are you aware of the differences between these newer units and the older conventional one in your household?

Give people a minute to write down their answers, and then ask each person to share their responses. [10 minutes]

- In some areas bylaws have been passed where wood stoves cannot be used during periods of poor air quality.
 1. Would this be a good option to reduce wood smoke in Smithers or not?
 2. If a similar program was introduced in the Smithers area, how likely do you believe it would be that residents would replace older wood stoves with newer high-efficiency stoves?
 3. Would you replace your wood stove?

Give people a minute to write down their answers, and then ask each person to share their responses. [10-15 minutes]

- Some areas have people going door-to-door when a home is producing lots of wood smoke. The first few visits typically involve advising how to burn clean. Subsequent visits may involve issuing a ticket that is similar to a parking ticket.
 - a. Would this be a good option to reduce wood smoke in Smithers or not?
 - b. If a similar program was introduced in the Smithers area, how likely do you believe it would be that residents would replace older wood stoves with newer high-efficiency stoves?
 - c. Would you replace your wood stove?

Give people a minute to write down their answers, and then ask each person to share their responses. [10-15 minutes]

- Similarly, there are locations where residents have been charged monthly fees if they use older wood stoves.
 - a. Would this be a good option to reduce wood smoke in Smithers or not?
 - b. If a similar program were introduced in B.C., how large would the fee have to be before most residents would replace older wood stoves with a newer high-efficiency EPA stove?
 - c. Would you replace your wood stove?

Give people a minute to write down their answers, and then ask each person to share their responses. [10-15 minutes]

- The questions asked during this focus group session are intended to provide information to the government on residential wood heating practices and opinions. The primary reasons for looking into these issues are these facts:
 1. Wood smoke contains many toxic pollutants. Several studies have related wood smoke to respiratory (lung) symptoms such as coughing, asthma, congestion, and wheezing. In British Columbia, air pollution is estimated to account for 25 to 250 deaths per year, and costs our health care system \$85 million per year. Health risks are higher for pregnant women, children, elders and those with existing heart and lung problems.
 2. Air quality in Smithers/Hazelton/Telkwa is negatively affected by residential wood smoke. The provincial health officer has recommended that action be taken to reduce wood smoke emissions.

OPTION: Present statements in a poster or handout and ask a few questions about each:

Were you aware of this before?

- Does this concern you?
- How much confidence do you have in these facts?
- Would this encourage you to change to newer technology wood stove? Why or why not?

If you had been aware of these facts at the start of this focus group would you consider changing out your old technology appliance; and also would your responses to any of this evening's questions be different?

Facilitator recap:

- a. Q3 - Do you like the smell of wood smoke?
- b. Q5 - Your plans to purchase and install a new technology unit?

Give people a minute to write down their answers, and then ask each person to share their responses. [10 minutes]

APPENDIX FIVE: QUESTIONNAIRE

No: _____#

Residential Wood Heating Survey—Bulkley Valley Lakes District

Hi, my name is _____. I am calling on behalf of the town of Smithers/Burns Lake/Terrace to gather information on how people heat their homes and general opinions regarding air quality. An introductory letter would have been sent to your home from *the Bulkley Valley Lakes District Airshed Management Society*. Do you recall seeing this letter?

I'd really appreciate if you could take some time to answer this survey. Your participation is voluntary. All the information you provide will be kept confidential. When the results are finalized, your name will not be associated with your answers in any way.

The questionnaire will take approximately 20 minutes to complete. Once you complete the questionnaire, you can enter a draw to win \$100, \$75 or \$25.

The interviewer, please check if the respondent is 1) ① Female or ② Male

2) Which neighbourhood does the respondent live in ① Smithers, ② Burns Lake, ③ Terrace

3) Approximate size of the house/residence? _____ sq.ft / sq.mt.

Opening

(For everybody)

- How long have you been living in this area?

① Ever since birth, about _____ year(s)

② Moved from elsewhere, about _____ year(s) ago

- Do you heat your home with wood?

① Yes (goto [Q3](#))

② No (goto [Q4](#))

Interviewer: if **YES** to [Q2](#), the respondent is 'Wooduser',

If **NO** to [Q2](#), the respondent is 'Non wooduser'

'Pellet stove' users belong to 'Non wooduser'

- If **YES** to [Q2](#), how much of your household heating comes from wood?

① >90%

② 50% to 90%

③ 20 to 50%

④ <20%

99 DK

Goto [Q4](#)

- Do you own or rent this residence?

① Rent

② Own

- Are you the head of this household?

1. ① Yes (goto [Q7](#))

② No, could we speak to the head of this household?

②1 Yes (goto [Q7](#))

②2 No (not available right now). Is there a time when (s)he is free?
We'd like to come back again (end of questionnaire).

Scheduled second visit time: _____

Interviewer: if **Wooduser** to **p1 Q2**, complete **Q6** to **Q11**; if **Non wooduser**, goto **Q12**.

- How long have you been heating your house with wood?
 _____ year(s), 99 DK

- Is heating with wood a necessity for your household? Please respond using a 5-point scale where 1 means not necessary at all, 5 means extremely necessary and the mid-point 3 means somewhat necessary.

1 2 3 4 5 99
 Not necessary at all Somewhat necessary Extremely necessary DK

- Is heating with wood something enjoyable for your household? Please respond using a 5-point scale where 1 means not enjoyable at all, 5 means highly enjoyable and the mid-point 3 means somewhat enjoyable.

1 2 3 4 5 99
 Not enjoyable at all Somewhat enjoyable Highly enjoyable DK

- What type of appliance do you burn firewood in (mention all the appliance types, then go to the corresponding question/section)?

- 1 Open fireplace (goto **p5 Section 5**)
- 2 Advanced technology wood stove/fireplace insert (goto **Q10**)
- 3 Conventional wood stove/fireplace insert (*)
- 4 Furnace (goto **p5 Section 5**)
- 5 Outdoor Boiler (goto **p5 Section 5**)
- 96 Other, please specify _____ (goto **p5 Section 5**) 99 DK

Interviewer: * if “3” ONLY, goto **Section 2**; if “5 and other appliance”, goto **Q11**.
 Do not include a pellet stove.

- If Advanced wood stove/fireplace insert (&NOT Conventional units) to **Q9**, You are using an advanced appliance now. In the past, did you ever use a conventional wood stove/fireplace insert to heat your home?

- 1 Yes (goto **p4 Section 3**) 2 No (goto **p5 Section 5**)

- If Conventional wood stove/fireplace insert (3) and an additional appliance to **Q9**, How much of your wood heat, do you think, comes from your wood stove or fireplace insert?

- 1 >90% (goto **p3 Section 2**)
- 2 50% to 90% (goto **p3 Section 2**)
- 3 20 to 50% (goto **p3 Section 2**)
- 4 <20% (goto **p5 Section 5**)

- If NO to **p1 Q2**, Does this house have a wood stove or fireplace insert?

- 1 Yes (goto **p3 Q13**) 2 No (goto **p3 Q14**)

- If YES to **p2 Q12**, Is your wood stove or fireplace insert:

- 1 A conventional unit (goto **p6 Section 6**)

CONVENTIONAL APPLIANCE CHANGEOUT - MOTIVATION

(For everyone who used a conventional heat appliance in the past –YES to p2 Q10 or Conventional units to p3 Q15)

- Looking back on the decision to remove your old wood stove or fireplace insert, can you please rate the following reasons on a 5-point scale where 1 means no effect at all, 5 means a great deal of effect, and the mid-point 3 means some effect.

Motivation	Rating of how much effect the motivation has on the changeout decision
	1 no effect,... 3 some effect,... 5 great effect, 99 DK
1 Wood stove wore out	
2 Chimney smoke concern	
3 Neighbourhood smoke complaints	
4 Safety concerns	
5 Insurance requirement	
6 Too much effort to collect firewood	
7 Mess in the home from carrying wood in	
96 Other, please specify below	

Read if Wooduser

Are there other reasons that prompted you to change away from your conventional wood stove/fireplace insert?

Note: It is important to get as much information as possible on the other reasons.

- Was the decision to change out your conventional appliance your decision alone, a household decision or did somebody else outside of the household help you make the decision (check only one)?

- 1 My own decision
- 2 A household decision
- 3 A decision based on the input from (check as many as apply)
- 31 Member(s) of extended family
 - 32 Friend(s)
 - 33 Neighbour(s)
 - 34 Other, please specify _____
- 96 Other, please specify _____ 99 DK

End of section

Interviewer: if Non wooduser, goto p5 Section 4; if Wooduser, goto p5 Section 5.

FUEL SWITCH AWAY FROM WOOD - MOTIVATION

(For **Non woodusers** who used a wood-heating appliance before—who answer **p3 Q15**)

- So you are no longer heating with wood? Looking back, what were your reasons for not continuing (don't read, check as many as the respondent mentions)?
 - ❶ Less work to collect firewood/tend fire
 - ❷ Less chimney smoke into the environment
 - ❸ Gas became available in my area
 - ❹ Insurance
 - ❺ Safety concern
 - 96 Other, please specify _____
 - 99 DK
- Please also identify three most important reasons from the above (Input number)

Foremost important	Second important	Third important

End of section

Goto [Section 5](#)

EFFECTION OF WOOD STOVE CHANGEOUT PROGRAM AND BURN-IT-SMART WORKSHOP

(For **Woodusers**, and **Non woodusers** who used a wood-heating appliance in the past—who answer **p2 Q15**)

- Are you aware of the 'Bulkley Valley and Lakes District Wood stove Changeout' program that operated in 2004 (hint: 15% discount on the purchase of a new appliance was offered for households to change out an old technology wood stove in favour of a new technology wood stove or another heat source)?
 - ❶ Yes (goto [Q22](#))
 - ❷ No (goto [Q23](#))
 - 99 DK (goto [Q23](#))
- If YES to [Q21](#), How did you hear about the program (don't read, check as many as the respondent mentions)?
 - ❶ Newspaper
 - ❷ Radio
 - ❸ Internet
 - ❹ Friends, neighbours, relatives
 - ❺ Posters at local government offices and credit unions
 - ❻ Store banner
 - ❼ Burn it Smart workshop
 - 96 Other, please specify _____
 - 99 DK

Goto **p6** [Q23](#)

- Were you also aware of 'Burn it Smart' workshops offered in your area?
 - ❶ Yes (goto [Q24](#))
 - ❷ No (goto [Section 6](#))
 - 99 DK (goto [Section 6](#))

- If YES to [Q23](#), Did you participate in a Burn it Smart workshop?
 - ① Yes (goto [Q25](#))
 - ② No (goto [Section 6](#))
 - ③ Some other family member attended the workshop (goto [Q25](#))
 - ④ DK (goto [Section 6](#))
- If YES or ‘some other family member’ to [Q24](#), We would like to understand whether the Burn it Smart workshop you attended affected your burning practices. When we look at before and after the workshop, how often does your household apply the following burning practices? Would it be never, seldom, sometimes, most of time or always?

Burning practice	Before	After
	① never, ② seldom, ③ sometimes, ④ most of time, ⑤ always, ⑥ DK	
① Cover firewood from rain and snow		
② Dry/season firewood for more than 6 months before burning		
③ Burn hot fires		
④ Don't burn non-firewood material, i.e. painted or treated wood, cardboard, magazines, manufactured wood products		
⑤ Open up combustion air supply before going to bed (rather than damping down)		
⑥ Refrain from burning when outside air is stagnant (no wind)		

End of section

Goto [Section 6](#)

WOOD SMOKE HEALTH CONCERNS

(For *everyone*)

- Do you like the smell of wood smoke in general (check only one)?
 - ① Yes (goto [p7 Section 7](#))
 - ② No (goto [p7 Q27](#))
 - ③ Neither like nor dislike (goto [p7 Section 7](#))
 - ④ Depends, please explain _____ (goto [p7 Q27](#))
 - ⑤ Other, please specify _____ (goto [p7 Section 7](#))
 - ⑥ DK (goto [p7 Section 7](#))
- If NO to [p6 Q26](#), Please rate the following reasons for not liking wood smoke on a scale of 1 to 5, with 1 being strongly disagree, 5 being strongly agree, and the mid-point 3 being neither disagree nor agree.

Reason	Rating of the respondent's reason for not liking wood smoke
	① Strongly disagree, ③ Neither disagree nor agree, ⑤ Strongly agree, ⑥ DK
① It is harmful to human health	

- ④ Don't burn non-firewood material, i.e. painted or treated wood, cardboard, magazines, manufactured wood products (goto [Q32](#))
- ⑤ Open up combustion air supply before going to bed (rather than damping down) (goto [Q32](#))
- ⑥ Refrain from burning when outside air is stagnant (no wind) (goto [Q32](#))
- ⑦ Speak to my neighbours about how to burn properly (goto [Q32](#))
- ⑧ Switch from wood to a cleaner source such as gas/propane, oil or electricity (goto [Q32](#))
- ⑨ None (goto [p9 Q34](#))
- ⑩ Other, please specify _____ (goto [Q32](#))
- ⑪ DK (goto [p9 Q35](#))

31.2 For Non wooduser (to [p1 Q2](#)):

- ① Let your neighbour(s) know when they are releasing lots of smoke (goto [Q32](#))
- ② Explain the effects of wood smoke to your neighbours(s) (goto [Q32](#))
- ③ Let everyone in your neighbourhood know that some families release large amounts smoke (goto [Q32](#))
- ④ File complaints with the municipality or the Ministry of Environment regarding excessive wood smoke releases (goto [Q32](#))
- ⑤ Give your neighbour(s) some financial aid in order for them to make an appliance improvement (goto [Q32](#))
- ⑥ None (goto [p9 Q34](#))
- ⑩ Other, please specify _____ (goto [Q32](#))
- ⑪ DK (goto [p10 Section 8](#))

• Overall, do you think that the actions you have taken to reduce wood smoke have

- ① Significantly improved your quality of life
- ② Possibly improved your quality of life
- ③ Had no significant effect
- ④ Made you somewhat less comfortable
- ⑩ Other, please specify _____
- ⑪ DK

Goto [p9 Q33](#)

• Overall, do you think that the actions you have taken to reduce smoke have

- ① Significantly improved your neighbourhood air quality
- ② Possibly improved your neighbourhood air quality
- ③ Had no serious effects
- ⑩ Other, please specify _____
- ⑪ DK

Goto [Q35](#)

- If NONE to p8 [Q31.1](#) or [Q31.2](#), *Is there any particular reason why you haven't taken any actions (don't read, check as many as the respondent mentions)?*
- ❶ (Read if **Wooduser**) I haven't done so because I rent my home and thus have no control over the wood burning appliance
- ❷ I don't see a reason to reduce smoke in my neighbourhood
- ❸ My neighbourhood is quite clean, therefore there is no need for my household to take action
- ❹ I am not the only one who is polluting the neighbourhood; and I won't take action unless everybody else is taking action
- ❺ I don't know how we might minimize outdoor smoke
- ❻ I feel uncomfortable approaching my neighbours about the wood-smoke concerns
- 96 Other, please specify _____
- 99 DK

If Wooduser, complete [Q35](#) and [Q37](#); if Non Wooduser goto p10 [Section 8](#)

- Have you received complaints from your friends or neighbours about the smoke coming from your chimney?
- ❶ Yes (goto [Q37](#))
- ❷ No (goto p10 [Section 8](#)) 99 DK (goto p10 [Section 8](#))
- If YES to [Q35](#), *What did your neighbour complain about and request of you?*
_____ (Goto [Q37](#))
- *How did you respond to the complaint(s) (check only one)?*
- ❶ Did nothing
- ❷ Did what your neighbour(s) requested
- ❸ Negotiated with your neighbour(s) to reach some agreement, i.e. time of the day to burn wood, etc
- 96 Other, please specify _____
- 99 DK

End of section

Goto p10 [Section 8](#)

PUBLIC RESONSES TO GOVERNMENT ACTIONS

(For everybody)

- *There are a number of actions that can be taken to reduce the amount of smoke from residential wood heating. Please tell me how much you support or oppose the following actions.*

1. Public education related to reducing smoke from residential wood burning

1	2	3	4	5	99
<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Strongly oppose	Oppose	Neither support nor oppose	Support	Strongly Support	DK

2. Providing cash incentives for replacing an old technology wood stove with a cleaner option such as advanced technology wood stove/fireplace insert, or electricity, gas or oil fuelled appliance

1	2	3	4	5	99
<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Strongly oppose	Oppose	Neither support nor oppose	Support	Strongly Support	DK

3. Only allowing new technology appliances to be installed in new construction

1	2	3	4	5	99
<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Strongly oppose	Oppose	Neither support nor oppose	Support	Strongly Support	DK

4. Mandatory changeout at time of house sale/purchase

1	2	3	4	5	99
<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Strongly oppose	Oppose	Neither support nor oppose	Support	Strongly Support	DK

5. Limiting the use of wood burning appliances during periods of poor air quality if the household has a secondary source of heat

1	2	3	4	5	99
<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Strongly oppose	Oppose	Neither support nor oppose	Support	Strongly Support	DK

6. Warning visits to houses which produce lots of smoke

1	2	3	4	5	99
<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Strongly oppose	Oppose	Neither support nor oppose	Support	Strongly Support	DK

7. Wood-smoke ticket (similar to parking ticket)

1	2	3	4	5	99
<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Strongly oppose	Oppose	Neither support nor oppose	Support	Strongly Support	DK

8. Tax on old technology (conventional) wood stoves - that do not meet new emission standards

1	2	3	4	5	99
<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Strongly oppose	Oppose	Neither support nor oppose	Support	Strongly Support	DK

39. *Are there other things you would like to see the government do that would reduce emissions associated with residential wood heating?*

Note: It is important to record this information

The questions asked during this interview are intended to provide a better understanding on residential wood heating practices and opinions. The primary reasons for looking into these issues are based on these facts:

- Wood smoke contains many toxic pollutants. Several studies have related wood smoke to respiratory (lung) symptoms such as coughing, asthma, congestion, and wheezing. In British Columbia, air pollution is estimated to account for 25 to 250 deaths per year, and costs our health care system \$85 million per year. Health risks are higher for pregnant women, children, elders and those with existing heart and lung problems.
- Air quality in Smithers/Hazelton/Telkwa is negatively affected by residential wood smoke. The provincial health officer has recommended that action be taken to reduce wood smoke emissions.
- Further information can be found at:
 - i. The Lung Association of British Columbia – State of the Air in British Columbia 2003, <http://www.B.C..lung.ca>
 - ii. Provincial Health Officer’s Annual Report 2003 – Air Quality in British Columbia, a Public Health Perspective, <http://www.healthservices.gov.B.C..ca/pho>
 - iii. Health Canada, http://www.hc-sc.gc.ca/iyh-vsv/environ/wood-bois_e.html

Handing out a burn it smart magnet; pause for 8-10 seconds

40. Do you accept these facts? Please respond using a 5-point scale where 1 means not at all, 5 means completely, and the mid-point 3 means a bit.

1 2 3 4 5 99
Not at all A bit Completely DK

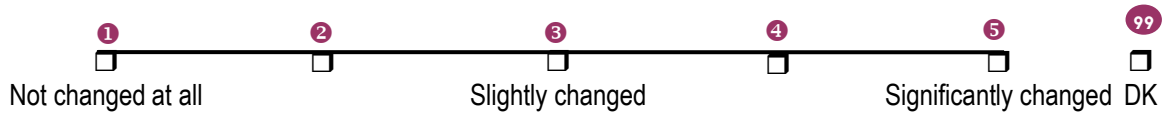
Goto [p12 Q41](#)

41. Would everyone in the house accept these facts as well?

- 1 Yes, all
- 2 Some would, and some would not
- 3 Nobody
- 96 Other, please specify _____ 99 DK

Goto [Q42](#)

42. Do these facts change your perception of wood smoke? Please respond using a 5-point scale where 1 means not changed at all, 5 means significantly changed, and the mid-point 3 means slightly changed.



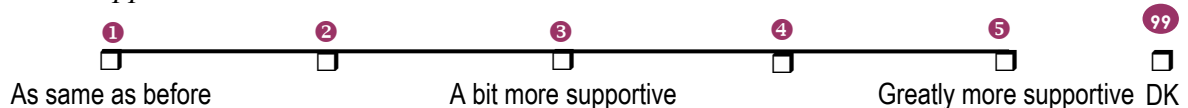
Interviewer: If '1' or '2', goto [Q43](#); otherwise, goto [Q44](#).

43. If '1' or '2' to p12 [Q42](#), Why has your opinion not changed (don't read, check as many as the respondent mentions)?

- 1 The chances of becoming ill due to wood smoke are small
- 2 We/I only use my old technology appliance occasionally, and thus it doesn't produce much smoke
- 3 My family and I are all in good health; plus we have good health care
- 4 We/I already know these facts
- 5 (to *Wooduser*) We/I know how to burn wood with little smoke; therefore nothing is going to happen to me or my family
- 6 (to *Wooduser*) Heating with wood is cheap, and cost is an important issue for my household
- 7 (to *Wooduser*) We/I have to burn wood when there is power failure
- 8 (to *Wooduser*) Some family member(s) enjoy burning wood and they insist doing so
- 96 Other, please specify _____ 99 DK

Goto [Q44](#)

44. After knowing these facts, would you become more supportive towards the smoke-reduction actions? Please respond using a 5-point scale, where 1 means as same as before, 5 means greatly more supportive, and the mid-point 3 means a bit more supportive.



End of section

Goto [p13 Section 9](#)

BACKGROUND INFORMATION

(For everybody)

Finally could you tell me a bit about yourself?

45. Over the past 12 months, how many people, INCLUDING YOURSELF, age 18 or older have lived in your household?

_____ people, 99 DK 999 Refuse

46. Over the past 12 months, how many children age 17 or younger have lived in your household?

_____ people, 99 DK 999 Refuse

47. Please tell me which category best describes your age. Is it

- 1 <18
 2 18-29
 3 30-39
 4 40-55
 5 56-70
 6 >70 999 Refuse

Interviewer: if **Wooduser**, complete [Q48](#) to [Q50](#); if **Non wooduser**, goto [Q51](#)

48. Within your household, is there any particular member who is in charge of collecting firewood, seasoning firewood, and maintaining fires? Or do all members take responsibility altogether?

- 1 Me alone (goto to [Q51](#))
 2 Everybody (goto to [Q51](#))
 3 Some household member(s) (goto to [Q49](#))
 4 We share the work (goto to [Q51](#))
 96 Other, please specify _____ (goto to [Q51](#))
 99 DK (goto to [Q51](#))

49. If 'some household member(s)' to [Q48](#), Is this person

- 1 Male 2 Female

Goto to [Q50](#)

50. How old is this person? _____ Goto to [Q51](#)

51. Is there any particular person in your **household** who is especially active in efforts to reduce smoke, or is everyone about the same in this regard?

- 1 None 2 One person
 3 All about the same 99 DK 999 Refuse

52. *Is there any particular person in your neighbourhood who is especially active in efforts to reduce smoke, or is everyone about the same in this regard?*
- ① None
- ② One person
- ③ A few
- ④ All about the same 99 DK 999 Refuse
53. *What is your highest level of education (not necessarily completed)?*
- ① No formal education
- ② Grade school
- ③ High school
- ④ College or technical training
- ⑤ University or above 999 Refuse
54. *Can you tell me your occupation?*

55. *Are you employed regularly?*
- ① Work full time
- ② Work part time
- ③ Study full time
- ④ Retired
- 96 Other, please specify _____ 999 Refuse
56. *That is the end of our survey. We appreciate your time and cooperation. Thank you very much for your time and valuable opinions. Do you have any additional comments or questions about this survey?*

End of section

End of Screening Questionnaire

Interviewer: please write down in below any observation you think important (if any):

.....

Interviewer: This questionnaire is to be used in conjunction with the Screening Questionnaire. If [Section 2: Invitation to Focus Group](#) answer is NO or DK, then this questionnaire is to be answered either in person or by phone.

Conventional appliance user questions

(For [Conventional appliance users who are not participating the FG](#))

The interviewer, 1) please circle if the respondent is ❶ Female or ❷ Male

2) Which neighbourhood does the respondent live in ❶ Smithers, ❷ Burns Lake, ❸ Terrace

3) Approximate size of the house/residence _____ sq.ft. / sq.mt.

4) Did the respondent answer the questions in the Screening Questionnaire?

❶ Yes (don't complete [p28 Section18](#)) ❷ No (complete [p29 Section18](#))

USAGE OF THE WOOD STOVE/FIREPLACE INSERT

57. What are the reasons you choose to heat your house with wood? (Don't read, check as many as the respondent mentions)

- ❶ Wood supply is abundant
- ❷ Wood heat is cheap
- ❸ Some member(s) of the household like(s) the dry heat
- ❹ Some member(s) enjoy(s) collecting firewood
- ❺ Heating with wood is a part of the tradition
- ❻ Wood heat is an important back-up in case of power failure, esp. in winter
- ❼ I rent this place which is equipped with a wood stove/fireplace insert
- ❽ Other, please specify _____ ❾ DK

58. As you recall, in what year did you install and start to use your current wood-heating appliance? _____

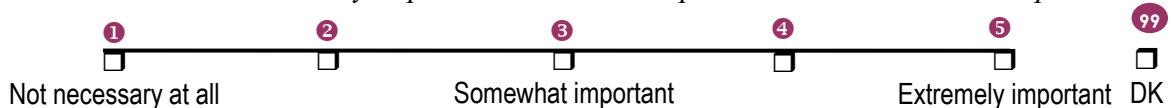
59 To keep your house warm in fall, winter and spring, how often in average (in terms of % time) do usually you use your wood stove/fireplace insert?

59.1 % time in fall (Sep—Nov)

59.2 % time in winter (Dec—Feb)

59.3 % time in spring (Mar—Apr)

60. How important is it to keep a fire going in your wood stove/fireplace insert all night long in winter? Please respond in a 5-point scale, where 1 means not necessarily at all, 5 means extremely important, and the mid-point 3 means somewhat important.



End of section

Goto [p16 Section 11](#)

WOOD SMOKE HEALTH CONCERNS

26. Do you like the smell of wood smoke in general (check only one)?

- 1 Yes (goto [p16 Section 12](#))
- 2 No (goto [p16 Q27](#))
- 3 Neither like nor dislike (goto [p16 Section 12](#))
- 4 Depends, please explain _____ (goto [p16 Q27](#))
- 96 Other, please specify _____ (goto [p16 Section 12](#))
- 99 DK (goto [p16 Section 12](#))

27. If NO to [p16 Q26](#), Please rate the following reasons for not liking wood smoke on a scale of 1 to 5, with 1 being strongly disagree, 5 being strongly agree, and the mid-point 3 being neither disagree nor agree.

Reason	Rating of the respondent's reason for not liking wood smoke
	1 Strongly disagree, 3 Neither disagree nor agree, 5 Strongly agree, 99 DK
1 It is harmful to human health	
2 It reduces visibility in the community	
3 It has a lingering odour	
4 It stains the outside walls of my home	
96 Other, please specify below	

End of section

Goto [p16 Section 12](#)

ACTIONS TO REDUCE SMOKE

28. Is the air quality of your neighbourhood generally 'good'? _____
How important is 'good' air quality to you and your household? (Pause for 3 seconds) Please respond using a 5-point scale where 1 means not important at all, 5 means extremely important, and the mid-point 3 means somewhat important.

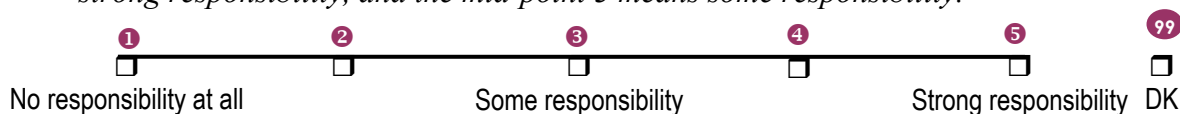
1 2 3 4 5 99
 Not important at all Somewhat important Extremely important DK

29. Is your neighbourhood 'smoky' during heating season? (Pause for 3 seconds)
Please respond using a 5-point scale where 1 means not smoky at all, 5 means extremely smoky, and the mid-point 3 means somewhat smoky.

1 2 3 4 5 99
 Not smoky at all Somewhat smoky Extremely smoky DK

30. Do you think your household has some responsibility to ensure that your neighbourhood is not 'smoky' when burning wood? (Pause for 3 seconds) Please

respond using a 5-point scale where 1 means no responsibility at all, 5 means strong responsibility, and the mid-point 3 means some responsibility.



31. Have you taken any of the following actions to reduce smoke in your neighbourhood (pause for 5 seconds, read and check as many as apply)?

- ❶ Cover firewood from rain and snow (goto [p17 Q32](#))
- ❷ Dry/season firewood for more than 6 months before burning (goto [p17 Q32](#))
- ❸ Burn hot fires (goto [p17 Q32](#))
- ❹ Don't burn non-firewood material, i.e. painted or treated wood, cardboard, magazines, manufactured wood products (goto [p17 Q32](#))
- ❺ Open up combustion air supply before going to bed (rather than damping down) (goto [p17 Q32](#))
- ❻ Refrain from burning when outside air is stagnant (no wind) (goto [p17 Q32](#))
- ❼ Speak to my neighbours about how to burn properly (goto [p17 Q32](#))
- ❽ Switch from wood to a cleaner source such as gas/propane, oil or electricity (goto [p17 Q32](#))
- ❾ None (goto [p18 Q34](#))
- ❿ Other, please specify _____ (goto [p17 Q32](#))
- ⓫ DK(goto [p18 Q35](#))

32. Overall, do you think that the actions you have taken to reduce wood smoke have

- ❶ Significantly improved your quality of life
- ❷ Possibly improved your quality of life
- ❸ Had no significant effect
- ❹ Made you somewhat less comfortable
- ❿ Other, please specify _____
- ⓫ DK

Goto [p17 Q33](#)

33. Overall, do you think that the actions you have done to reduce smoke have

- ❶ Significantly improved your neighbourhood air quality
- ❷ Possibly improved your neighbourhood air quality
- ❸ Had no serious effects
- ❿ Other, please specify _____
- ⓫ DK

Goto [p18 Q35](#)

34. If NONE to [p17 Q32](#), Which of the following describes why you haven't taken any actions (don't read, check as many as the respondent mentions)?

- ❶ I haven't done so because I rent my home and thus have no control over the wood burning appliance
- ❷ I don't see a reason to reduce smoke in my neighbourhood
- ❸ My neighbourhood is quite clean, therefore there is no need for my household to take action
- ❹ I am not the only one who is polluting the neighbourhood; and I won't take action unless everybody else is taking action
- ❺ I don't know how we might minimize outdoor smoke
- ❻ I feel uncomfortable approaching my neighbours about the wood-smoke concerns
- 96 Other, please specify _____
- 99 DK

Goto [p18 Q35](#)

35. Have you received complaints from your friends or neighbours about the smoke coming from your chimney?

- ❶ Yes (goto [p18 Q36](#))
- ❷ No (goto [p18 Section 13](#))
- 99 DK (goto [p18 Section 13](#))

36. If YES to [p18 Q35](#), What did your neighbour complain about and request of you?

_____ (Goto [p18 Q37](#))

37. How did you respond to the complaint(s)?

- ❶ Did nothing
- ❷ Did what your neighbour(s) requested
- ❸ Negotiated with your neighbour(s) to reach some agreement, i.e. time of the day to burn wood, etc
- 96 Other, please specify _____
- 99 DK

End of section

Goto [p18 Section 13](#)

KNOWLEDGE OF NEW TECHNOLOGY WOOD HEATING APPLIANCES

61. Are you aware of new technology wood stoves/fireplace inserts available today, i.e. the ones that are sold in the market or that your friends or neighbours may have installed recently?

- ❶ Yes (goto [p19 Q62](#))
- ❷ No (goto [p19 Section 14](#))

62. If YES to [p18 Q61](#), Based on your understanding, how do these new technology wood stove/fireplace inserts differ from the appliance you use? Would it be (don't read, check as many as the respondent mentions)?

- ① They produce less smoke
- ② They use less firewood
- ③ They are easier to use
- ④ They are safer to burn
- ⑤ Other, please specify _____
- ⑥ Not much difference
- ⑦ DK

Goto [p19 Q63](#)

63. Do you know anyone who has replaced their appliance?

- ① Yes (goto [p19 Q64](#))
- ② No (goto [p19 Section 14](#))

64. If YES to [p19 Q63](#), Based on what you hear from them, do you think they are satisfied with the new wood stove/fireplace insert?

- ① Very satisfied
- ② Somewhat satisfied
- ③ Not satisfied
- ④ DK

End of section

Goto [p19 Section 14](#)

INTENTION TO REPLACE CONVENTIONAL WOOD HEATING APPLIANCES

65. Do you have any plans to add a new heating appliance or switch to another heat source in the near future? Would you say (check only one)

- ① You will get a new heating appliance (goto [p19 Q66](#))
- ② You would like to, but somehow are unable to do so (goto [p20 Q67.1](#))
- ③ You have thought about it, but you decided not to (goto [p20 Q67.2](#))
- ④ You are thinking about it (goto [p21 Q70](#))
- ⑤ You never thought about it (goto [p21 Section 15](#))

66. If 'will get a ...' to [p19 Q65](#), Will the new heating appliance you would like or consider to add likely be a(n)

- ① Replacement of the existing wood stove/fireplace insert, or
- ② Addition to existing one(s)

And will it likely to be a(n)

- ③ New technology wood stove/fireplace insert, or
- ④ another type of heat source (i.e. electricity, gas, oil, or other type of fuel)

Goto [p21 Section 15](#)

67. If You

67.1 'would like to, but unable to do so' (to p19 Q65), what limits your ability to act (don't read, check as many as the respondent mentions)?

- ① Costs too much, in terms of
- ⑪ Purchasing a new appliance
 - ⑫ Having it professionally installed
 - ⑬ Taking out a permit
 - ⑯ Other, please specify _____
- ② Too much trouble, please explain _____
- ⑯ Other, please specify _____ ⑲ DK

Goto [p20 Q68.1](#)

67.2 'have thought about it, but decided not to' (to p19 Q65), why did you choose not to (get a new technology appliance or switch heat source, don't read, check as many as the respondent mentions)?

- ① Cost too much, in terms of
- ⑪ Purchasing a new appliance
 - ⑫ Having it installed professionally
 - ⑬ Obtaining a permit
 - ⑯ Other, please specify _____
- ② Too much trouble, please explain _____
- ⑯ Other, please specify _____ ⑲ DK

Goto [p20 Q68.2](#)

68. Please identify from the above

68.1 If 'would like to, but unable to do so' to p19 Q65, What are the three biggest barriers to your action (Input number from p20 Q67.1)

Biggest barrier	Second biggest barrier	Third biggest barrier

Goto [p21 Section 15](#)

68.2 If 'have thought about it, but decided not to' to p19 Q65, What are the three reasons that are most influential in your decision not to get a new technology appliance or switch to other heat source (Input number from p20 Q67.2)

Biggest reason	Second biggest reason	Third biggest reason

Goto [p21 Section 15](#)

69. If 'are thinking it' to p19 Q65, *Why are you considering getting a new appliance or switching heat source (don't read, check as many as the respondent mentions)?*

- 1 Chimney smoke concern
- 2 The old stove/insert is wearing out
- 3 Neighbour smoke complaint
- 4 New appliance would use less wood
- 5 Don't want to burn wood any more
- 6 Can't cut wood anymore
- 96 Other, please specify _____
- 99 DK

End of section

Goto p21 [Section 15](#)

SIZE OF FINANCIAL INCENTIVE

70. *Various forms of financial aid are being considered to help your household replace your old wood stove/fireplace insert, as long as you agree to trade in your old appliance. These financial aids may include 15% and more discount on the purchase price of a new heat appliance, waiver of permit charge, low interest loans.*

70.1 Will a financial aid valued \$400 be enough for your family to get a new heat appliance which costs about \$2000-3000?

- 1 Yes (goto p22 [Q71](#))
- 2 No (goto p21 [Q70.2](#))
- 99 DK (goto p21 [Q70.2](#))

70.2 If NO or DK to p21 Q70.1, Will \$500 be enough?

- 1 Yes (goto p22 [Q71](#))
- 2 No (goto p21 [Q70.3](#))
- 99 DK (goto p21 [Q70.3](#))

70.3 If NO or DK to p21 Q70.2, Will \$600 be enough?

- 1 Yes (goto p22 [Q71](#))
- 2 No (goto p21 [Q70.4](#))
- 99 DK (goto p21 [Q70.4](#))

70.4 If NO or DK to p21 Q71.3, Will \$700 be enough?

- 1 Yes (goto p22 [Q71](#))
- 2 No (goto p22 [Q70.5](#))
- 99 DK (goto p22 [Q70.5](#))

70.5 If NO or DK to p21 Q71.4, Will \$800 be enough?

- 1 Yes (goto [p22 Q71](#))
- 2 No (goto [p22 Q70.6](#))
- 99 DK (goto [p22 Q70.6](#))

70.6 If NO or DK to p22 Q71.5, Will \$900 be enough?

- 1 Yes (goto [p22 Q71](#))
- 2 No (goto [p22 Q70.7](#))
- 99 DK (goto [p22 Q70.7](#))

70.7 If NO or DK to p22 Q71.6, Will \$1000 be enough?

- 1 Yes (goto [p22 Q71](#))
- 2 No (goto [p22 Q70.8](#))
- 99 DK (goto [p22 Q70.8](#))

70.8 If NO or DK to p22 Q71.7, Are you saying that even \$1000 isn't enough in order to help your family get a new appliance? How much then is enough?

- 1 \$_____ (goto [p22 Q71](#))
- 2 Financial incentive alone will not help, no matter how much (goto [p22 Q71](#))
- 3 You have decided not to give up the old appliance no matter what (goto [p23 Section 16](#))
- 99 DK (goto [p22 Q71](#))

71. Besides the financial incentive, are there other factors important for you to get a new appliance?

- 1 Yes (goto [p22 Q72](#))
- 2 No (goto [p23 Section 16](#))
- 99 DK (goto [p23 Section 16](#))

72. If YES to [p22 Q71](#), If so, what are they?

Factor 1	
Factor 2	
Factor 3	

End of section

Goto [p23 Section 16](#)

WOOD STOVE CHANGEOUT PROGRAM AND BURN-IT-SMART WORKSHOP

21. Are you aware of the ‘Bulkley Valley Wood stove Changeout’ program that operated in 2004 (hint: 15% discount on the purchase of a new appliance was offered for households to change out an old technology wood stove in favour of a new technology wood stove or another heat source)?

- 1 Yes (goto [p23 Q23](#))
- 2 No (goto [p23 Q23](#))
- 99 DK (goto [p23 Q23](#))

23. If YES to p23 Q21, How did you hear about the program (don’t read, check as many as the respondent mentions)?

- 1 Newspaper
- 2 Radio
- 3 Internet
- 4 Friends, neighbours, relatives
- 5 Posters at local government offices and credit unions
- 6 Store banner
- 7 Burn it Smart workshop
- 96 Other, please specify _____
- 99 DK

Goto [p23 Q23](#)

23. Were you also aware of ‘Burn-it-smart’ workshops offered in your area?

- 1 Yes (goto [p23 Q24](#))
- 2 No (goto [p24 Q73](#))
- 99 DK (goto [p24 Q73](#))

24. If YES to [p23 Q23](#), Did you participate in a Burn-it-smart workshop?

- 1 Yes (goto [p23 Q25](#))
- 2 No (goto [p24 Q73](#))
- 3 Some other family member attended the workshop (goto [p23 Q25](#))
- 99 DK (goto [p24 Q73](#))

25. If YES or ‘Some other family member...’ to [p23 Q24](#), We would like to understand whether Burn it Smart workshop you attended affected your burning practices. When we look at before and after the workshop, how often does your family apply the following burning practices? Would it be never, seldom, sometimes, most of time or always?

Burning practice	Before	After
	1 never, 2 seldom, 3 sometimes, 4 most of time, 5 always, 99 DK	
1 Cover firewood from rain and snow		
2 Dry/season firewood for more than 6 months before burning		
3 Burn hot fires		
4 Don’t burn non-firewood material, i.e. painted or treated wood, cardboard, magazines, manufactured wood products, like plywood and chip board		
5 Open up combustion air supply before going to bed (rather than damping down)		

<input checked="" type="checkbox"/> Refrain from burning when outside air is stagnant (no wind)		
---	--	--

Interviewer: Go back to [p23 Q70.8](#): if 'I have decided... no matter what', goto [p24 Section 17](#); otherwise complete [p24 Q73](#) and [p24 Q74](#)

73. In regard to purchasing a new appliance, is there a time of the year your family would be more financially able to make such a purchase?

① Spring: _____

② Summer: _____

③ Fall: _____

④ Winter: _____

⑨6 Other, please specify _____

⑨9 DK

Goto [p24 Q74](#)

74. If a program providing you financial incentives, like the Wood stove Changeout program is to be introduced into your area, how much time would your family need between such a program being advertised and your household being able to make a purchase?

① Less than one month

② One to Two months

③ Two to three months

⑨6 Other, please specify _____

⑨9 DK

End of section

Goto [p24 Section 17](#)

PUBLIC RESPONSES TO GOVERNMENT ACTIONS

The questions asked during this interview are intended to provide a better understanding on residential wood heating practices and opinions. The primary reasons for looking into these issues are based on these facts:

- Wood smoke contains many toxic pollutants. Several studies have related wood smoke to respiratory (lung) symptoms such as coughing, asthma, congestion, and wheezing. In British Columbia, air pollution is estimated to account for 25 to 250 deaths per year, and costs our health care system \$85 million per year. Health risks are higher for pregnant women, children, elders and those with existing heart and lung problems.
- Air quality in Smithers/Hazelton/Telkwa is negatively affected by residential wood smoke. The provincial health officer has recommended that action be taken to reduce wood smoke emissions.
- Old wood stoves release far more air pollution than other forms of residential heating
- Further information can be found at:

- i. The Lung Association of British Columbia – State of the Air in British Columbia 2003, <http://www.B.C..lung.ca>
- ii. Provincial Health Officer’s Annual Report 2003 – Air Quality in British Columbia, a Public Health Perspective, <http://www.healthservices.gov.B.C..ca/pho>
- iii. Health Canada, http://www.hc-sc.gc.ca/iyh-vsv/environ/wood-bois_e.html

Handing out a burn it smart magnet; pause for 8-10 seconds

40. Do you accept these facts? Please respond using a 5-point scale where 1 means not at all, 5 means completely, and the mid-point 3 means a bit.

1 2 3 4 5 99
 Not at all A bit Completely DK
 Goto **p25** [Q41](#)

41. Would everyone in the house accept these facts as well?

- 1 Yes, all
- 2 Some would, and some would not
- 3 Nobody
- 96 Other, please specify _____ 99 DK

Goto **p25** [Q75](#)

75. Do these facts urge you to consider upgrading your old appliance?

- 1 Yes, you will (*check only one of the following*)
 - 11 upgrade your old heat appliance
 - 12 re-think upgrading your appliance
 - 13 start to consider upgrading your appliance
 - 96 Other, please specify _____

Goto **p26** [Q38](#)

- 96 Other, please specify _____ (goto **p26** [Q38](#))
- 2 No (goto **p25** [Q76](#)) 99 DK (goto **p25** [Q76](#))

76. If NO or DK to **p25** [Q75](#), Describe the reason why you wouldn't upgrade your wood stove/fireplace insert (pause and read and check as many as apply)?

- 1 The chances of becoming ill due to wood smoke are small
- 2 We/I only use my old technology appliance occasionally, and thus it doesn't produce much smoke
- 3 My family and I are all in good health; plus we have good health care
- 4 We/I already know these facts

- 5 We/I know how to burn wood with little smoke; therefore nothing is going to happen to me or my family
- 6 Heating with wood is cheap, and cost is an important issue for my household
- 7 We/I have to burn wood when there is power failure
- 8 Some family member(s) enjoy burning wood and they insist doing so
- 96 Other, please specify _____
- 99 DK

Goto [p26 Q38](#)

38. There are a number of actions that can be taken to reduce the amount of smoke from residential wood heating. Please tell me how much you support or oppose the following actions.

1) **Public education related to reducing smoke from residential wood burning**

1	2	3	4	5	99
<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Strongly oppose	Oppose	Neither support nor oppose	Support	Strongly Support	DK

3) **Only allowing new technology appliances to be installed in new construction**

1	2	3	4	5	99
<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Strongly oppose	Oppose	Neither support nor oppose	Support	Strongly Support	DK

4) **Mandatory changeout at time of house sale/purchase**

1	2	3	4	5	99
<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Strongly oppose	Oppose	Neither support nor oppose	Support	Strongly Support	DK

5) **Limiting the use of wood burning appliances during periods of poor air quality if the household has a secondary source of heat**

1	2	3	4	5	99
<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Strongly oppose	Oppose	Neither support nor oppose	Support	Strongly Support	DK

6) **Warning visits to houses which produce lots of smoke**

1	2	3	4	5	99
<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Strongly oppose	Oppose	Neither support nor oppose	Support	Strongly Support	DK

7) **Wood-smoke ticket (similar to parking ticket)**

1	2	3	4	5	99
<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Strongly oppose	Oppose	Neither support nor oppose	Support	Strongly Support	DK

8) **Tax on old technology (conventional) wood stoves - that do not meet new emission standards**

1 **2** **3** **4** **5** **99**
 Strongly oppose Oppose Neither support nor oppose Support Strongly Support DK

Goto [p27 Q77](#)

77. Should these actions be put into effect, how likely is your household to upgrade your heat appliance?

1) **Public education related to reducing smoke from residential wood burning**

1 **2** **3** **4** **5** **99**
 Not likely at all Somewhat likely For sure DK

3) **Only allowing new technology appliances to be installed in new construction**

1 **2** **3** **4** **5** **99**
 Not likely at all Somewhat likely For sure DK

4) **Mandatory changeout at time of house sale/purchase**

1 **2** **3** **4** **5** **99**
 Not likely at all Somewhat likely For sure DK

5) **Limiting the use of wood burning appliances during periods of poor air quality if the household has a secondary source of heat**

1 **2** **3** **4** **5** **99**
 Not likely at all Somewhat likely For sure DK

6) **Warning visit to the houses which produce lots of smoke**

1 **2** **3** **4** **5** **99**
 Not likely at all Somewhat likely For sure DK

7) **Wood-smoking ticket (similar to parking ticket)**

1 **2** **3** **4** **5** **99**
 Not likely at all Somewhat likely For sure DK

8) **Tax on old technology (conventional) wood stoves - that do not meet new emission standards**

1 **2** **3** **4** **5** **99**
 Not likely at all Somewhat likely For sure DK

39. Are there other things you would like to see the government do that would reduce emissions associated with residential wood heating?

Note: It is important to record this information

End of section

Goto **p28** [Section 18](#)

BACKGROUND INFORMATION

Finally could you tell me a bit about yourself?

45. Over the past 12 months, how many people, **INCLUDING YOURSELF**, age 18 or older have lived in your household?

_____ people,

99 DK

999 Refuse

46. Over the past 12 months, how many children age 17 or younger have lived in your household?

_____ people,

99 DK

999 Refuse

47. Please tell me which category best describes your age. Is it

1 <18

2 18-29

3 30-39

4 40-55

5 56-70

6 >70

999 Refuse

48. Within your household, is there any particular member who is in charge of collecting firewood, seasoning firewood, and maintaining fires? Or all members take responsibility altogether?

1 Me alone (goto to **p29** [Q51](#))

2 Everybody (goto to **p29** [Q51](#))

- ③ Some household member(s) (goto to [p29 Q49](#))
- ④ We share the work (goto to [p29 Q51](#))
- 96 Other, please specify _____ (goto to [p29 Q51](#))
- 99 DK (goto to [p29 Q51](#))

49. If 'some household member(s)' to [p29 Q48](#), *Is this person*

- ① Male
- ② Female

Goto to [p29 Q50](#)

50. *How old is this person?* _____

Goto to [p29 Q51](#)

51. *Is there any particular person in your **household** who is especially active in efforts to reduce smoke, or is everyone about the same in this regard?*

- ① None
- ② One person
- ③ All about the same
- 99 DK
- 999 Refuse

52. *Is there any particular person in your **neighbourhood** who is especially active in efforts to reduce smoke, or is everyone about the same in this regard?*

- ① None
- ② One person
- ③ A few
- ④ All about the same
- 99 DK
- 999 Refuse

53. *What is your highest level of education (not necessarily completed)?*

- ① No formal education
- ② Grade school
- ③ High school
- ④ College or technical training
- ⑤ University or above
- 999 Refuse

54. *Can you tell me your occupation?*

55. *Are you employed regularly?*

- ① Work full time
- ② Work part time
- ③ Study full time
- ④ Retired
- ⑨6 Other, please specify _____
- ⑨99 Refuse

56. *That is the end of our survey. We appreciate your time and cooperation. Thank you very much for your time and valuable opinions. Do you have any additional comments or questions about this survey?*

End of section

End of Conventional Appliance User Questionnaire

Interviewer: please write down in below any observation you think important (if any):

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