

Understanding Woodstove Usage: Maximizing the Environmental Benefit of Public Education



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Report Compiled by:



On behalf of the Alberni Air Quality Society and the Port Alberni Air Quality Council.

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Executive Summary

This document presents the findings and information gathered from door-to-door wood-burning appliance survey conducted in the City of Port Alberni. Throughout February and March 2017, 800 homes were approached and 331 people completed a survey which asked 12 questions about usage of wood-heating appliances and perceptions of air quality. Through the study:

- 9% of people reported that they use wood as the primary source of heat in their home.
- 19% reported using wood as a source of heat
- 30% of people surveyed indicated that they have some sort of wood-heater in their house.
- 34% of wood heaters were reported to be over 22 years old
- Roughly two thirds of survey respondents indicated that they burn 3 or less cords of wood per year.
- Just over half of respondents that burn wood season their wood for over one year
- 48% of respondents said they believe that air quality in Port Alberni is mostly good but poor on occasion.
- 181 people (59% of respondents) suggested that smoke from wood-burning appliances affects air quality in their neighbourhood.
- Industrial activity, vehicle emissions, and wood smoke from residential and commercial sources were frequently cited as sources of pollution to pay attention to.

Interestingly, these results are very similar to those that were found in the Town of Smithers through the study conducted there in 2016. In that survey they also found that roughly one out of five residences used wood heat in some form and that the fraction of uncertified appliances may be as high as 40% if you include respondents who were not aware of whether or not their appliance was certified. Results suggest that significant work will be needed to get existing woodstoves into compliance with City bylaws, bylaws that require all wood-heating appliances in the City of Port Alberni to be emissions certified. Results also suggest that more work can be done to educate the community about the importance of seasoning wood before burning it.

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Each partnership was important to the overall project. Thank you to each of these organizations and to the people involved in helping make this research project happen.

Introduction

“Wood smoke is a major contributor to air pollution in B.C., and – similar to vehicle emissions – its health effects are detrimental to humans. Wood smoke contains fine particulate matter (PM2.5), which can cause chronic and acute respiratory and cardiac diseases, especially among children and the elderly” (BC Lung Association, 2017).

Port Alberni is known to have instances of degraded air quality in the winter; PM2.5 levels have been found to exceed provincial objectives up to 15 days during the coldest months of the year (Ministry of Environment 2016). Residential smoke is a priority concern given the number of residents who burn wood. Through an emissions inventory process in 2015, the Comox Valley Regional District found that nearly 50% of smoke emissions are attributed to residential wood smoke (RWDI, 2015). In the Alberni Valley, the Woodstove Exchange Program has operated each year from 2012 through 2017 with Burn-it-Smart Workshops offered on a number of occasions (Alberni-Clayoquot Regional District, 2017). Through this program over 250 old, non-emissions certified woodstoves have been replaced with emissions certified models with estimated savings on the order of 20 metric tonnes of particulate matter (ACRD, 2016). Despite these efforts particulate matter continues to be elevated during winter months and a woodstove signature is evident in the emissions data (MOE, 2016). The City of Port Alberni has also taken recent action to ban old, non-emission certified wood-heating appliances from the city through the Wood-Burning Appliance (Solid Fuel) Emissions Bylaw (City of Port Alberni, 2012). It was identified that research was needed to better understand current woodstove usage and to determine effective communication approaches to reduce wood smoke and improve air quality on a wider scale. Hence began this project.

This project, Understanding Woodstove Usage: Maximizing the Environmental Benefit of Public Education, set out to gather information and increase understanding on the status of residential wood burning in the Valley. The aim is that this information can then be used to inform messaging and provide direction to which supports might be needed to move residents to cleaner burning heating options.

Survey Methods

The research project ran from January to June 2016. Data collection took place in February when the days were cooler and people were actively heating their homes. Volunteers from across Port Alberni offered their time to be a part of the canvass team. Canvassers attended a volunteer training session where survey methods were discussed and everyone was trained on the survey questions.

The survey targeted 800 homes in four neighbourhoods throughout Port Alberni. In particular canvassers targeted single-family and multi-family residences with unobstructed street-level entrances, including duplexes and mobile homes. Apartments, care facilities and businesses were not approached. Residences displaying “no trespassing” signs or places where canvassers felt unsafe were avoided.

The Wood-Heating Appliance Research Project was advertised in the local newspaper, The Alberni Valley News, and included in City Connect, a quarterly newsletter that is distributed to all city residents in conjunction with utility bills. Given this, residents were alerted that the canvassers would be coming and were encouraged to take part in the survey. Survey completion was voluntary and residents could choose to not participate if that was their wish.

Surveys were distributed from 16:00 to 18:00, Monday to Friday, through the last two weeks of February 2017. This maximized the number of people who would be home and allowed the canvassing to happen before it got too dark. Canvassers went door to door in each neighbourhood. Canvassing personnel approached every house in each reporting area and interviewed respondents using the two page Alberni Air Quality Council Wood-burning Appliance Survey as found in Appendix 1. Responses were recorded directly on the survey forms and then digitized after the fact. If a resident was home they were asked to complete the survey. A person responded at 52% of the homes that were approached and roughly 80% of people who opened the door chose to answer at least some of the questions on the survey (334 people). About 20% (84) of people declined the survey or opted to complete the survey later in private rather than in person with a canvasser. In these instances, and where no resident was home, a paper survey along with a Door Canvass Letter (see Appendix 3) with instructions for delivery to the regional district office, were left in mailboxes and on door steps.

Canvassers had a list of frequently asked questions (see Appendix 3), brochures, and educational materials on hand in case people indicated an interest in further information. As an additional benefit, the Alberni-Clayoquot Regional District, through the provincial woodstove exchange program, provided a quantity of moisture meters and instructional videos to be distributed in the community. Canvassers gave these items at their discretion to respondents who demonstrated a potential for them to be put to good use, as determined by their answers to questions having to do with the duration of fuel seasoning and quantity of fuel use.

The complete list of materials carried by the canvassers is included in Appendix 2 below.

Reporting Areas

Surveys were distributed in four neighbourhoods across Port Alberni which give a cross section of old and new homes and a mix of residential neighbourhoods. Survey areas were specifically selected through discussions with the City of Port Alberni Planning Department, Ministry of Environment, and the Port Alberni Air Quality Council. 800 homes were targeted in order to capture about 10% of the Single Detached Houses and Other Attached Dwellings in Port Alberni as reported in the 2016 Census data (Government of Canada, 2016). The number of residential units targeted in each area was determined by geography and approximate size of the regions so that the sum total resulted in the desired 800 units. The four neighbourhoods were South Port, Central Port, North Port, and Westport Place. Table 1 shows the number of properties in each sample area as well as the number of survey responses garnered from each neighbourhood. Figure 1 below shows the map of Port Alberni; yellow circles depict the neighbourhoods of interest. The corresponding canvass maps are included in Appendix 4.

Table 1: Properties in Sample Area and Total Surveys Analyzed.

Neighbourhood	# of Properties in Sample Area	Residences Present	Surveys Analyzed Overall	Percent Respondents
Central Port	253	150	93	37%
South Port	251	134	111	44%
North Port	244	114	101	41%
Westport Place	52	20	22	42%
			*4	

*Miscellaneous surveys; completed but were not attributed to a neighbourhood.

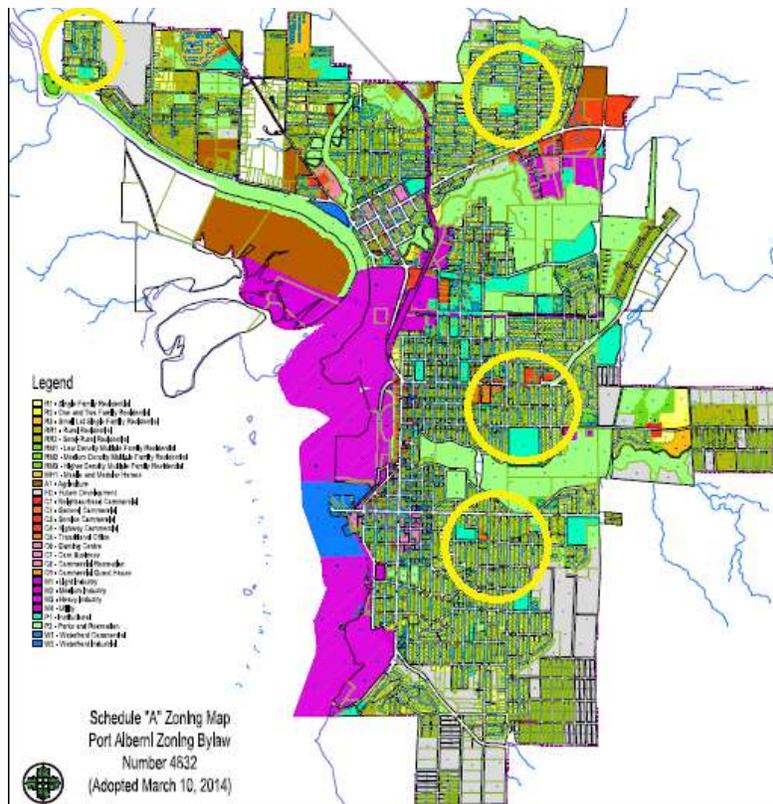


Figure 1: Survey Area; Targeted Neighbourhoods are Indicated with Yellow Circles.

Survey Questions

The survey questionnaire consisted of 14 questions and collected both qualitative and quantitative data. Many of the survey questions were derived from the Residential Wood-Burning Appliances in Smithers: Door-to Door Survey Results (Heimstra, 2016) undertaken in the Town of Smithers last year. The survey questions were then further synthesized and the survey condensed based on feedback received from the City of Port Alberni, the Port Alberni Fire Department, the BC Ministry of Environment and the Vancouver Island Health Authority. The complete survey can be found in Appendix 1. After canvassing,

final surveys were collected for a further two weeks and then the data was transmitted to Vancouver Island University for input and analysis. Survey questions were input into Survey Monkey and analyzed from there. Marks on the surveys indicated the collection area so that the surveys are connected to the neighbourhood of origin. All surveys were identical and the survey respondents remained anonymous in all cases.

Survey Results

Overall, 331 surveys were analyzed. Some people chose to answer all of the questions and other people only responded to select questions. In each instance, the number of respondents to each particular question is recorded with the graph or plot in question.

The first three questions of the survey asked about heating methods and were answered by the majority of participants. If the survey respondent did not have a wood heater (i.e. wood burning appliance), then the second section was skipped. The third section asked about perceptions of air quality and had about a 90% response rate from survey respondents. Section 1 included Questions 1-3:

Question 1: What is the primary source of heat in your home?

The question gave three primary options of electricity, gas, and wood and then provided an 'other' option for alternative forms of heat. Figure 2 below shows the responses in each category. Interestingly, a number of people selected 2 or more sources of heat as primary sources of heat in their home; 19 of those were heat pump and electricity though an additional 29 responses were a random combination of other heating forms. Overall 54 people reported that they use a heat pump as a primary source of heat in their home and 57 respondents say oil is a primary source of heat in their home. Given the response rate of 235 respondents and 29 of those reporting that they use wood as a primary source of heat in their home, over 1 in 10 people (12%) use wood as a primary source of heat in their home.

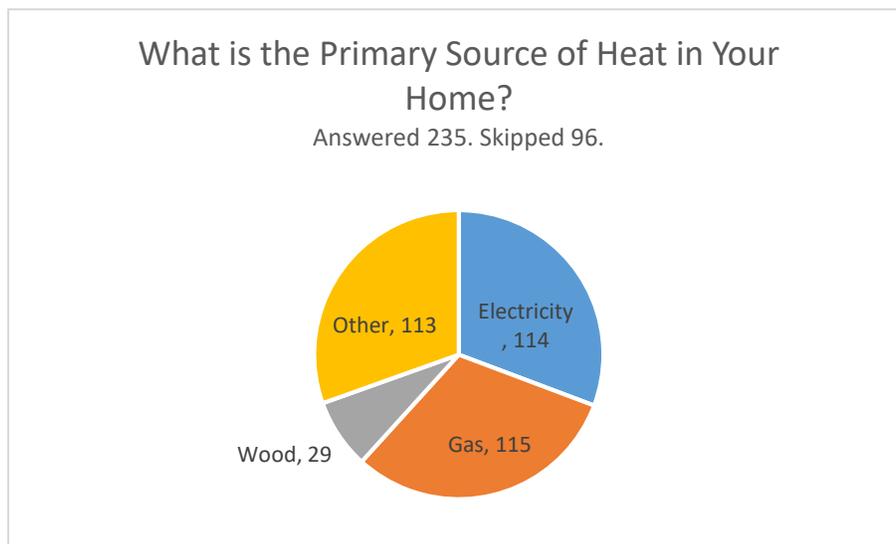


Figure 2: Primary Source of Heat.

Question 2: Do you currently use wood as a heat source in your home?

Nearly one in five, or 19% of people responding, indicated that they use wood as a source of heat in their home. The proportion of people who reported using wood as a source of heat was highest in the Northeast Sample (24%) and lowest in the Northwest Sample (5%). This is consistent with what was expected given the newer homes in the Northwest Sample. See the distribution of responses by neighbourhood in Figure 3 below.

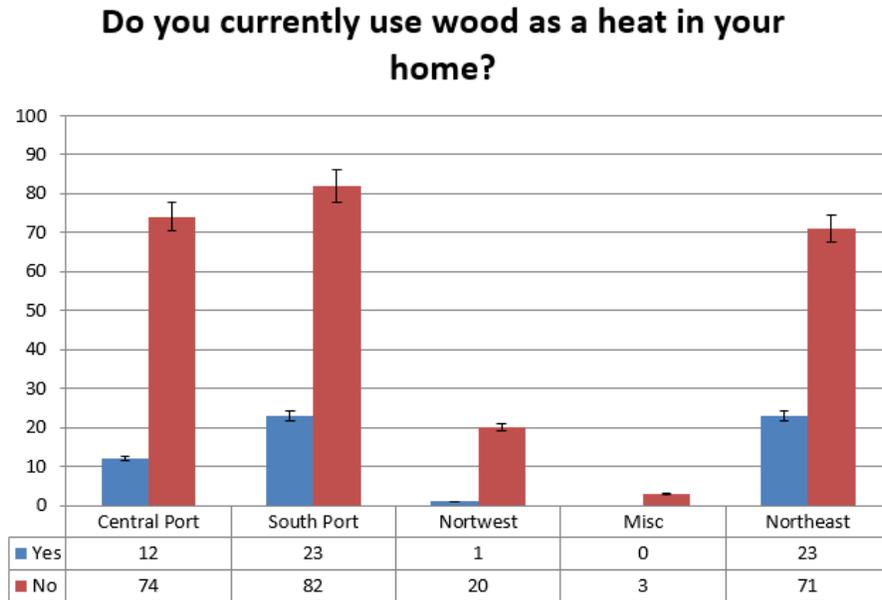


Figure 3: Survey Respondents Who Use Wood as a Source of Heat. Recorded by Neighbourhood.

Question 3: What kind of wood heater do you have in your house?

According to survey results, over half (52%) of the wood burning appliances in the survey area are fireplaces and over a third (34%) of appliances are woodstoves. There was a significant variance across neighbourhoods however with more fireplace inserts in the Northeast Sample and the only pellet stoves reported were in South Port. The breakdown is included in Figure 4 and the distribution by neighbourhood in Figure 5.

Section 2 (Questions 4 – 7) of the survey questionnaire asked questions specifically of people who burn wood as a source of heat.

Question 4: How old is your wood burning appliance?

Responses to the age of the wood burning appliances were multiple choice in nature with less than 2 years, 2-5 years, 5-10 years, 10-15 years, 15-22 years, over 22 years, and don't know, as the choices.

Stoves that are over 22 years old would have been pre-1995 and would most likely be non-emissions certified. Anything before 1994 would certainly be non-emissions certified and it is a flaw in the survey that it said 22 years rather than 23 years. However, in people's memory, and given the breakdown of the answer categories, 22 years is likely very close to 23 years and consequently it is expected that the result would be similar. 34% of survey respondents suggested that their wood-heating appliance was older than 22 years. In addition, 7% of people surveyed responded that they did not know the age of

What kind of wood heater do you have in your house? (all regions)

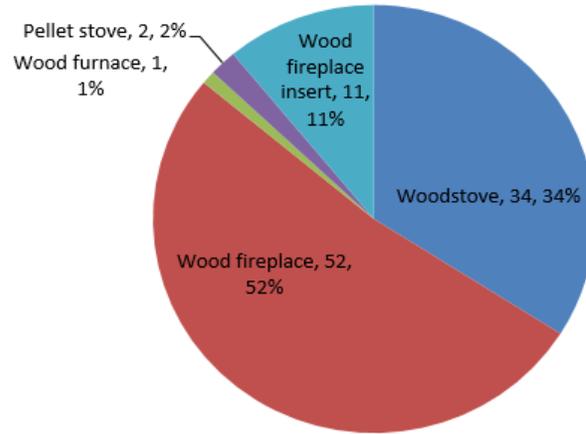


Figure 4: Types of Wood Heaters in the Survey Area.

What kind of wood heater do you have in your house? (among regions)

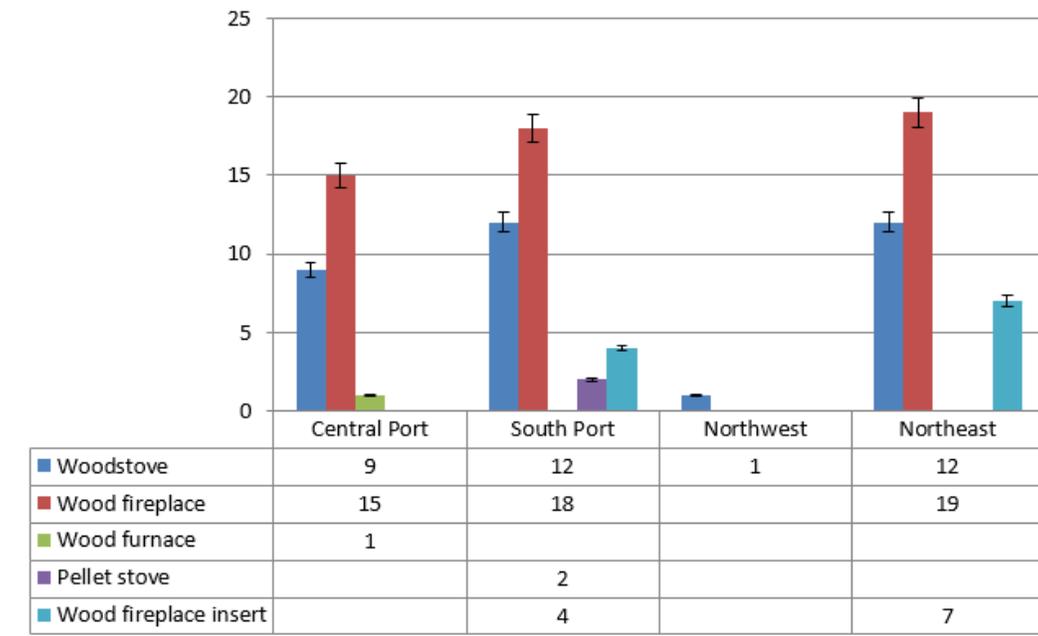
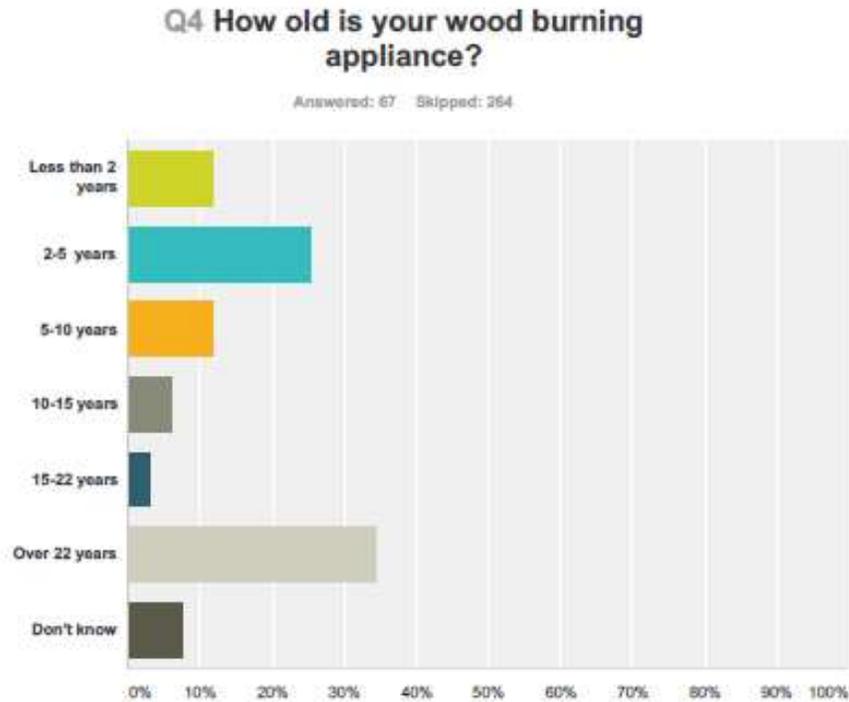


Figure 5: Types of Wood Heaters by Neighbourhood.

their wood-heating appliance. Therefore, it is highly likely that at least a third of the wood heating appliances in the survey area are non-emissions certified and up to 42% could potentially be non-emissions certified. See Figure 6 below for the complete breakdown of the age of wood-heating appliances in the survey area.



Answer Choices	Responses	Count
Less than 2 years	11.94%	8
2-5 years	25.37%	17
5-10 years	11.94%	8
10-15 years	5.97%	4
15-22 years	2.99%	2
Over 22 years	34.33%	23
Don't know	7.46%	5
Total		67

Figure 6: Age of Wood Burning Appliances

Question 5: Approximately how much wood do you burn each year?

More than 1 in 4 survey respondents said that they burn less than 1 cord of wood per year and nearly two thirds of people reported burning 3 or less cords of wood per year. At the same time nearly 1 in 10 survey respondents, or 6 people, said that they burn three to five cords of wood per year and one person burned over 5 cords of wood. Six people (10%) also said that they didn't know how much wood they burned. The quantity of wood burned per region is shown in Figure 7 below.

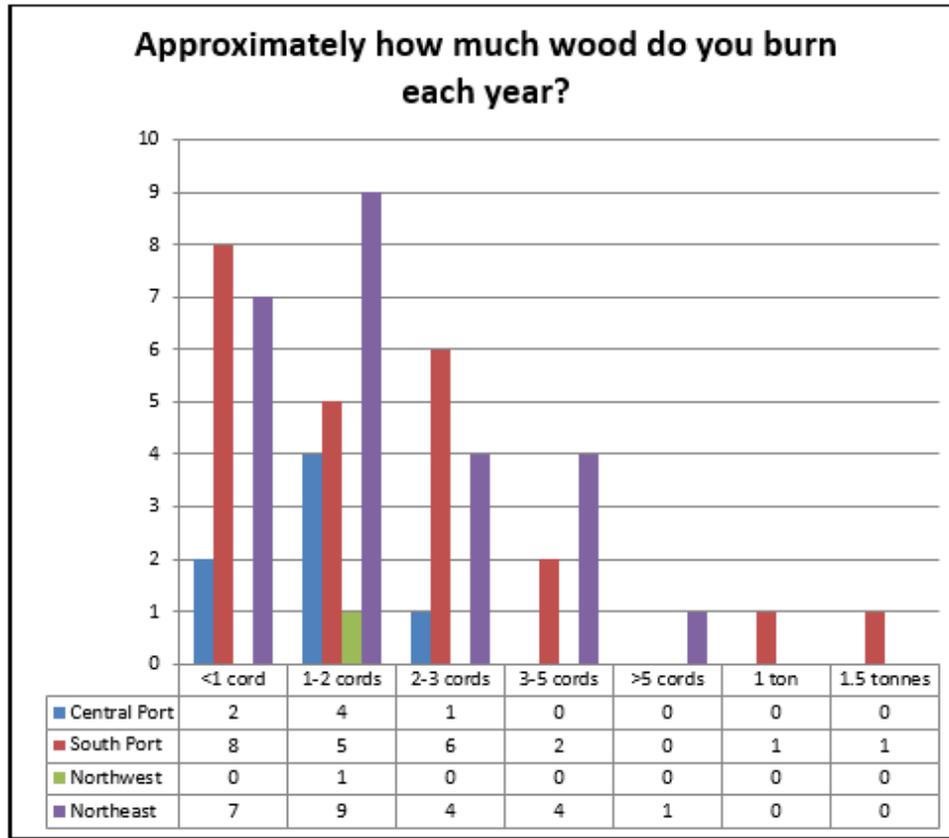


Figure 7: Quantity of Wood Burned by Region.

Question 6: For how long do you season your firewood (i.e. how long do you leave your firewood to dry) before burning it? (Does not apply to pellet appliances.)

Figure 8 shows the length of time that survey respondents season their firewood. Over half of people responding indicated that they season their wood for more than one year. At the same time 17% of people let the wood dry for less than 6 months, 4% don't season their wood at all, and 9% don't know how long they season it. Therefore, up to one third of people could be burning wood that is less than 6 months out of the bush and consequently could be burning wet wood. Figure 8 below shows the breakdown by time period. Figure 9 shows the responses by region.

Question 7: Are you aware of the provincial woodstove exchange program, which provides a free grant of \$250 to replace a non-emissions certified stove with an emissions-certified model, pellet appliance or gas appliance?

Over half of people who answered question 7 said that they were aware of the provincial woodstove exchange program. The other half (46%) said that they had not heard of the program. However, only 35 people actually responded to this question. See the plot in Figure 10 below to see the distribution of responses by region.

Q6 For how long do you season your firewood (i.e. how long do you leave your firewood to dry) before burning it? (Does not apply to pellet appliances.)

Answered: 54 Skipped: 277

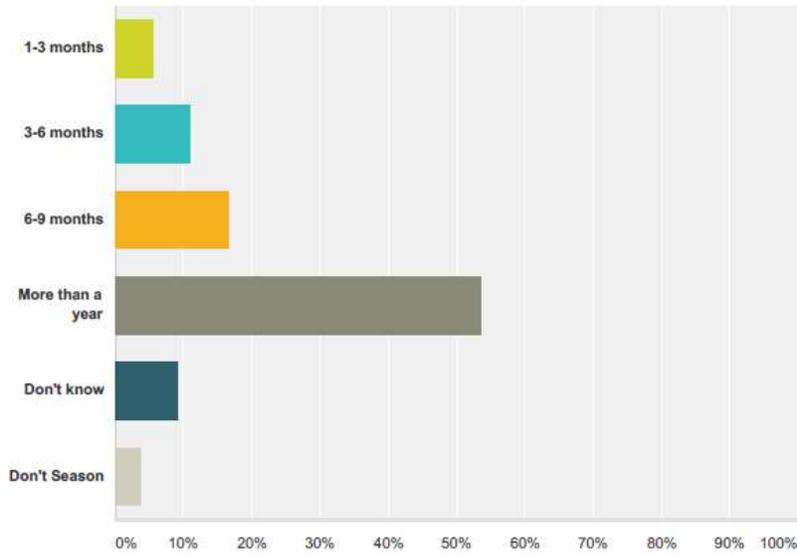


Figure 8: Length of Time that Survey Respondents Season their Firewood.

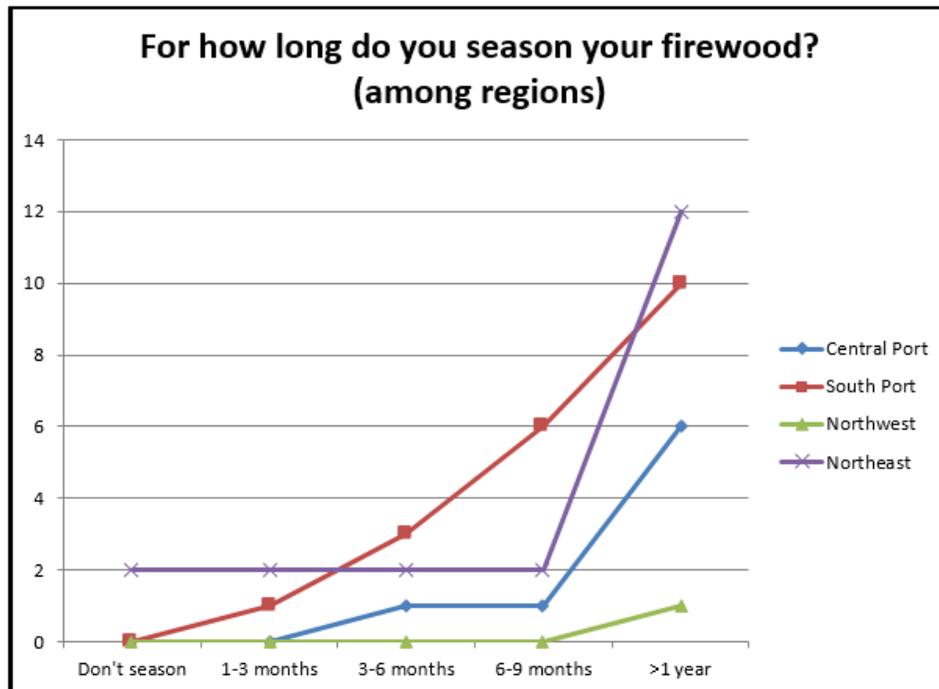


Figure 9: Reported Length of Time that Firewood is Seasoned by Neighbourhood.

Are you aware of the provincial woodstove exchange program?

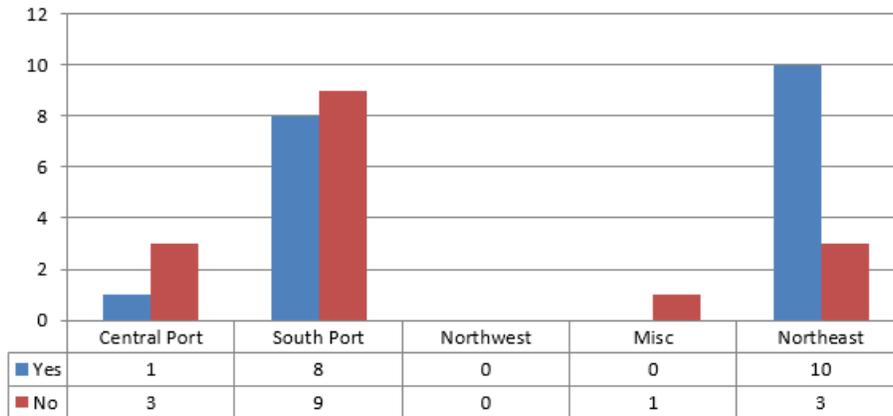


Figure 10: Respondents Aware of the Provincial Exchange Program by Neighbourhood.

Question 8: Which of the following statements best describes how you feel about air quality in Port Alberni? "

Depending who you talk to the responses vary. In the Northeast survey sample 40% of people reported that they feel that air quality is equally likely to be poor, good, or worse. This is dramatically different than in Central Port where just 19% of people reported the same feelings. There, 81% of respondents said they feel air quality is either mostly good or always good. Figure 11 below shows the breakdown by region. Overall 48% of survey respondents said that they believe air quality is mostly good but poor on occasion and 11% reported they feel it is mostly or practically always poor. See Figure 12 for more.

Which statement best describes how you feel about air quality in Port Alberni?

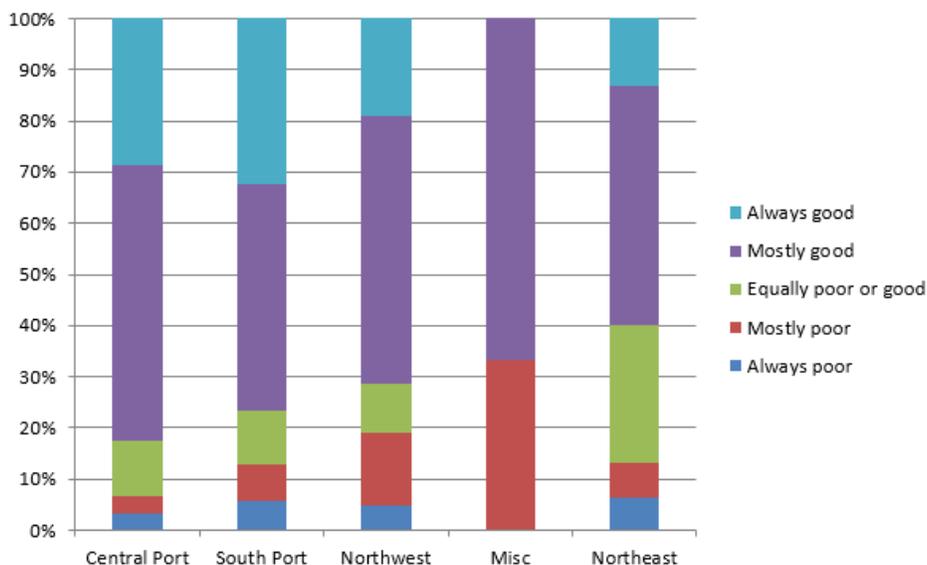


Figure 11: Feelings About Air Quality in Port Alberni.

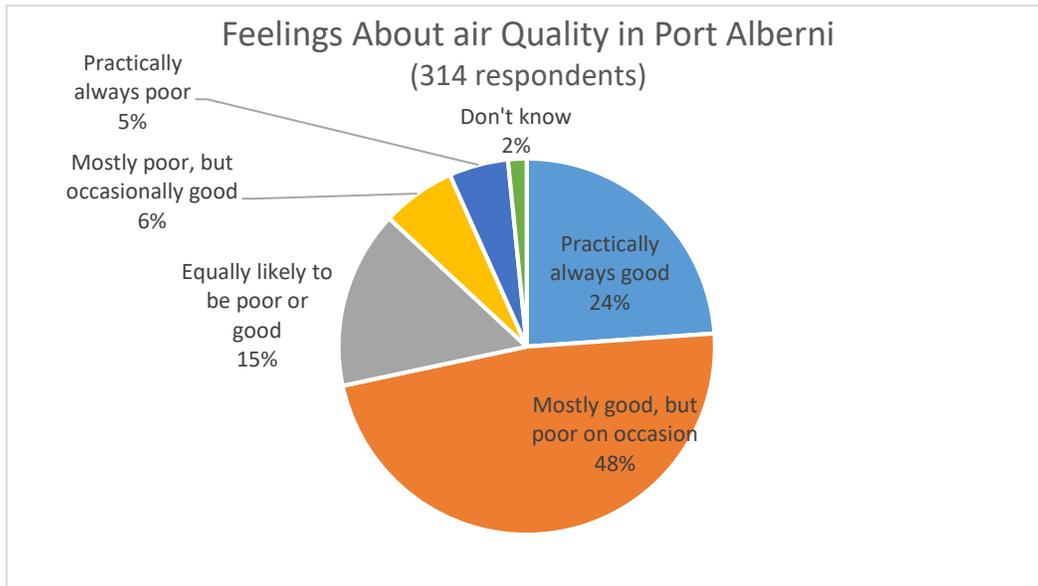


Figure 12: Overall Feelings about Air Quality in Port Alberni.

Question 9: To what extent does smoke from wood-burning appliances affect air quality in your neighbourhood specifically?

Again, 40% of the Northeast Sample reported that smoke from wood burning appliances affects air quality in their neighbourhood to a large or moderate extent. In a similar vein, 30% of them suggested that other sources of air pollution in Port Alberni and the surrounding area affect air quality in their neighbourhood to a large or moderate extent. In all regions, over half of residents indicated that smoke from wood burning appliances affects air quality in their neighbourhood to some extent. See Figure 13.

To what extent does smoke from wood-burning appliances affect air quality in your neighbourhood?

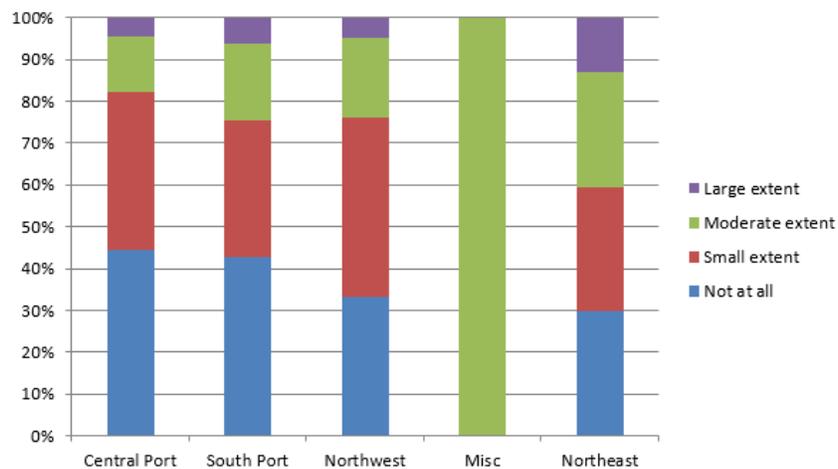


Figure 13: Feelings about the Impact of Smoke from Wood-Burning Appliances by Region.

Question 10: To what extent do other sources of air pollution in Port Alberni and the surrounding area affect air quality in your neighbourhood specifically?

Over 60% of respondents said that other sources of air pollution have an impact on air quality in their neighbourhood and most people said that they were impacted either to a moderate or to a small extent.

To what extent do other sources of air pollution in Port Alberni and the surrounding area affect air quality in your neighbourhood?

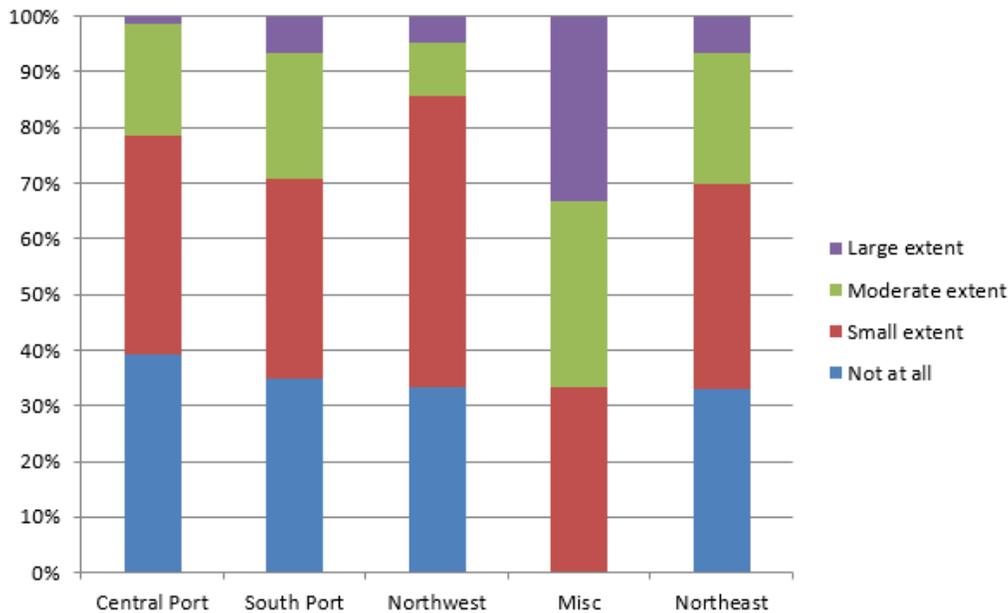


Figure 14: Impacts of Other Sources of Air Pollution Compared Across Regions.

A comment section following the last spoken question asked survey respondents to identify other source(s) of air pollution that affect air quality in the community. The responses were numerous and hit on a range of factors across the community. The sources of air pollution identified included:

- APD
- Backyard fires
- Burn piles
- Cantimber
- Catalyst
- Cows
- Factories (general)
- Farmland
- Fog
- Forest fires and slash burning
- Fossil fuel
- Garbage burning
- Gas furnaces
- Geography
- Home burning
- Inversions
- Mill (general)
- Moore Rd.
- Natural gas
- Oil furnaces
- Outdoor burning
- Pesticides
- Plastic burning
- Pollen
- Sewage
- Tobacco
- Valley
- Vehicles
- Wood kilns
- Wood stoves

The responses combined into categories yielded:

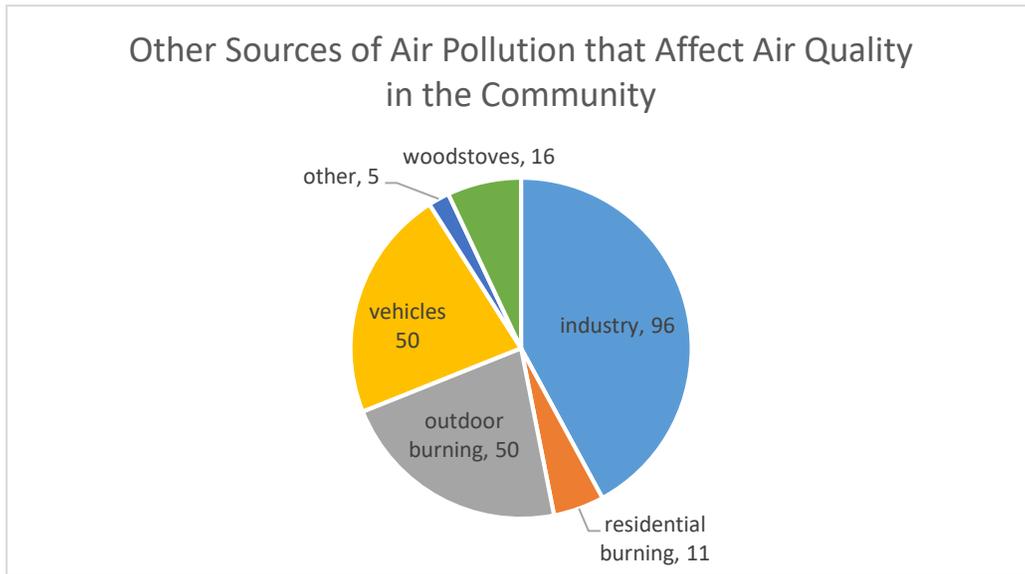


Figure 15: Other Sources of Air Pollution; Frequency of Comments.

Interestingly, comments were consistent with prior air quality information and what impacts are expected in certain neighbourhoods. For instance, slash burning and agricultural emissions, including burning at Moore Road, was mentioned as a source of pollution 24 times, nearly half of the times that it was raised, by residents in the Northeast section of the survey area. Catalyst was fairly consistently raised across the regions (41 people or 18% of respondents) and an additional 37 people noted 'the mill' as a source of pollution. On top of these comments a number of people noted Catalyst as being much cleaner than it used to be. Cantimber was also a point of comment and 9 people across the South, Central, and Northeast samples identified this industrial plant as having an effect on air quality in Port Alberni. Besides industrial activity and open burning, vehicles were the next most cited cause of air pollution with 50 people from across the survey area noting it as a concern.

Finally, at the end of the survey canvassers asked survey respondents if they had any further comments and then took note of whether or not they saw a chimney on the house and whether or not they saw smoke. The results are included in Figures 16 and 17 below.

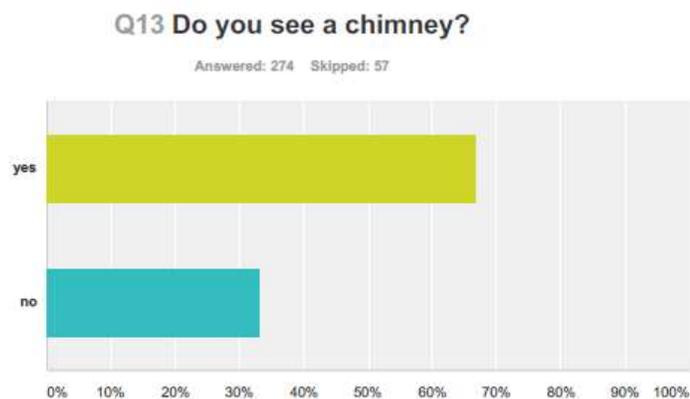
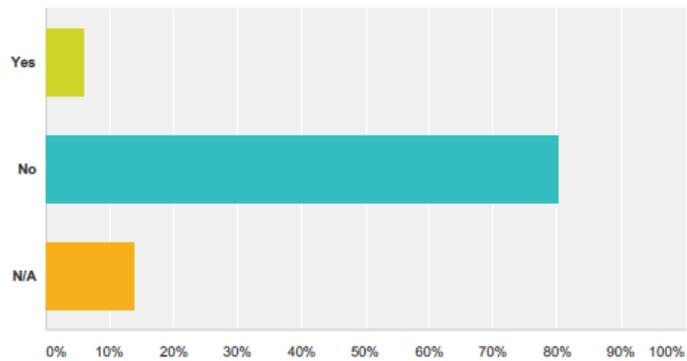


Figure 16: Chimney Observation

Q14 If yes, do you see it smoke?

Answered: 266 Skipped: 65



Answer Choices	Responses	
Yes	6.02%	16
No	80.08%	213
N/A	13.91%	37
Total		266

Figure 17: Incidences of visible Smoke from Homes in the Survey Area.

Discussion

This wood-heating appliance survey was voluntary and delivered to homes within specifically selected regions. While clear precautions were taken to minimize survey bias, and to ensure the generalizability of the data, experimental bias is still possible and individual and community burning practices can vary overtime.

There is a potential for bias in surveys if respondents felt that their wood burning activity would be looked down upon. In that case it would be possible that this is an underestimate of the amount of wood that is burnt within the neighbourhoods in question. There has been significant public education about the concern of too much wood burning and resulting air emissions. The City of Port Alberni has a Wood-Burning Appliance (Solid Fuel) Emissions Bylaw (City of Port Alberni, 2012) which phases out the use of old, non-emissions certified stoves, and fully came into effect this past May. We did have at least one comment: "I'm not sure I want to do the survey because I have a woodstove" (resident of the NE Sample). Canvassers made an effort to assure residents that we were not against wood-burning but rather looking at ways to help people who do burn, burn cleaner and that the survey was anonymous. The survey was also carefully constructed to ensure that there was no discussion of regulation to help separate the survey from people's views of the policy. The door campaign was advertised well in advance so that residents would be aware that the canvassers were coming. This project was profiled in the City Connect, a quarterly flyer distributed to all single family homes in Port Alberni along with the utility bill mail out. There was also an article in the local newspaper, the Alberni Valley News, which

alerted residents to this campaign. It is clear that word did get out through these channels as a few people commented on it at the door and one person (who reported burning wood as a source of heat) directly asked for a moisture meter after completing the survey saying “I completed the survey. Don’t I get a moisture meter?” Conversations were also present on Social Media and a couple of people contacted the Air Quality Council and asked if they could get a survey as we didn’t go to their home.

The generalizability of the data is hard to predict. Four neighbourhoods were selected to provide a cross-section of the community. However, each neighbourhood is distinct and the results vary across neighbourhoods. This could mean that other distinct neighbourhoods exist in the city but were not captured by the data. At the same time, A/B significance testing was used to find significant differences in these data using a p value of <0.05 . This simple test was used to determine the significant differences in means between regions with a confidence interval of 95%. A confidence interval of this percentage suggests moderate evidence against the null hypothesis that all regions are the same. In either case, the neighbourhoods included some old neighbourhoods, some new neighbourhoods, lower income neighbourhoods, and higher income neighbourhoods with the hope of capturing an overarching view of the state of woodstove usage across the City.

To a rough approximation then, if it is assumed that the data is comparable to the rest of the City of Port Alberni, and this is extrapolated out, we can predict how many old stoves remain in Port Alberni. Given the survey data this would mean that 12% of people burn wood as a primary source of heat and 30% of appliances are non-emissions certified. With about 8000 homes in the City of Port Alberni, as discussed above with the 2016 Canadian census data, this would yield an estimate that 960 homes use wood as a primary source of heat in their home. Therefore, it could be estimated that 320 old, non-emissions certified appliances remain across the City of Port Alberni.

Given the extent of wood burning appliances in homes, the culture of a region and perceptions about burning wood could have a significant impact on wood burning practices. It is a matter of public education to help people understand the impact of wood-burning so that they can make informed choices about their use of wood and decide for themselves how to weigh the competing benefits and costs of using wood as a source of heat.

The survey did have the effect of increasing the narrative of conversation about the pros and cons of burning wood as questions were prompted on street corners and conversation raised on social media about the health concerns of wood smoke, merits of wood as a source of heat in an emergency, how busy lives make seasoning wood impractical, and how burning techniques can have a direct impact on the quantity of smoke that is generated.

Recommendations for Future Work

Next steps will be to report to the City of Port Alberni local government, Alberni-Clayoquot Regional District, and city residents so that the survey findings may inform future strategy and policy development as work continues to improve air quality and health for people in the region.

Recommendation 1: Continue the Woodstove Exchange Program and incentivizing people to change out old non-emissions certified appliances with new emissions certified ones.

Recommendation 2: Continue to offer Burn-it Smart workshops on an annual basis in the fall. Offer an opportunity for people to learn tips and techniques to burn wood cleaner.

Recommendation 3: Develop a city-wide stove upgrade and removal strategy to go along with the Wood Burning Appliance Emissions Bylaw. This could include working with insurance companies, Wood Energy Technology Inspectors, and realtors to help with the education of the impacts of wood-heating appliances. The Woodstove Exchange Program could be included as one prong of an interconnected plan to help bring all residences into compliance with city bylaw.

Recommendation 4: Include the oil to heat pump incentive program in an educational campaign together with the Woodstove Exchange Program (it now includes a woodstove to heat pump replacement option) and other messaging about conserving energy in the home. Survey results suggest that many people use two or more primary sources of heat in their home. Given that, for instance, any homes that use both oil and wood as sources of heat now would likely reduce their emissions from wood burning as well as from oil if they were to replace their oil furnace with a high efficiency heat pump. If they replaced both the oil furnace and the woodstove at the same time, they might be eligible for both incentives.

Recommendation 5: Work with forestry companies and the Ministry of Forest Lands and Natural Resource Operations to encourage them to include educational information about smart burning practices along with all firewood permits.

Conclusion

In conclusion, over 330 residents from 4 different neighbourhoods across Port Alberni took the time to share information about their wood-burning practices and share their thoughts about air quality. Over 1 in 10 respondents reported using wood as a primary source of heat in their home and nearly 1 in 5 people indicated that they use wood as a source of heat. At least a third of the wood heating appliances (23) in the survey area are non-emissions certified which leaves significant room for the Woodstove Exchange Program to continue to play a role to help incentivize people to change out the old appliances for new, more efficient models. Thirty percent of respondents season their firewood for less than 6 months which leaves another tremendous opportunity for education about the health benefits of letting wood dry out prior to burning it.

In all regions over half of residents indicated that smoke from wood burning appliances affects air quality in their neighbourhood to some extent. Some residents specifically shared their health conditions, made worse by wood smoke, and expressed their gratitude for the fact that this survey was taking place.

Public education has a key role to play in reducing emissions from residential wood smoke. Messaging needs to be specifically targeted to people who presently burn wood. While it is estimated that people who burn wood are a fifth of the population they are not the whole population. It is clear that smoke from wood-burning appliances has an impact on air quality in Port Alberni. Non-wood burners can keep the wood-burners accountable and the wood-burners can do their part to burn as clean as possible with the technology available.

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Appendix 1: Survey

Alberni Air Quality Council Wood-burning Appliance Survey
February 2017

1. What is the primary source of heat in your home?
Electricity Gas Wood Other _____
 2. Do you currently use wood as a heat source in your home?
Yes, No
 3. What kind of wood heater do you have in your house?
Woodstove, Wood Fireplace, Pellet stove, Wood furnace, Wood Fireplace insert, Pellet furnace,
Outdoor wood boiler, Don't know
-

If participant does not have a wood heater (i.e. wood burning appliance), then skip to Question 8.

4. How old is your wood burning appliance?
Less than 2 years, 2 - 5 years, 5 - 10 years, 10 - 15 years, 15 - 22 years, Over 22 years, Don't know
5. Approximately how much wood do you burn each year?
Less than 1 cord, 1 - 2 cords, 2 - 3 cords, 3 - 5 cords, more than 5 cords, Don't know

Other amount: Record quantity and units; e.g. bundles, truckloads, etc. If pellets: How many bags, pallets or tonnes of pellets do you use each year?
6. For how long do you season your firewood (i.e. how long do you leave your firewood to dry) before burning it? (Does not apply to pellet appliances.)
Don't season, 1 - 3 months, 3 - 6 months, 6 - 9 months, More than 1 year, Don't know
7. Are you aware of the provincial woodstove exchange program, which provides a free grant of \$250 to replace a non-emissions certified stove with an emissions-certified model, pellet appliance or gas appliance?
Yes, No, Have previously participated in the program
8. Which of the following statements best describes how you feel about air quality in Port Alberni?
"The air quality in Port Alberni is..."
Practically always good
Mostly good, but poor on occasion
Equally likely to be poor or good
Mostly poor, but occasionally good
Practically always poor
Don't know
9. To what extent does smoke from wood-burning appliances affect air quality in your neighbourhood specifically?
Large extent, Moderate extent, Small extent, Not at all, Don't know

10. To what extent do other sources of air pollution in Port Alberni and the surrounding area affect air quality in your neighbourhood specifically?

Large extent, Moderate extent, Small extent, Not at all, Don't know

11. Can you identify other source(s) of air pollution that affect air quality in the community?

12. Do you have any other Comments?

Observation only

13. Do you see a chimney?

Yes, No

14. If yes, do you see smoke?

Yes, No, Not applicable

Appendix 2: Canvass Materials

Items Included in the Canvass Package
Clip board
Paper
Pens
Plastic sheet
Name tag (identifying them as part of the research project)
Door Canvass Script
Surveys
FAQ sheet with questions and answers
Educational Materials
<ul style="list-style-type: none">• Woodstove exchange brochures• City air quality/bylaw infographic• Outdoor burning information (Firehall info sheet)• Moisture meters• Burn It Smart DVDs• BC Lung Association Brochures

Appendix 3: Door Canvass Letter and Frequently Asked Questions

Dear Homeowner,

Sorry to miss you this evening.

The Alberni Air Quality Society is conducting a survey across the city on wood-heaters. Please take a few minutes to help us out. Everyone who returns a survey will be entered into a draw to win a FREE moisture meter.

The aim of the survey is to get a better sense of wood-heating appliance usage in Port Alberni and gather opinions on air quality.

Please take a few minutes to fill out the survey and return it to us. All surveys are anonymous and the data is important to help develop programs (like the woodstove exchange program) to reduce smoke pollution and improve air quality and health.

Please drop off or mail the completed survey to:

Alberni-Clayoquot Regional District
3008 5th Ave
Port Alberni, BC
V9Y 2E3

Thanks for your support.

For more information on air quality in Port Alberni visit bcairquality.ca and/or <http://www.acrd.bc.ca/air-quality-council-web-directory>.

Port Alberni Wood-Heating Appliance Survey 2017:
Frequently Asked Questions and their Answers

Q1. Who is conducting the survey?

A. The Alberni Air Quality Society is conducting the survey with the support of the BC Ministry of Environment, The City of Port Alberni, and Vancouver Island University.

Q2. Who is the Alberni Air Quality Society and the Port Alberni Air Quality Council?

A. The Alberni Air Quality Society is a non-profit organization that oversees the financial administration and governance of the Port Alberni Air Quality Council. The Port Alberni Air Quality Council is a stakeholder roundtable that works to improve air quality and health through research, monitoring, collaboration, and public education.

Q3. What is the role of the Wood-heating Appliance Survey?

A. The role of the survey is to get a better understanding of wood-heating appliance usage in Port Alberni. It also serves as a tool to see where more resources are needed to help people who do burn wood burn it more efficiently.

Q4. Where can I learn more information about air quality initiatives in Port Alberni?

A. <http://www.acrd.bc.ca/air-quality-council-web-directory>. In addition, www.bcairquality.ca can be accessed for real-time Air Quality data for Port Alberni.

Q5. Who can I call if I'm being impacted by wood smoke?

A. For wood smoke complaints associated with smoke generated in the City, call the City of Port Alberni fire department at 250 724 1351.

Outside of the city, people can contact the provincial call in center, the RAPP line at 1 877 952-7277 or send an e-mail to the BC Ministry of Environment Environmental complaints line at EnvironmentalComplaints@gov.bc.ca.

Q6. What is a cord of wood?

A. The definition of a cord of firewood in Canada, is a **full or bush cord**, which typically measures 4' wide x 4' high x 8' long and is 128 cubic feet in volume. A pickup truck holds about ½ cord of wood if the wood is flat.

If you have further questions or would like more information please contact the program coordinator, Sarah Thomas, at 778-679-2303.

Appendix 4: Survey Area



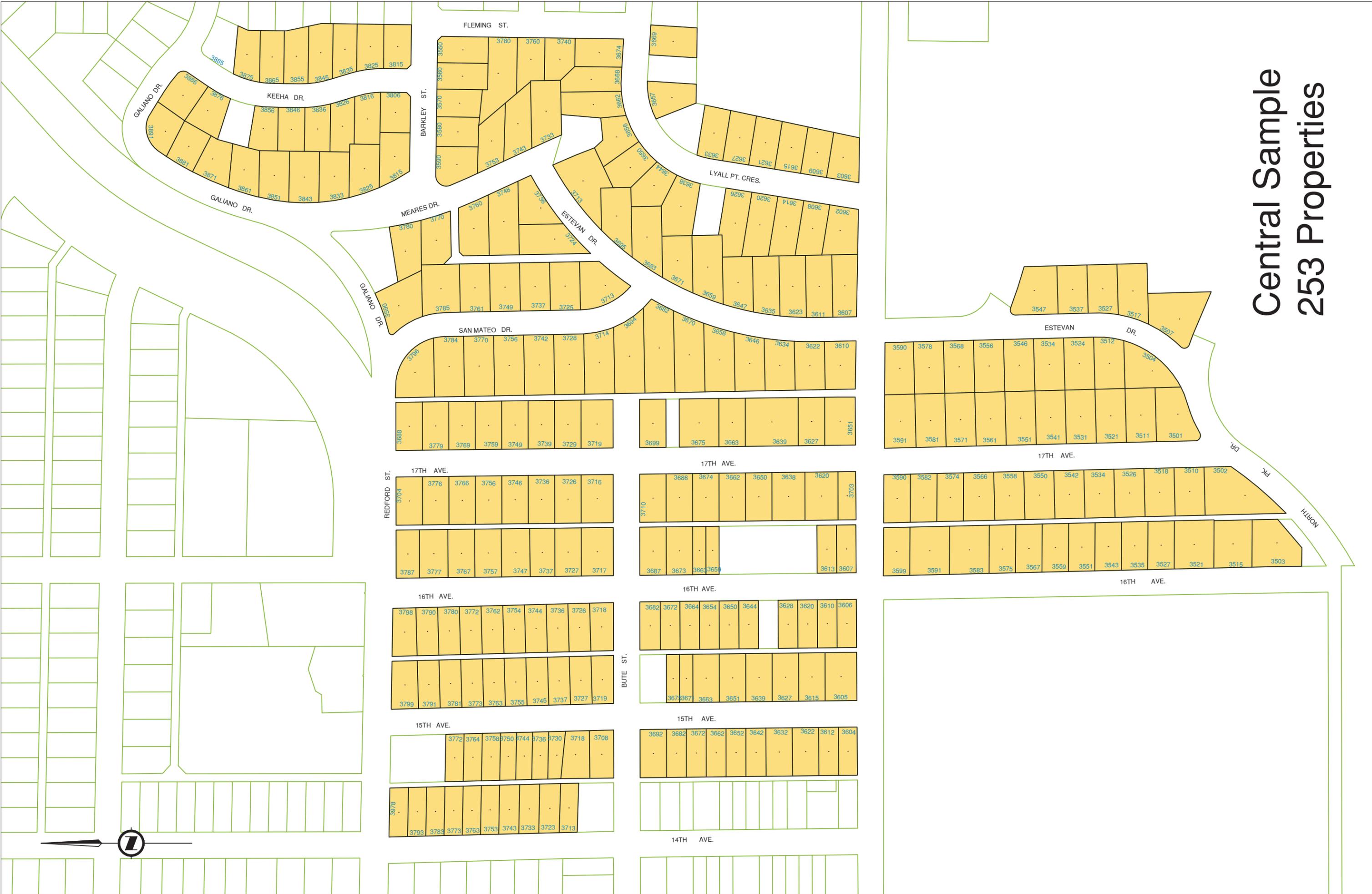
Northwest Sample 52 Properties



South Sample 251 Properties



Central Sample 253 Properties





Northeast Sample 244 Properties

