

NEW GLASGOW AND PICTOU COUNTY SURVEY RESULTS

Two online surveys were administered to learn more about the knowledge and perceptions of Nova Scotians, and New Glaswegians particular, of modern bioenergy and forest management practices. Both surveys included an initial set of questions to gauge respondents' knowledge and opinions of the survey topic, followed by an informational video, then a set of follow-up questions to see if perceptions changed after watching the video. The videos included in the surveys are hosted on the Heat New Glasgow website and were created for the purpose of the perceptions study. Surveys were hosted on the project website and participants were recruited through geographically-targeted Facebook advertisements (e.g. Figure 1) and targeted emails. The surveys were part of a broader province-wide postdoctoral research project at Dalhousie University, but survey recruitment efforts focused on the Town of New Glasgow and surrounding area. Surveys ran from August to October 2022 and more than 200 responses were received for each survey from across the province. The advertisement presented in Figure 1 ran for the week of October 17 – 24 2022 and received 260 link clicks, 82 comments, 14 likes, and 5 shares.

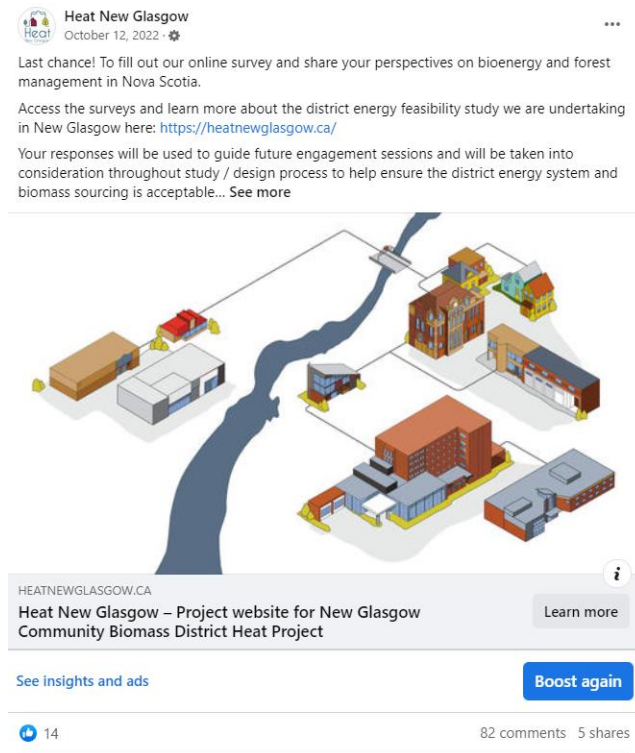


Figure 1: Example Facebook Ad for Survey Recruitment

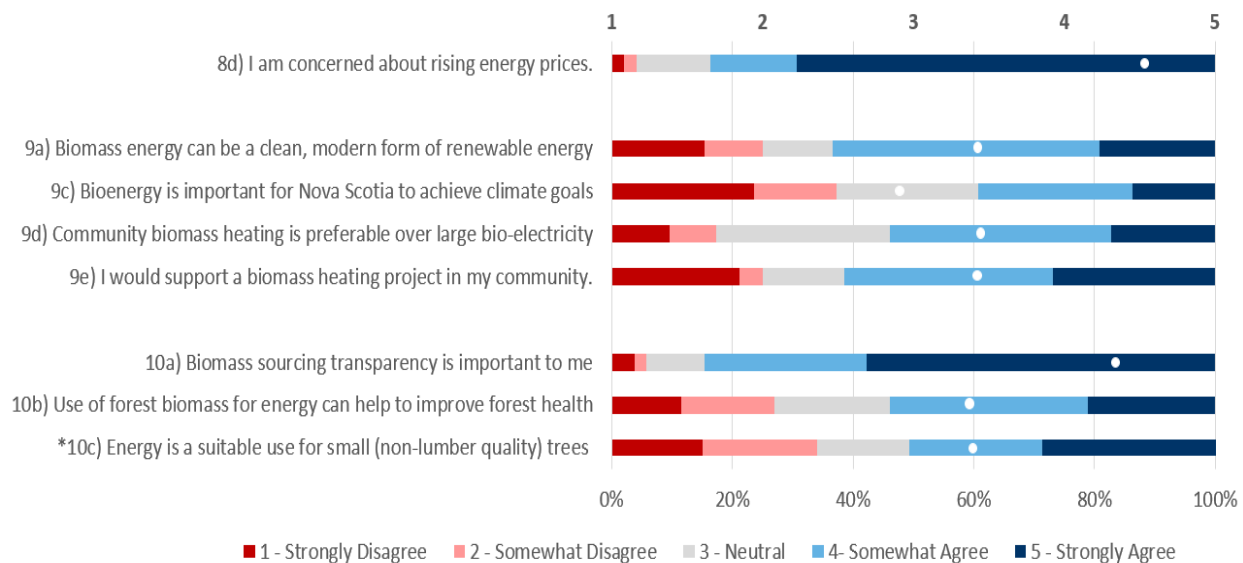
BIOENERGY SURVEY RESPONSES

Of the 204 total responses received for the bioenergy survey, 52 were from residents of the Town of New Glasgow (based on postal code).¹ The following summary details the survey results of respondents from New Glasgow. A summary of the comments received is provided in the Appendix.

Most respondents (94%) were familiar with term ‘biomass’ and were aware that biomass is currently used to heat C/I buildings in Nova Scotia (84%). Only 24% reported that biomass is important to their livelihood. A large majority (84%) responded that they are concerned about rising energy costs in New Glasgow.

Perceptions Around Bioenergy and Biomass Sourcing

Overall, New Glasgow-based respondents’ opinion on bioenergy is relatively positive and they are quite supportive of a bioenergy project in their community (62% at least somewhat supportive, 13% neutral). A large majority of respondents (85%) feel that biomass sourcing must be transparent. Just over half of respondents believe that energy is a suitable use for non-sawmill quality wood (51%) and that using biomass for energy could help to improve forest health (54%). Figure summarizes survey responses from New Glaswegians (prior to watching the video).



The bottom axis shows the percentage of responses in each category, while the top axis and white dots on the graph indicate the average score with 3 being neutral and greater

Figure: Summary of Bioenergy Perceptions Survey Responses from New Glaswegians

¹ The margin of error of the survey responses is +/- 14%, based on a sample size of 52 and population of about 7,800 adults in New Glasgow.

When asked who they would trust to ensure biomass is sustainably sourced, respondents from New Glasgow reported that would have the most trust in the Provincial Government, followed by the Municipal Government, then Indigenous groups, with private companies the least trusted (Figure 2). This is important information for allocation of responsibility to ensure/provide oversight on fuel sustainability. Note that forest owners’ cooperatives were not included as an option in the survey (an oversight).

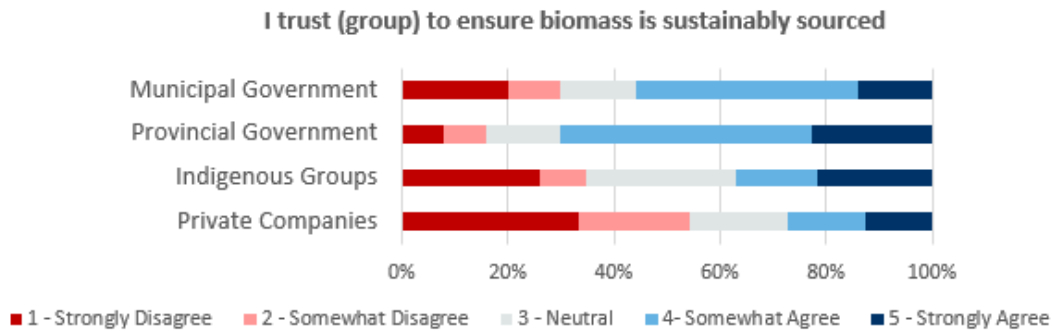


Figure 2: Summary of Responses to Trust in Sustainable Sourcing

There were not enough responses after the video to draw conclusions, but there was some evidence that watching the informational video on modern bioenergy somewhat improved perceptions. Almost 50% of respondents indicated they would be more likely to support a bioenergy project in their community after watching the video.

1.1.1.1 Concerns and Desired Benefits

When asked to select their top three concerns associated with development of a bioenergy project in their community, respondents from New Glasgow reported the sustainability of biomass sourcing as the top concern, followed by air emissions from the bioenergy plant, then distribution of benefits (e.g., who profits from the bioenergy system and fair value paid to biomass suppliers). About a third of respondents had concerns around carbon emissions. Very few people were concerned about the technical and logistical aspects of a bioenergy project and only a handful were concerned about the aesthetics of the plant. Concerns are summarized in Figure 3.

My primary concerns if a bioenergy project is developed in my community are:

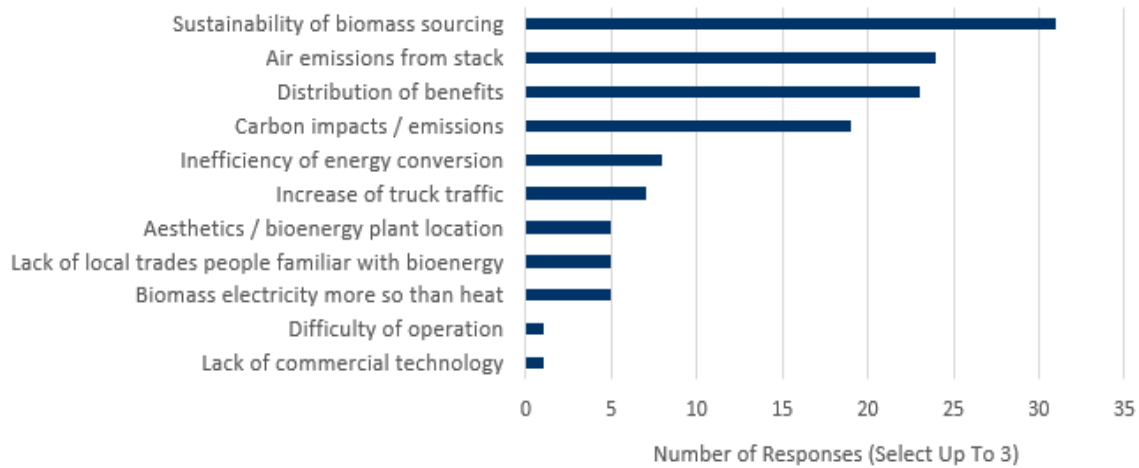


Figure 3: Summary of New Glaswegian Concerns about Bioenergy

The primary benefit that New Glasgow residents want to see from a bioenergy project in their community is reduced energy cost. The next most important benefit for New Glaswegians is GHG emission reductions, followed by municipal economic development, job creation, and energy security. Creation of a local biomass market is a benefit that some would like to see but was not a top priority among respondents (Figure 4).

The primary benefits if a bioenergy project is developed in my community would need to be:

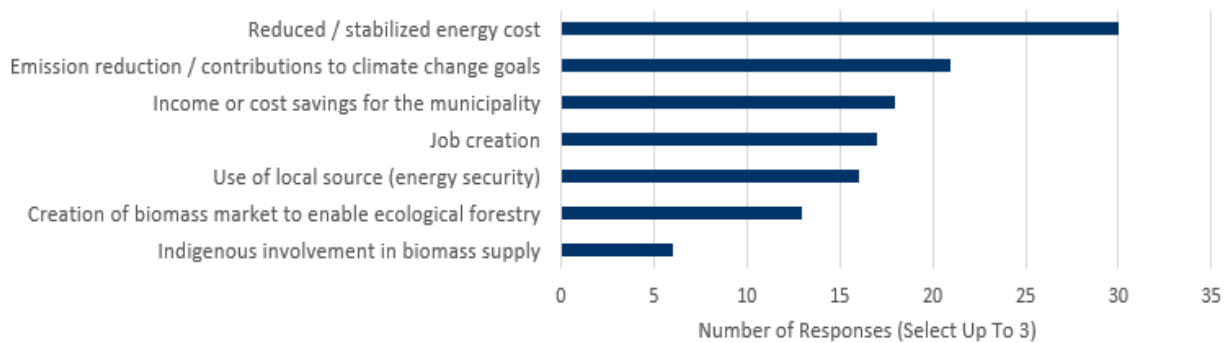


Figure 4: Summary of Bioenergy Project Benefits desired by New Glaswegians

1.1.2 FOREST MANAGEMENT SURVEY RESPONSES

Of the 210 total responses received for the forest management survey, 24 were from residents of the Town of New Glasgow. Due to the small sample size, and because biomass would be primarily sourced from within Pictou County, analysis for the forest management survey was expanded to include all respondents from within Pictou County – 69 in total.² A summary of the comments received is provided in the appendix.

Nearly all respondents (98%) agreed that healthy forests are important to them and most (83%) reported that forests are important for their own recreational activities. 72% of respondents from Pictou County reported that they are at least somewhat familiar with how forests are managed in Nova Scotia but only 42% reported that forests are at least somewhat important to their livelihood.

1.1.2.1 Perceptions Around Forest Management and Use

When asked about the values that forests should be managed for, almost all respondents from Pictou County felt that forests should be managed for ecosystem quality/biodiversity. A large majority also agreed that recreation, and carbon storage / GHG emission reductions are important management objectives. Employment and economic return were considered less important management objectives, though more than half of respondents still felt these objectives were at least somewhat important (see Figure 5). Most respondents think that the forest can be managed for all values in Figure 5 simultaneously (67% somewhat or strongly agreed) and that timber harvest is required to manage the forest for all values (62% somewhat or strongly agreed).

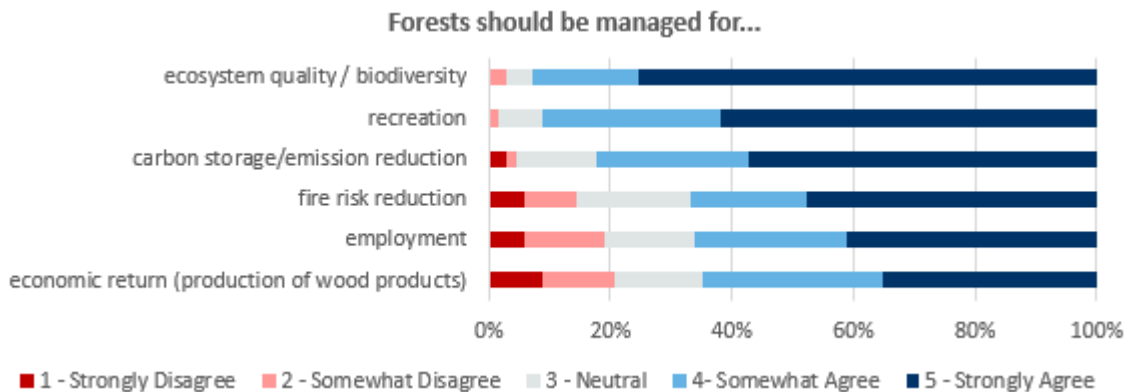


Figure 5: Summary of Survey Responses on Forest Management Values

Three quarters (75%) of respondents from Pictou County at least somewhat agreed that harvesting trees can be good for a forest ecosystem and most (64%) agreed that forests should be more actively managed. Most at least somewhat agree that forests should be used to produce lumber, but less than half agreed that forests should be used to produce pulp and paper or energy (see Figure 6). Interestingly, only 4% of respondents stated that they ‘strongly disagree’ with forests being used to produce lumber, but 29% and 27% “strongly disagree’ with forests being used for pulp and paper or energy, respectively. This indicates that respondents want forests to be more actively and managed but that they want solid wood products to be the primary means of doing so. In reality, the quality of timber harvested to manage forests for

² The margin of error of the survey responses is +/- 11%, based on a sample size of 69 and population of about 35,500 adults in Pictou County.

ecosystem values and biodiversity is often insufficient to produce solid wood products. Communicating this timber quality and value challenge is something that clearly must be a priority if the DHS is to be developed, since high biodiversity is generally inconsistent with managed forests only for lumber production.

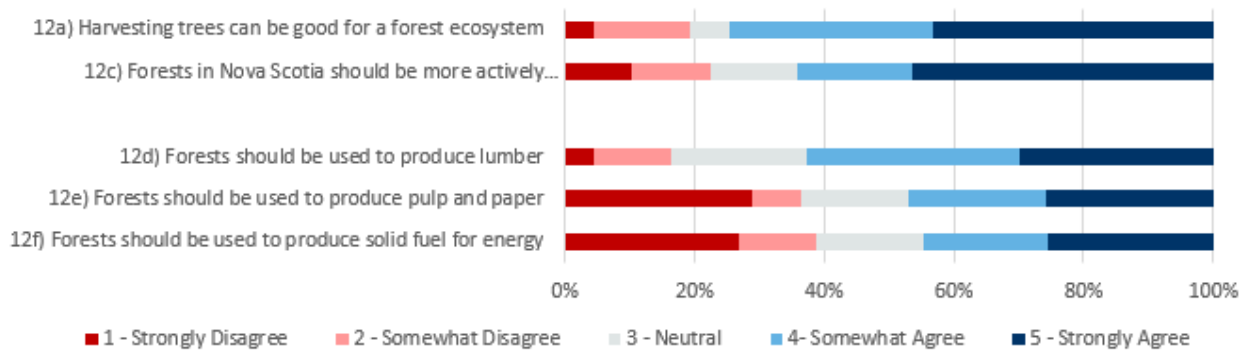


Figure 6: Summary of Responses to Questions on Forest Management and Products

The next group of questions asked if respondents felt that certain groups can have a positive impact on forest ecosystems. Most respondents from Pictou County (75%) at least somewhat agreed that private forest owners can have a positive impact, while less than half of respondents felt the same for industrial forestry companies or Indigenous forest companies (see Figure 7).

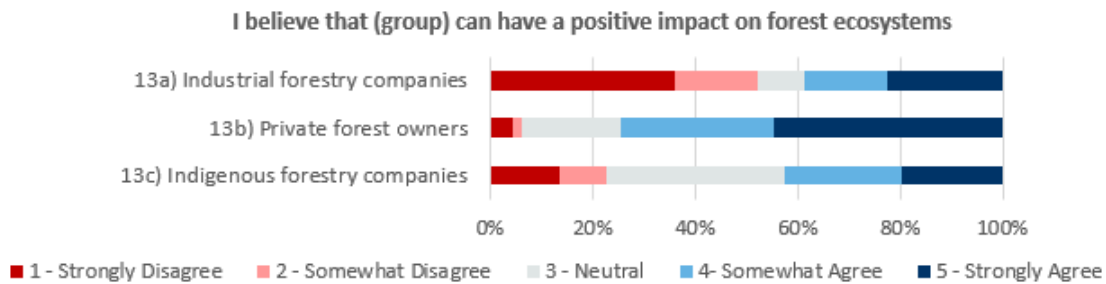


Figure 7: Summary of Responses to Question on Forest Ecosystem Impact

1.2 RESIDENTIAL HEATING SYSTEM QUESTIONNAIRE

To better understand the costs and impacts associated with conversion of individual home heating systems to biomass district heating, the project team conducted an online survey about existing residential heating systems in New Glasgow.³ The questionnaire asked about primary and secondary heating fuels, heat distribution systems, and DHW fuels.

The type of in-building heat distribution systems – radiators/hydrionic, forced air, or ductless (e.g., electric mini-splits or baseboards) – influences the cost of the in-building retrofit required to connect homes to the HTU and the heat network. The heating fuels replaced influences the cost and GHG savings that can be realized by developing a biomass DHS.

³ The focus of the questionnaires was single family homes as in-building assessments of the heating systems in the largest commercial and institutional buildings in New Glasgow will take place during Phase 2 of the feasibility study.

Survey responses were encouraged using geographically-targeted ads on the Heat New Glasgow Facebook page. Respondents were asked to provide their address to ensure they lived within Town boundaries. A total of 86 responses for single family homes or apartments were received.⁴

Existing Heat Distribution Systems

Nearly half of all homes in New Glasgow have hydronic heating systems, also known as radiant heating, where hot water is circulated through radiators, tubing beneath the floor (in-floor), or through hydronic baseboard heaters to heat the home. Homes with hydronic heating systems are the lowest cost to connect to a DHS. There is a relatively even split between forced air heating systems and ductless heating in the remaining homes (Figure 8). Homes with no in-building heat distribution system (ductless) have the highest heat network connection costs because installation of a full retrofit is required.

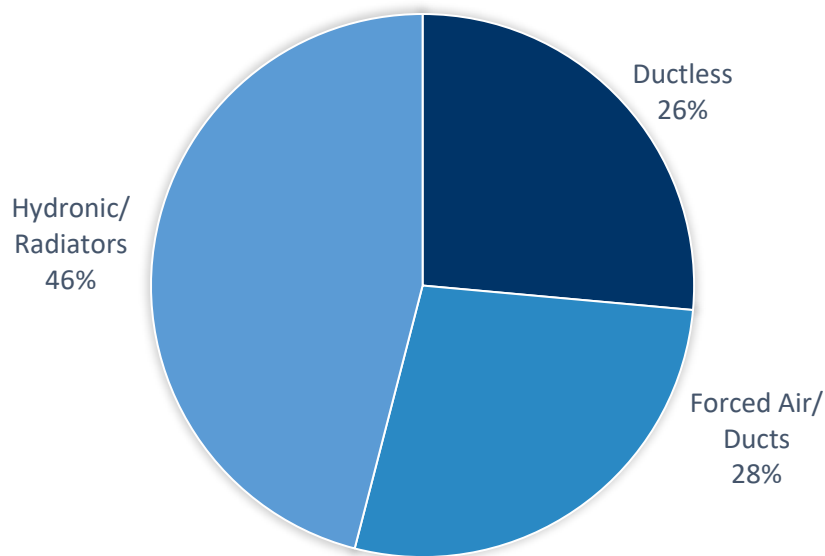


Figure 8: Existing In-Building Heat Distribution Systems in Detached Homes in New Glasgow

⁴ The margin of error of the survey responses is +/- 11%, based on a sample size of 86 and population of about 3,000 detached homes in New Glasgow.

Heating Fuels Currently Used

Respondents were asked to report both primary and secondary heating fuels (Figure 9) as numerous homes use a combination of fossil fuels and wood or electricity. The most common combination reported in the questionnaire was heating oil supplemented by electric baseboards or electric air source heat pumps (ASHPs). Many of these systems are likely to use heating oil for a radiator-based hydronic heating system that cannot be retrofitted to ASHPs. A combination of electric baseboards and ASHPs (mini-splits) was also common. Note that electricity refers to direct electric heating using baseboards or an electric furnace/boilers. High cost, high carbon heating oil is by far the most common heating fuel used in New Glasgow. For DHW, most homes (54%) use electric water heaters while 38% use heating oil and 7% use propane. It is unlikely homes would have both heating oil and propane fuels. Over 80% of homes use one of these fuels for primary or secondary heating, meaning this is the likely proportion of homes that have hydronic or forced air systems – distribution systems required to use these fuels.

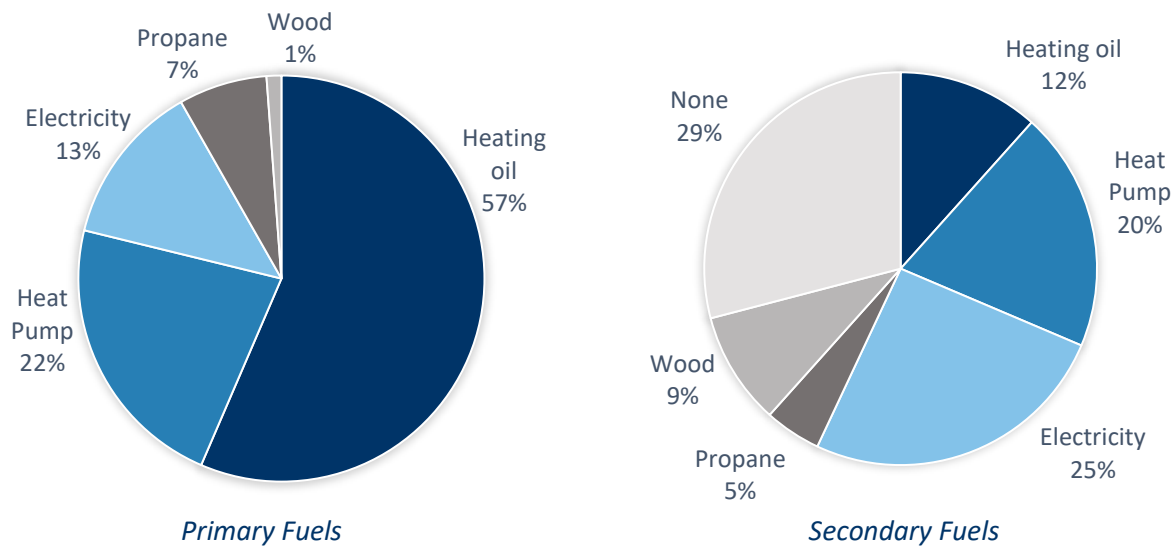


Figure 9: Heating Fuels Used in New Glasgow Detached Homes