CONVERSION PROGRAM

2014 PROGRESS REPORT

May 5, 2015

Prepared For

INTERIOR GAS UTILITY

MWH®

Interior Gas Utility

Conversion Program
2014 Progress Report

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TABLE OF CONTENTS

LIST OF FIGURES

LIST OF APPENDICES

LIST OF ACRONYMS AND ABBREVIATIONS

%	percent
ADEC	Alaska Department of Environmental Conservation
Agnew::Beck	Agnew::Beck Consulting
AHFC	Alaska Housing and Financing Corporation
AIDEA	Alaska Industrial Development and Export Authority
ARS	automatic response system
BTU	British Thermal Unit
CMC	Certified Mechanical Contractor
CSG	Conservation Services Group
EPA	U.S. Environmental Protection Agency
FEDC	Fairbanks Economic Development Corporation
FNG	Fairbanks Natural Gas
FNSB	Fairbanks North Star Borough
FOB	Free on Board
IDIs	individual interviews
IEP	Interior Energy Project
IGU	Interior Gas Utility
LNG	liquefied natural gas
mcf	thousand cubic feet

MWH	MWH Americas, Inc.
NEI	Northern Economics, Inc.
PM 2.5	particulate matter size 2.5 microns
RCA	Regulatory Commission of Alaska
SB	Senate Bill

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EXECUTIVE SUMMARY

Introduction

During 2014, Interior Gas Utility (IGU) experienced several successes, including initiating installation of natural gas distribution lines, and conducting an effective public information and outreach campaign. By focusing on the needs and reactions of the community, IGU is better able to advance development of its utility.

IGU is a municipal utility formed in late 2012 to deliver natural gas to customers in Interior Alaska within areas including the perimeter of Fairbanks, City of North Pole, and surrounding areas. To meet its obligations, IGU must develop a distribution network and potential customers must be willing to convert their current heating system to burn natural gas. At this time, IGU is not responsible for securing a gas supply. Securing the gas supply is an element of the Interior Energy Project (IEP) (through Senate Bill [SB] 23, April 2013), which is the responsibility of the Alaska Industrial Development and Export Authority (AIDEA).

As of this writing, AIDEA is considering a purchase of Pentex, the parent company of Fairbanks Natural Gas. Because AIDEA is the funding authority for the IGU distribution project, this purchase could impact the goals of IGU's six phase plan, which focuses on over 1,500 conversions within the first year of natural gas. Before a conversion program is finalized, especially with consideration to partnerships with local contractors, this acquisition and the effects on IGU need to be understood.

Customers conversion to natural gas is needed to convert their existing heating systems at a rate that has been modeled to support the economic success of IGU. Costs for conversion lies with the customer; therefore, understanding the factors affecting a customer's decision to convert are important and need to be addressed in design and implementation of the conversion program.

The conversions program will be conducted in six geographical phases. The area comprising the City of North Pole is Phase 1, the first community planned for conversion to natural gas.

In October 2014, the IGU Board outlined the following project goals for a successful, economical conversions program (in order of priority):

- Deliver natural gas Free on Board (FOB) Fairbanks at $15 per million cubic feet (mcf).
- Deliver natural gas in 2016.
- Complete distribution build-out within 6 years

Advisory Groups

Advisory groups (including Conversions Steering Group and Logistic Group) were created to increase program transparency and interaction with the community while developing the conversions program. The advisory groups have assisted in guiding the IGU Board to characterize the customer base, provide public education, and begin to define roadblocks (e.g., financing) that could affect a customer's decision to convert to natural gas. The advisory groups

provided initial reviews of components of a natural gas conversion program, including: financing options, program design concepts, existing programs, and logistical considerations. These reviews were driven by goals of the utility and community partners to deliver a conversion program that provides:

- Ease of participation.
- Immediate savings to the customer.
- Low-interest funding option.
- Potential participation in rebate or incentive programs.
- Cost efficiencies by coordinating with existing organizations.

2014 Market Study

To gain a better understanding of the decision points important to potential customers and configuration of current heating systems, IGU contracted with MWH Americas, Inc. (MWH) and their contractors to conduct further market research within the North Pole service area – the first community to be served with natural gas by IGU.

Under direction of the IGU Board and participation of various advisory groups and stakeholders, activities and information gathered during the market research included: community meetings, open houses, individual interviews, pilot study (home heating system assessments and preliminary cost estimate for conversion), and focus group (comprised of some participants of the pilot study). Of these components of the market study, the most site-specific information was collected through the pilot study and focus group, generally described below.

The pilot study was conducted in two parts: 1) on-site surveys (assessments of home heating systems and 2) estimate of cost for the customer to convert to natural gas. Fifty-six systems (including water heaters) were assessed in 47 homes. The assessments collected data such as current heating unit, age of system, and location within the home. Each preliminary cost estimate (a range of cost) was based on several assumptions such as permit fees and cost of running the line to the home. The pilot study provided information on a sampling of systems within the Phase 1 area and the data is useful for recognizing potential issues and costs associated with conversion.

Once the pilot study was completed, 11 participants chose to participate in a focus group. The purpose of the focus group was for customers to review and comment on a draft proposal regarding a gas conversion program design prepared by Conservation Services Group (CSG), an independent contractor (draft dated November 2014). The focus group allowed for comments, questions, and statements from customers regarding what will, and what will not, work for a successful conversion program from the customer's standpoint.

Summary of Results

Highlights of results, or common themes of statements, from customers/participants derived from previous studies and the 2104 market study include:

- Participants are favorable toward the prospect of available natural gas.

- An estimated number of 215 residents are projected to convert in the IGU Phase 1 within the first year of natural gas availability; 859 in the second year.
- Residents are excited about the prospect of natural gas to save money on energy costs.
- Residents have varying degrees of understanding the difference between gas projects, the IEP and IGU.
- The biggest expressed challenge to residential conversion is cost.
- Low-interest loans with on-bill pay financing appears to be the desired method of financing for homeowners.
- Residents desire conversions assistance in finding qualified contractors, recommended systems, and education on home installment.
- Efficiencies gained through logistical scheduling may result in increasing the number of conversions annually.
- Air quality attainment is considered a benefit, by residents, but is not a main driver for conversion.
- Pilot study revealed more recommendations for burner replacements rather than boiler replacements, potentially lowering the average homeowner cost of conversion.

Next Steps and Recommendations

It is recommended that, during 2015, IGU continue to develop the framework and execution plan for the conversions program based on the needs of the community and the utility. Moving forward, the focus for the conversion program will be to develop the framework for a tactical and comprehensive approach to implementing residential conversions. This includes working with consumers in anticipation of first gas delivery in the 2nd quarter of 2017. In order to achieve this, the advisory groups (steering and logistics groups), led by IGU, will continue their work to develop the financial and logistical models, and implementation strategies into a comprehensive plan that allows for advancement of collaboration between the IGU, residential customers, and business partners.

During the development of the conversions program, risks will be identified and qualified to support decision making. Typical project risks are associated with project drivers such as schedule, budget/financing, and quality. The conversions program will have these risks, as well as risks associated with consumers' decision to buy or not to buy natural gas from IGU.

Steps forward for the development of the conversions program for 2015 include:

- Develop cohesive tactical program plan.
- Continuation of a robust outreach and marketing plan.
- Continued work modeling financial aspects.
- Identify conversion funding/financing strategy for homeowners.
- Assist in development of a qualified mechanical contractors program.
- Development of a customer service program by leveraging the IGU gas operator's resources.
- Creation of an installation process for gas conversions.

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1.0 INTRODUCTION

Interior Alaska has been plagued with high energy costs for over 50 years. This area of the state does not have access to clean burning natural gas and as a result the majority of residents utilize fuel oil or wood to heat their homes. As the costs for fuel oil rise, residents opt to burn wood because it is available and can be more affordable. The particulates from wood burning create a serious air quality issue. The U.S. Environmental Protection Agency (EPA) has listed Fairbanks as an area of non-attainment for particulate matter size 2.5 micrometers (PM 2.5).

In response to high energy costs and poor air quality in the Fairbanks area, on April 12, 2013, the Alaska Legislature passed the Interior Energy Project (IEP) (Senate Bill [SB] 23) including provision for a financing package to support an initiative to bring affordable natural gas to Interior Alaska. The IEP legislation was executed in Fairbanks on May 24, 2013. The overall project includes: (1) construction, installation, and start-up costs for a liquefied natural gas (LNG) facility on the North Slope, and (2) assistance in the financing of LNG storage, re-gasification, and piped natural gas distribution systems to bring affordable natural gas to residential and commercial customers in the Fairbanks North Star Borough (FNSB). Since the passage of SB 23, the 29th Legislature passed House Bill 105, which expanded the origin of gas supply from the North Slope to anywhere in the state for delivery to Interior Alaska as a primary market.

SB23 was the original backbone of funding for this project, but does not include funding for residential or commercial conversions.

Two Interior Alaska local utilities have the responsibility to deliver natural gas to residential and commercial customers in their respective service areas. Fairbanks Natural Gas (FNG) is an active private utility which provides natural gas to approximately 1,100 customers within the City of Fairbanks. Interior Gas Utility (IGU) is a municipal utility formed in late in 2012 to deliver affordable natural gas to the customers within the service area, including the perimeter of the City of Fairbanks, City of North Pole, and surrounding areas, **Figure 1** IGU Service Area. Expansion is planned by phases as presented in **Figure 2** IGU Phases 1 thru 6 Construction.

On December 20, 2013, the Regulatory Commission of Alaska (RCA) awarded IGU a Certificate of Public Convenience and Need (Certificate No. 753). This regulatory approval allowed IGU to form a utility to distribute natural gas to the RCA-defined service area. The service area includes approximately 12,000 residential properties that are currently not served by natural gas that could become customers, and IGU has the responsibility to develop a distribution network and design a heating source conversions plan for potential customers. At this time, IGU is not responsible for securing a gas supply. Securing the gas supply is an element of the IEP, which is the responsibility of Alaska Industrial Development and Export Authority (AIDEA).

To meet its obligations, IGU must develop a distribution network and potential customers must be willing to convert their current heating system to burn natural gas. Recognizing the importance of residential conversions to the success of the utility, IGU initiated an outreach program (Market Study Program, 2014) to identify the needs of the consumers and identify market conditions (e.g., cost of gas) that would favor conversions and form the basis for the

design and development of a conversion program, including financing options. The initial service area of interest is the City of North Pole, Alaska, identified as Phase 1 of the program.

1.1 Advisory/Steering Groups

In an effort to increase program transparency and interaction within the community, advisory groups were created. Members of these groups include community leaders and representatives who have shown an interest in advancing the overall project to bring natural gas to residential customers in Fairbanks, and contribute their knowledge and expertise in support of that goal. The primary advisory groups are described below.

IGU Conversions Steering Group – IGU established a Conversions Steering Group to identify, research, and evaluate components for a natural gas conversion program. The Group was comprised of community leaders from the energy, conservation, natural gas, and contracting communities. They created and focused on Guiding Principles to discuss program design elements such as consumer behavior, energy efficiency, marketing, and financial assistance, and developed recommendations to the IGU Board for further actions. Group members met bi-weekly from July 2014 through November 2014.

Guiding Principles to craft a successful conversions program for Interior residents:

1. Easy to participate.
2. Lower energy costs so that, after payment of conversion financing charges, customers still achieve immediate savings.
3. Low interest rates.
4. Offer a Rebate or Incentive.
5. Work with local, state, federal, private, and public organizations.

IGU Logistics Group – IGU formed this sub-group of the Conversions Steering Group to evaluate logistical components by working with heating unit manufacturers and industry professionals. The Logistics Group met weekly from August through November 2014 and focused on achieving conversions for a high number of residents within a short timeframe. The Logistics Group was instrumental in developing the provisions of the Pilot Program, and provided information on materials and costs, labor hours and wages, equipment standards, delivery and staging, and logistical considerations to meet the number of conversions projected by IGU.

1.2 Purpose of Report

This report has been prepared for the IGU Board to: 1) update and summarize previous work by others conducted at the onset of the IEP and performed under contract with AIDEA and IGU; 2) describe and summarize the 2014 Market Study work performed by MWH Americas, Inc. (MWH) and its contractors to confirm and build on understanding homeowner conversion expectations presented by others; and 3) provide an initial framework for the development of a conversion program, including financing options. The service area of interest is that of the City of North Pole and the surrounding area, which is identified as Phase 1 of the program build-out and operating plan (**Figure 3**).

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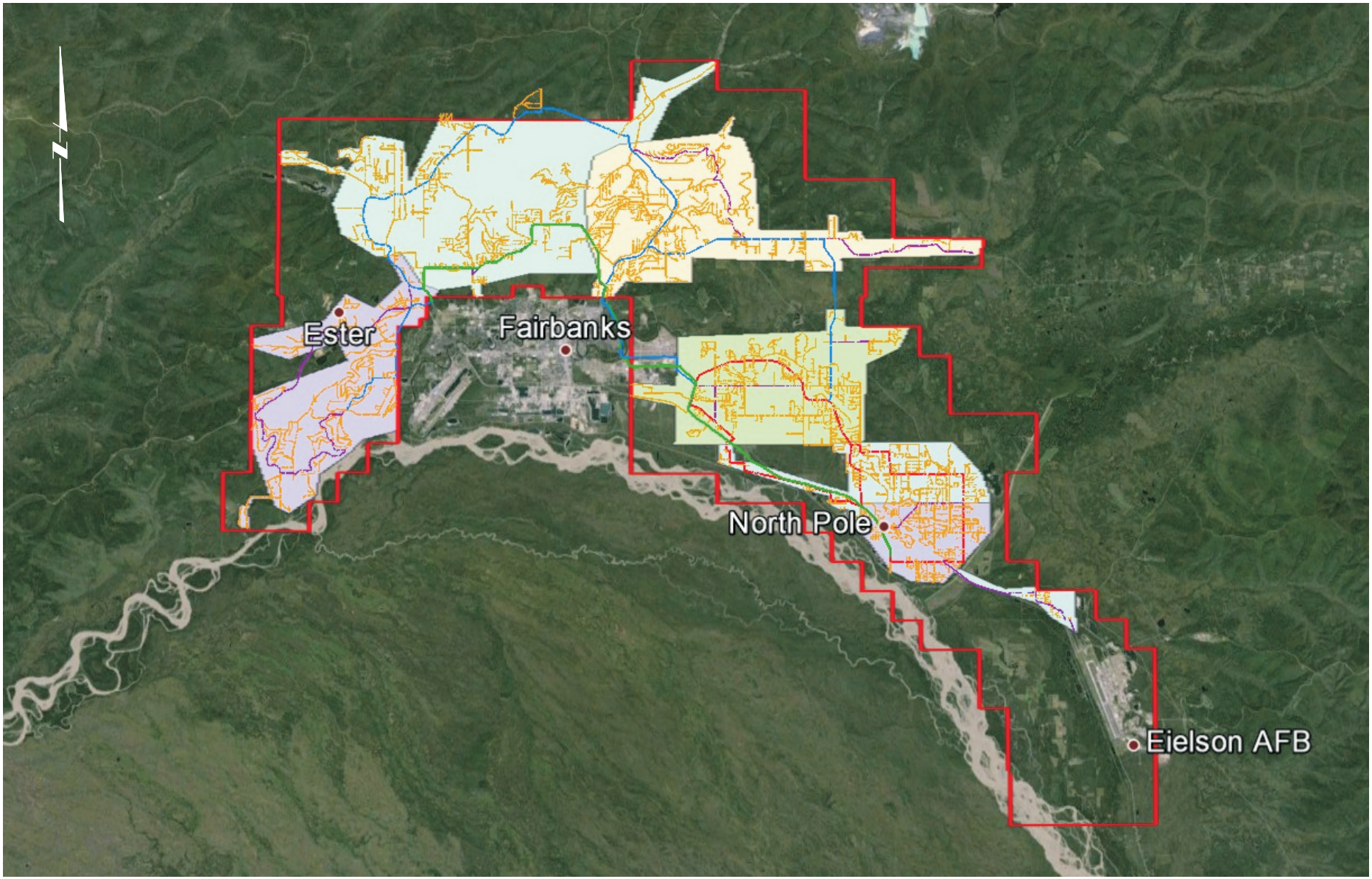

IGU SERVICE AREA

FIGURE
1

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INTERIOR GAS UTILITY

N
W E
S

Construction Phases

- 1
- 2
- 3
- 4
- 5
- 6
- City of Fairbanks
- City of North Pole

All Phases

IGU PHASES 1 THRU 6 CONSTRUCTION

FIGURE 2

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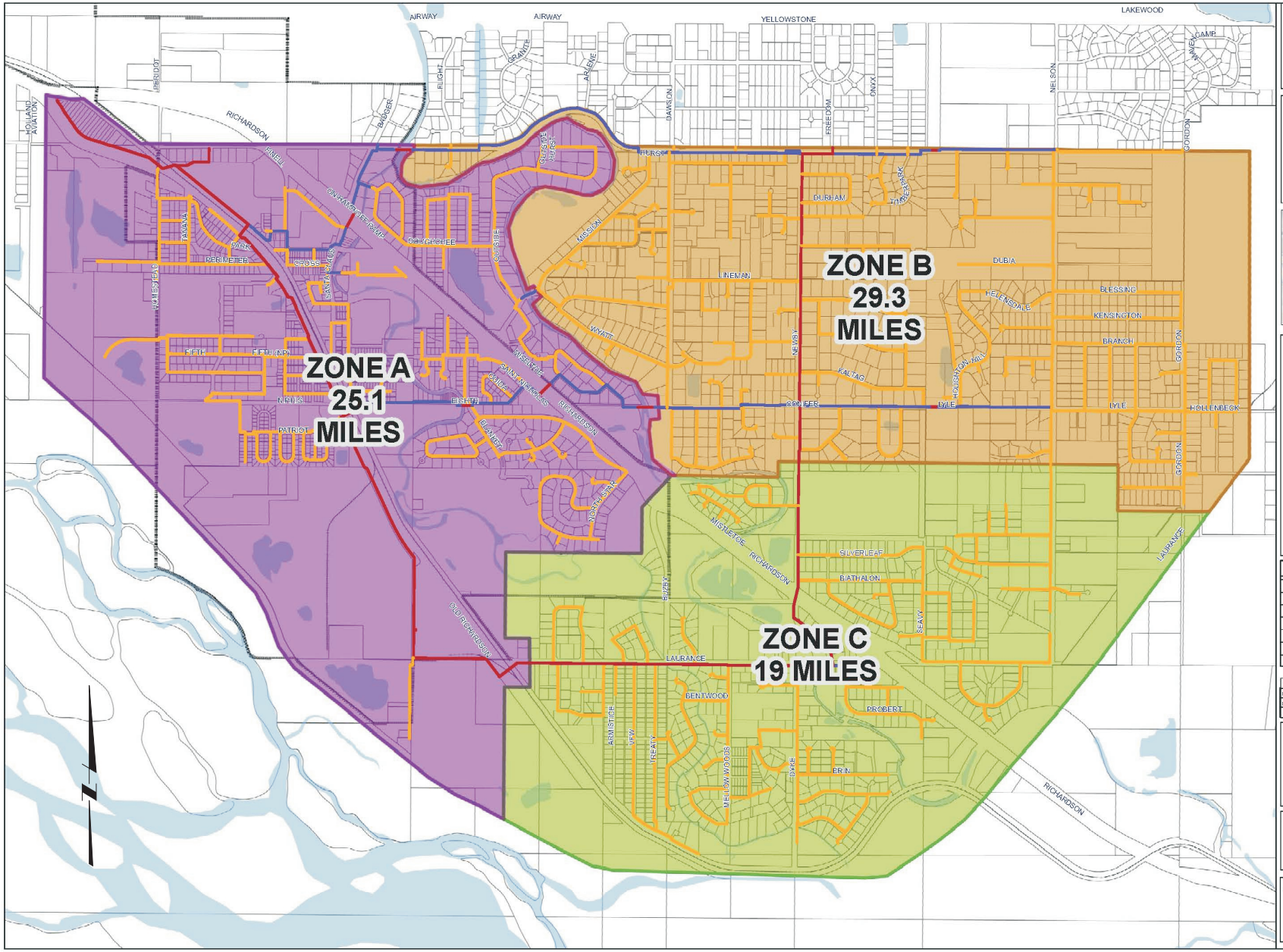

IGU PHASE 1

FIGURE 3

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1.3 Referenced Previous Work by Others

Since 2013, AIDEA commissioned several studies to support the overall development of the IEP. The goal of this work was to provide a better understanding of the demographic and attitudinal factors impacting (primarily) residential conversion rates. The previous reports described in this section comprise the framework documents that identified issues related to customers (e.g., willingness to convert, financial concerns) and current heating system conditions. These documents provided the basis and approach direction for the 2014 public outreach, including the 2014 Market Study (Section 3.0).

The primary sources of information used as a foundation for work conducted by IGU in 2014 are reports by Cardno ENTRIX (2014) and Northern Economics, Inc. LLC (NEI) (2013). Information presented in these reports is summarized below, and both reports are available on the IGU website (http://www.interiorgas.com).

Cardno ENTRIX, 2014 - IEP Natural Gas Conversions Analysis Report

Cardno ENTRIX evaluated conversions-related data from January through December 2014. Cardno ENTRIX evaluated the entire FNSB, including both FNG and IGU service areas. The report forecasted that as each phase of construction is completed, and natural gas becomes available to residential customers, 10 percent would convert in the first year and 40 percent the second year. By the end of the fourth year of any Phase, 85 percent of potential residential customers were predicted to convert to natural gas per phase. Conversion rates should be fully realized by Year 12 of each Phase.

The Cardno ENTRIX (2014) report presented conversion data and reported 77 to 82 percent (%) of the customers were willing to convert within the FNSB, including both IGU and FNG service areas. For the purpose of the Cardno ENTRIX report, and to follow the discussions of the Steering Group, a conversion projection rate of 75% was used. The Cardno ENTRIX report did not include primary wood burners (approximately 7% of the subject population). Focus groups and community outreach meetings that surveyed potential customers reflected a 75% conversion rate with oil prices above $4 per gallon.

Since the Cardno ENTRIX report, oil prices have significantly dropped, averaging about $3 per gallon in 2015. It is assumed that oil prices at this level could adversely affect the conversion rate.

Cardno ENTRIX predicted a rapid peak of over 2,500 conversions within the second year of secured natural gas supply for the entire FNSB. At a rate of 2,500 conversions a year, contractors would need to complete about 100 installations per week.

NEI 2013 – Natural Gas in the Fairbanks North Star Borough: Results from a Residential Household Survey

NEI surveyed 800 homeowner households across the FNSB for IGU. The survey focused on home heating systems and willingness of customers to convert to natural gas. The report states FNSB homeowners are interested in converting to natural gas. The main customer concerns are cost of conversion and recovery of these costs after conversion (i.e., savings on energy costs by using natural gas). NEI reported that to generate conversion rates above 50%, homeowners'

conversion costs should be kept below $6,000 per home. The NEI report provided a foundation for approach to the conversion program and a good basis for subsequent work by IGU (focusing on the Phase areas, beginning with the North Pole area).

2.0 BACKGROUND

Customer conversions are to be funded by the individual customer and are essential to the economic success of the utility. To meet the goal of providing gas to the greatest number of customers within its service area, IGU has to understand the decision points and needs of the consumers. This includes understanding the financial drivers and the potential timing for conversions, as related to the build-out of the distribution system and availability of gas.

To address business goals and objectives, as approved by its governing board, IGU dedicated resources to advance the development of the distribution system and identify consumer requirements for converting their current heating system to utilize natural gas. A customer conversion rate of 75% is needed for IGU to economically provide gas to its service area based on the IGU Six-Year Business Plan (May, 2014). Therefore, 12,000 of approximately 18,000 residential properties with in the IGU service area are needed to convert current heating systems to natural gas systems.

In October 2014, the IGU Board outlined the following project goals for a successful, economical conversions program (in order of priority):

- Deliver natural gas Free on Board (FOB) Fairbanks at $15 per million cubic feet (mcf).
- Deliver natural gas in 2016.
- Complete distribution build-out within 6 years.

Goals regarding the potential customer base (i.e., community goals) include:

- Reduce energy costs by 40%.
- Convert 10% of residential homes within Phase 1, the City of North Pole and surrounding area, within the first year of gas availability.
- Reduction of PM 2.5 emissions to improve the ambient air quality is of particular interest is the Phase 1 area.

Based on previous work prepared by others (Section 1.3), **Figure 4** depicts project customer conversion rates by year for both IGU and FNG. Figure 4 was developed to support the IEP and has been utilized by IGU to forecast its customer base. IGU business and operations plans are based upon the projection that residential conversions will take place over a period of years, with a high number of conversions occurring in the early years. Notable premises associated with the timing of conversions and development of Figure 4 include:

- A high differential between the costs associated with current heating fuels, particularly heating oil, and natural gas.
- Availability of gas to the utilities by 2016.

It should be noted that the availability of gas to the utilities has been delayed to the 2017 timeframe and the information portrayed in Figure 2 includes values for Phase 1 through Phase 3; however, this report focuses on the approximately 2,000 residents in the Phase 1 service area of North Pole.

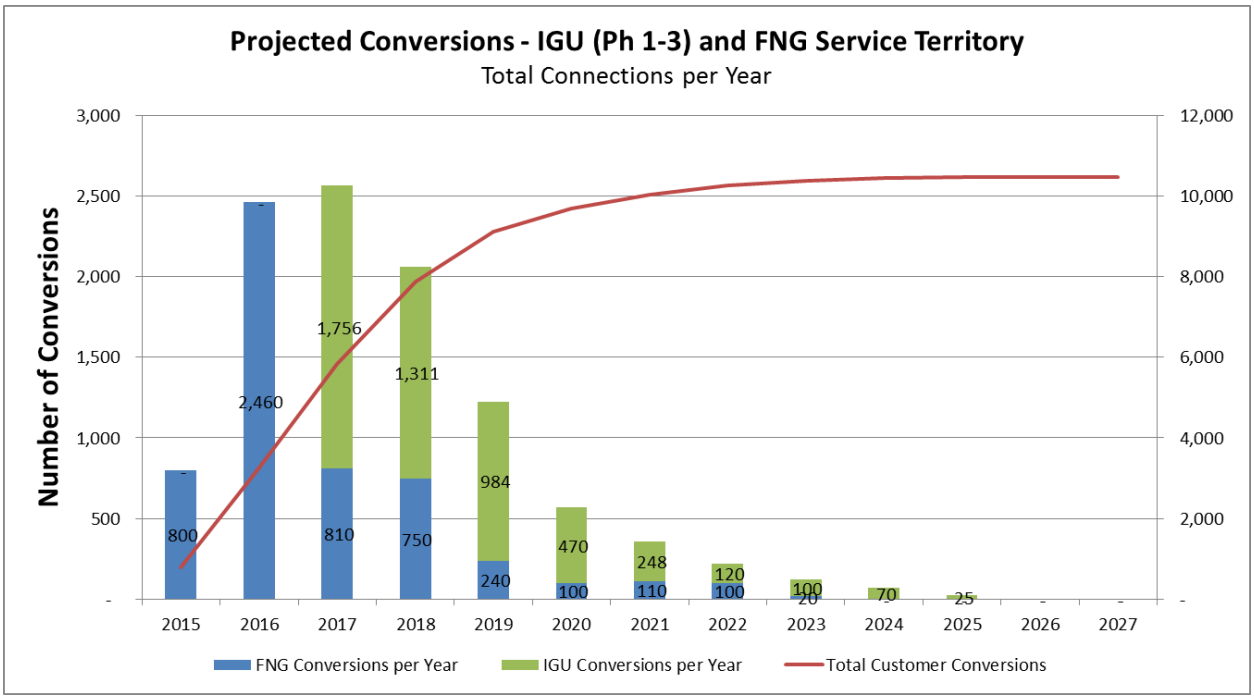

Figure 4 Projected Conversions – IGU and FNG Service Territory

Source: IEP Natural Gas Conversion Analysis; Prepared by Cardno ENTRIX; January 14, 2014

Variability of items outside of IGU control (e.g., price of oil, delays in provision of a gas supply) has resulted in the need to better understand and predict customer conversion rates and how the rate of conversion may be influenced by market conditions. Consumer price goals are defined on a percent reduction or "price at the burner tip" basis and scheduled on an undefined "first gas" date. Because the price of fuel oil remains relatively low, the differential cost between fuel oil and natural gas is reduced, which may affect the customer rate of conversion to natural gas. In addition, customers must bear the cost to convert their current heating systems to natural gas before they may realize energy cost savings. The costs associated with conversion may inhibit the rate at which customers make the change to natural gas.

The remainder of this report addresses the components and findings of the 2014 Market Study Program and discusses future actions toward developing and executing a successful conversion program.

3.0 2014 MARKET STUDY PROGRAM

To gain a better understanding of the decision points important to potential customers, IGU contracted with MWH and their contractors to conduct market research within the North Pole service area. The 2014 Market Study Program and public outreach effort focused on the North Pole area, because it is to be the first community served with natural gas by IGU. Under direction of the IGU Board and various advisory/steering groups, activities and information gathered during the market research included:

- Hosting community meetings and open houses.
- Conducting individual interviews.
- Conducting a pilot study of a sampling of heating systems in the Phase 1 area.
- Creating a consumer focus group comprised of some of the customers that participated in the pilot study.
- Defining general approach to designing a conversion program.
- Refining the online conversions calculator.

Public involvement and transparency are important to IGU and, to reach as many people as possible, IGU developed a comprehensive public engagement (i.e., public outreach) and market study strategy. The resulting 2014 Market Study Program focused on providing the affected communities with up-to-date project information. In addition, IGU and the advisory/steering groups worked within the communities to identify the key issues that may impact the ability or willingness of residential customers to convert their systems.

Formative research by others (Section 1.3) has provided useful information to better understand the demographic and psychographic make-up of the community relative to potential conversions. IGU utilized this data to tailor market study efforts based on consumer needs, attitudes, and perceptions. The primary public outreach and market study activities and findings are presented below (Section 3.1 through Section 3.4).

3.1 Community Meetings and Open Houses

Since June 2014, community meetings have been coordinated and facilitated by IGU to present information about the conversion project, discuss air quality issues, and to promote a dialogue on natural gas implications within the community. The Alaska Department of Environmental Conservation (ADEC), Air Quality Division organized two open houses in which IGU participated. IGU focused specifically on engaging the residents of North Pole in Phases I as the first potential customer base.

The community meetings and open houses are described below.

Community Meetings

- June 2, 2014 – Hotel North Pole – Introduction to Program Team and schedule, displayed Google Earth map, and general discussion about the project and information provided to attendees.
- August 25, 2014 – Hotel North Pole – During this community meeting, IGU contracted with Agnew::Beck Consulting (Agnew::Beck) who provided hand-held remote (automatic response system [ARS]) devices to 63 attendees and asked conversions-related questions (pre-determined by a Conversion Steering Group and the IGU Board). Responses were recorded during the open house and displayed for group discussion. A sample of results is:
    - 52 homes (83 percent) were somewhat likely, very likely, or certain they would switch to natural gas.
    - One-third expected to pay for their conversion from their savings; another third anticipated using a low interest loan.
    - 26 homes (41 percent) of the respondents, claimed they do not find any obstacles to convert and would convert today if gas were available.
    - 50% of participants indicated they were interested in financing options.

    The report of methods and full results of the ARS exercise is presented in **Appendix A** Agnew::Beck, ARS Results, August 24, 2014.
- November 13, 2014 – Hotel North Pole – Home Heating Workshop – Open House style featuring manufacturers of home heating systems, GIS displays of service areas, air quality information, and energy efficiency programs from the FNSB and AHFC.

Other Open Houses

Fairbanks Economic Development Corporation (FEDC) held three Community Meetings with IEP stakeholders, AIDEA, FNG, IGU, Golden Valley Electric Association, and MWH for the public to learn more and ask questions about bringing natural gas to the Interior. Presentations were given at all meetings by each prospective project team, and discussion focused on the estimated cost of gas delivery.

- July 8, 2014 – Westmark Hotel, Fairbanks
- August 18, 2014 – Westmark Hotel, Fairbanks
- November 12, 2014 – Westmark Hotel, Fairbanks

Two open houses were hosted and facilitated by ADEC, Division of Air Quality, with participation by IGU. The open houses were informational and provided updates on the ADEC implementation plan for air quality. Date and locations of the open houses were:

- December 1, 2014 – Westmark Hotel, Fairbanks.
- December 2, 2014 – North Pole Middle School, North Pole.

The public interaction at community meetings, and especially the open houses, provided some of the most useful feedback for IGU to understand customer perceptions. In many cases, such as the willingness to convert, the feedback closely resembled responses from a similar focus group held in December 2013.

3.2 Individual Interviews

In August 2014, IGU hired Agnew::Beck to conduct 15 individual interviews (IDIs) with residents in the North Pole area to capture views from a variety of individuals and businesses owners with varying levels of education, income, professional experience, and length of time in the area. The main objectives of the IDIs were to:

- Further investigate attitudes, perceptions, misperceptions, concerns, and level of awareness of North Pole residents regarding natural gas conversion.
- Provide a deeper understanding regarding interest and commitment to convert; identify key variables and thresholds affecting conversion decision/implementation.
- Provide a base level of educational information about IGU and past, current and projected natural gas efforts in the Interior as context for interviews.
- To identify, in their own words, what local residents believe is needed to address the local energy crisis.
- Identify key messages and effective messaging concepts in support of conversion project.
- Gain understanding of the perceptions of the people and organizations directly involved in the project, including IGU.

The interviews were conducted at Leaf N Bean coffee shop, North Pole, on August 20, 21, and 22, 2014. Individuals were identified as being an interview candidate through previous participation in neighborhood meetings or previous project efforts, referrals, and Facebook advertisements.

The Natural Gas Conversion Research: Interview Summary Report is provided in **Appendix B**. This Agnew::Beck report provides information regarding the approach and findings of the interviews.

A summary of information and responses derived from the 15 interviews is excerpted from the report in **Appendix B** and presented as follows:

- **Participants are excited about the prospect of natural gas.** Most interview participants support natural gas and see it as a part of the solution to addressing high energy costs, including electricity.
- **Participants have varying degrees of understanding about the IEP and the IGU.** Most participants were unfamiliar with the IEP or with IGU, and there is some confusion about how the efforts in the Interior relate to a potential natural gas pipeline. Of participants who were familiar with IGU, most people have positive or neutral impressions of the utility and believe that overall IGU is doing a good job. Participants emphasize that they value transparency, collaboration, and want to make sure that creating affordable energy for residents should remain the primary priority for IGU.

- **Many participants are worried this project will not come to fruition.** In particular, interviewees are worried about the government (local, state, federal) creating hurdles that slow the project's progress. That being said, participants feel encouraged by the level of engagement with the community, the visible presence of engineers in the field, and the development of phase maps and timelines.
- **The interviewed North Pole homeowners have a wide range of heating systems, fuel sources, and associated costs.** Most participants have both primary and secondary heating systems in their homes. Many participants have dedicated time, research, and energy to make their particular home as energy efficient and affordable as possible by using combinations of fuel, systems, and home improvements. Four households have recently converted from fuel oil to wood/wood pellets. Annual heating fuel costs ranged from under $2,000 for households that cut their own wood to reduce fuel costs, to over $5,000 for households that primarily rely on fuel oil.
- **The number one influence on home heating decisions is cost.** This includes both installation and operating costs. To a lesser extent, participants also care about efficiency, ease of use, and purchasing from local businesses that offer discounts (e.g., military discounts).
- **Most participants intend to convert their homes to natural gas.** However, interviewed homeowners want more details on both the cost of conversion and the possible annual savings. Many participants have cost-related concerns, such as hidden costs (e.g., installation, taxes) and being unable to afford the upfront conversion cost. Participants also have a variety of concerns and questions about the conversion process itself, including how to select a new system, what type of conversion they will need, the conversion timeline, and the possibility of keeping a backup system intact. Most participants with newer systems estimated conversion would cost $3,000 to $5,000, while other participants, especially those with older systems, estimated conversion costs between $4,000 and $12,000.
- **Most participants intend to convert their boilers and furnaces right away.** In order to spread out costs over time, many participants said they would spread out the conversion of other appliances over time.
- **For participants who can afford it, paying cash is the preferred option.** The most popular conversion payment financing option is the low interest loan bill pay option. Participants want to finance the conversion using the lowest interest rate possible and would be particularly interested in a bill pay option if the interest rate was no more than 3% or 4%. Most participants were not interested in the rebate program, because they would be unable to cover the upfront conversion costs. Some participants suggested offering special incentives when Permanent Fund Dividends are released, so that homeowners could apply their dividend toward a down payment toward their home conversion.
- **Participants want assistance navigating the conversion process.** Most participants would like IGU to provide information on installation, including a list of certified contractors, recommended heating systems and instructions on how homeowners can do

the installation on their own. Participants want this process to be streamlined and efficient.

3.3 Pilot Study

In 2014, IGU conducted a Pilot Study with direction from the Steering Group, Logistics Group, and the IGU Board. The objectives of the Pilot Study were:

- Provide IGU with information on current heating infrastructure of a sample of residences.
- Provide homeowners with estimated conversion costs to assist in making the decision to convert to natural gas.

The Pilot Study was comprised of two parts: on-site surveys of heating systems and development of a draft cost estimate for conversion for each of the samples homes. **Appendix C**, Pilot Study Elements, contains all the elements of the Pilot Study (e.g., right-of-entry forms, data dictionary, data collection practices, and findings).

3.3.1 On-Site Surveys

A total of 56 systems were assessed in 47 homes. Based on information gathered during the on-site surveys, the Logistics Group, several IGU pre-qualified manufacturers, and local heating system experts evaluated the information to develop an estimate of cost for conversion of each system (see Section 3.3.2).

Information collected during the pilot study on-site surveys included:

- Current type of heating unit.
- Location of home relative to the main street.
- Location of heating unit within the home.
- Space requirements for conversion.
- Unit information – manufacturer, model, serial numbers, and year of installation, and size (in British Thermal Units [BTUs]).
- Stack information.
- Access code review and identification of issues – basement, crawl space.

3.3.2 Cost Estimate and Assumptions

The second part of the pilot study comprised an estimate of the cost of conversion for each property and presented this information in letters to the owners.

The estimate included the following assumptions:

- City of North Pole permit fees ($50).
- Cost of service line from the main street (measured distance from a main street, estimated cost at $10 per foot).

- Cost of running pipe from meter to system ($942).
- Manufacturer make, model and serial number, size in BTU, and installed year.
- Assessor recommendation and average market furnace/boiler costs.
- Cost to replace water heater (if applicable or known) ($2,300).
- Efficiency rating of hot water heater.

The estimate did not include potential costs associated with a stack replacement. The estimate also noted that the cost of pipe from the mainline to the home will be borne by IGU within the first 100 feet, and was estimated for this purpose at $10 per foot after 100 ft. It was noted this cost could change depending on the Phase and current market prices at the time of installation for the materials. The survey data and a sample estimation letter is provided in **Appendix C**.

3.3.3 Findings of Pilot Study

Findings from the pilot study indicated the majority of heating units (85%) assessed in the pilot project were recommended for burner replacements, a much higher number than originally expected. This is hypothesized to be the result of a sample base of individuals who closely follow the project, regularly monitor and clean their systems, and closely watch home efficiency and costs. This sample may not accurately demonstrate the real picture of existing home heating systems throughout the entire service area, and it appears reasonable to expect to find older and less maintained heating units and more code issues, which could increase costs.

The assessors reported that most of these systems were in better condition than the average system in FNSB. Details about the heating systems are as follows, and results of the on-site survey are depicted in **Figure 5** through **Figure 12**:

- Distance of home from the nearest public cross-street ("main" street).
- Distance between heating system and exterior wall of structure.
- Square footage of structure.
- Access to heating system (e.g., basement, crawl space).
- Type of heating system.
- Type of hot water heating system.
- Age of heating system.
- Size of heating system (in BTUs).

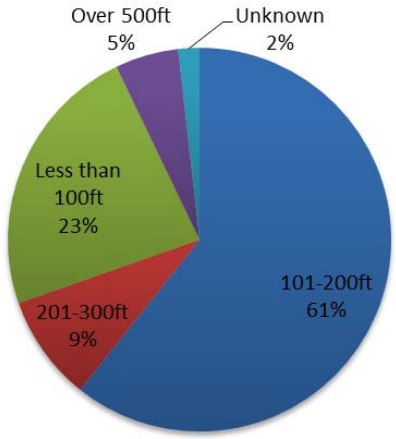

Figure 5 Distance of Home from Closest Public Street

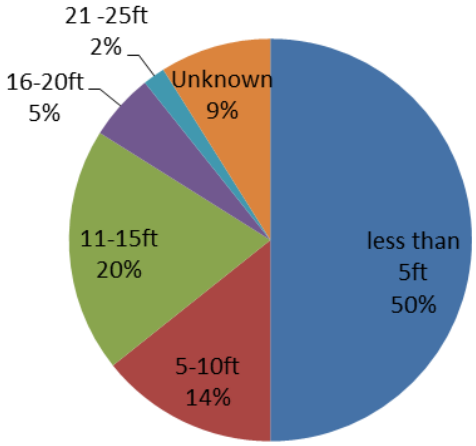

Figure 6 Distance of Heating System from Exterior Wall

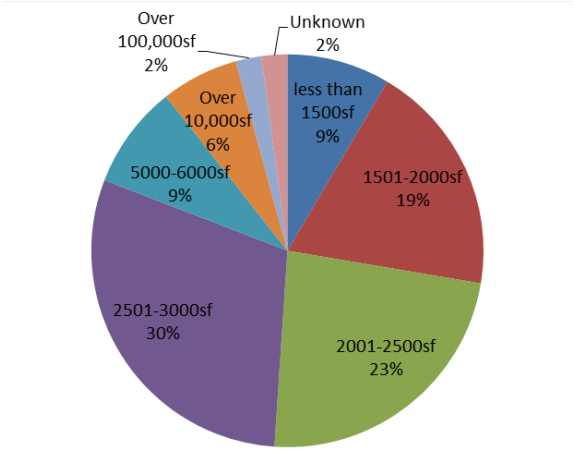

Figure 7 Home Square Footage

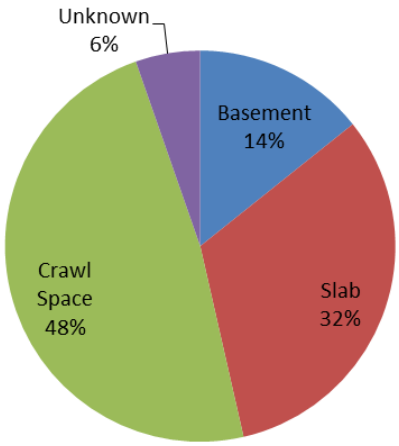

Figure 8 Access to Heating System

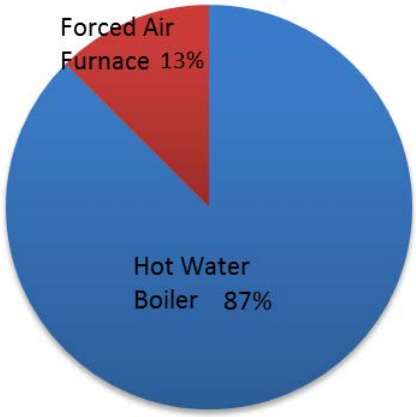

Figure 9 Type of Heating System

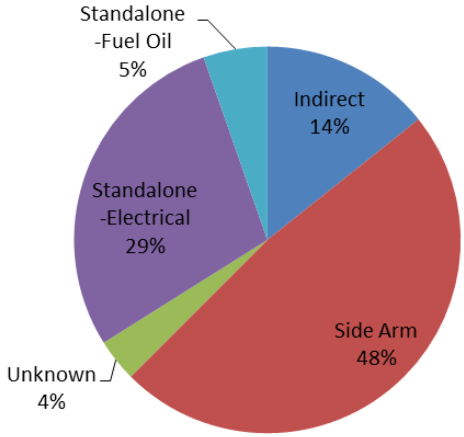

Figure 10 Type of Hot Water Heater

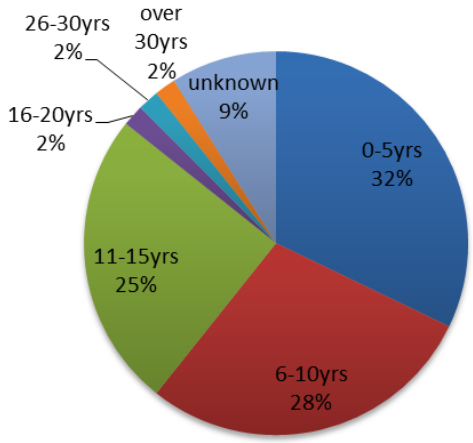

Figure 11 Age of Heating System

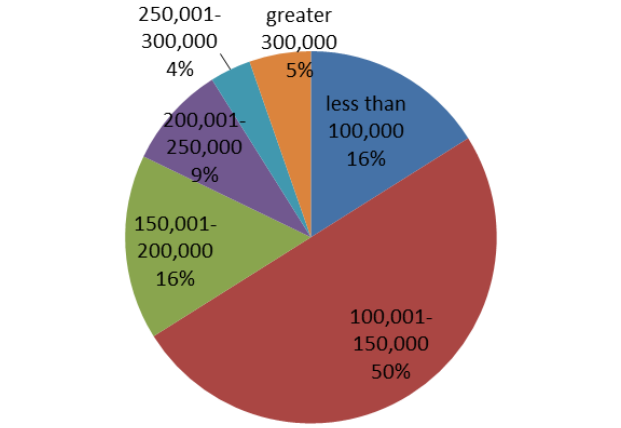

Figure 12 Size of Heating System (BTU)

3.4 Focus Group(s)

In November 2014, Conservation Services Group (CSG) prepared a draft proposal regarding a Gas Conversion Program Design (the final proposal is dated January 2105). The draft CSG proposal presented a potential design for the IGU gas conversion program. CSG is a market leader in energy efficiency program delivery and design, and delivered a comprehensive conversion program design concept from start-up to completion for IGU.

In December 2014, a focus group was organized by IGU and facilitated by Agnew::Beck personnel. Purpose of the focus group was to gather homeowner feedback regarding the Draft CSG proposal. The focus group comprised 11 participants from nine households that participated in the pilot study.

The focus group objectives and findings are summarized below and the Focus Group Summary Report (Agnew::Beck, see Meeting Process, page 2) is presented in **Appendix D**, Conversion Research Focus Group Summary.

Objectives of the focus group included:

- Solicit comments, questions, concerns about the overall program, individual components and financial options.
- What they like (will work) or not like (will not work) about the program, individual components.
- What they like best/least about the program/components.
- What would improve the program to better meet customer expectations; what would make for the "most ideal" customer service experience.
- Which/what financial options would best meet customer needs and increase ability/timing of conversion.

The focus group participants mentioned price control as one of their biggest concerns during the conversion process. A clear and manageable process should be detailed and agreed upon by all stakeholders before any work is conducted.

Some focus group participants indicated that, although oil prices are currently low, oil price volatility and air quality issues in North Pole are significant factors driving their decisions regarding conversions to natural gas.

In the pilot study focus group, reference **Appendix D**, participants were amenable to paying for home audits and inspections if the costs were clearly outlined and explained at the beginning of the conversions process. They highly valued assessment inspections and were willing to pay for these – again, if initially told of the costs.

4.0 2014 RESEARCH OF CONSUMER FINANCING OPTIONS

As part of the 2014 effort, the conversions team utilized information gained from potential residential customers to evaluate the cost to convert as a driver to decision making. The decision to convert has two parts: (1) whether or not to convert and (2) if converting, when?

Results of the studies performed by Cardno ENTRIX (2014) and NEI (2013) indicated the total cost to the consumer was a critical decision factor for residential consumers. The cost to the consumer includes the ultimate price of gas, as well as the upfront investment to convert. The market study work performed by IGU during 2014 confirmed those findings. While some participants indicated that, if priced right, they would prefer to pay the cost of conversion out-of-pocket. Others indicated that, if economic, they would consider pursuing financing to pay for the conversion. In response, IGU initiated an investigation of potential financing options for residential customers.

IGU initiated conversations with banks and the Alaska Housing Finance Corporation (AHFC) to identify approaches to providing financial options and potential relief to homeowners. AHFC administers funding and resources in support of Alaska's program to promote increasing energy efficiency in homes. There may be opportunities to build from the example set by AHFC and extend the benefit to the residential consumer.

Similarly, the FNSB has a similar rebate program for wood stove change-outs. This program focuses on reducing PM 2.5 emissions from non-EPA compliant wood stoves by providing rebates for heating fuel conversions, including those to support burning natural gas.

Potential customers that would seek to take advantage of a borrowing strategy indicated a preference for an "on-bill" repayment plan. This would allow the consumer to make one payment to IGU which would then forward loan repayment amount to lender(s).

Bringing these and other financing options together in a comprehensive package will continue to be evaluated and developed as the conversions program progresses.

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5.0 CSG GAS CONVERSION PROGRAM DESIGN PROPOSAL

In late 2014, IGU tasked CSG with developing a proposal for a recommended conversions program design and associated estimated cost for providing the conversion services support that is focused on the IGU service area. No decisions or actions were made relative to the proposal during 2014, as it was provided to IGU in January 2015. Evaluation of the resulting proposal is a follow-on task for IGU to be carried out during the 2015 program year. The Gas Conversion Program Design: Executive Summary by CSG is presented in **Appendix E**.

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6.0 NEXT STEPS – 2015 PROGRAM

The next steps for development of the conversion program are outlined in the following sections. It is anticipated that, similar to 2014, the activities for this program will be conducted on an annual basis and tasks described will be considered for the 2015 program year. Moving forward through 2015, the focus for the conversion program will be to develop the framework for a tactical and comprehensive approach to implementing residential conversions.

6.1 Evaluation of CSG Conversion Program Design Proposal

As mentioned above, a potential resource for the conversions program is CSG. At the onset of 2015, IGU received a proposal from CSG to provide program design and support for the conversions program. Evaluation and consideration of the proposal will take place as development of the overall program strategy continues. The IGU Board will be kept apprised of the progress and will be solicited for approvals as necessary.

6.2 Program Framework

As 2014 closed, IGU compiled the data and information gained through the market study work and initiated crafting a holistic strategy to facilitating conversions and developing an operational utility. The efforts in 2015 are expected to result in a tactical framework from which an executable program implementation plan can be created.

To support this effort, IGU identified the core functional areas necessary for successful implementation of the conversion program and utility operations. These core functional areas and subordinate actions are depicted on **Figure 13**. Figure 13 also includes responsible entities for the functional areas. It is expected that, during 2015, the parties, as they become known, will coordinate closely to develop a unified and cohesive plan. The following subsections describe the functional areas and activities more fully.

6.2.1 Program/Project Management

It is anticipated that MWH will continue to provide program and project management services to IGU in support of the conversions program. These services generally include: program oversight, planning, operator selection and collaboration, estimating, stakeholder engagement, risk identification and management, health and safety plans, and quality assurance requirements. These are the primary elements of the program plan that will serve as the roadmap for execution and implementation of a conversions effort. Development of the program plan will be on an iterative basis, which allows for refinement and improvement as more information becomes available and verified. During this process, MWH will work with IGU to fully scope the conversions program and develop a holistic approach to supporting IGU customers to make the change from current heating fuels to natural gas.

6.2.1.1 Risk Identification and Management

Developing an operating utility from the ground up is a challenging endeavor, and one with inherent risks. During the development of the conversions program plan, risks will be identified and qualified to support decision making. Typical project risks are associated with project drivers – such as schedule, budget/financing, and quality. The conversions program will have these risks, as well as risks associated with consumers' decision to buy or not to buy natural gas from IGU. Some of the variables that pose risk to the success of the conversions program include:

- Low oil price.
- Unacceptable natural gas price.
- Unknown gas source or supply.
- Potential military base closures.
- Political impacts.
- Funding limitations (IGU and consumer).
- Slower than forecasted rate of residential conversions.
- Resource limitations (Certified Mechanical Contractors [CMCs], equipment, and materials).

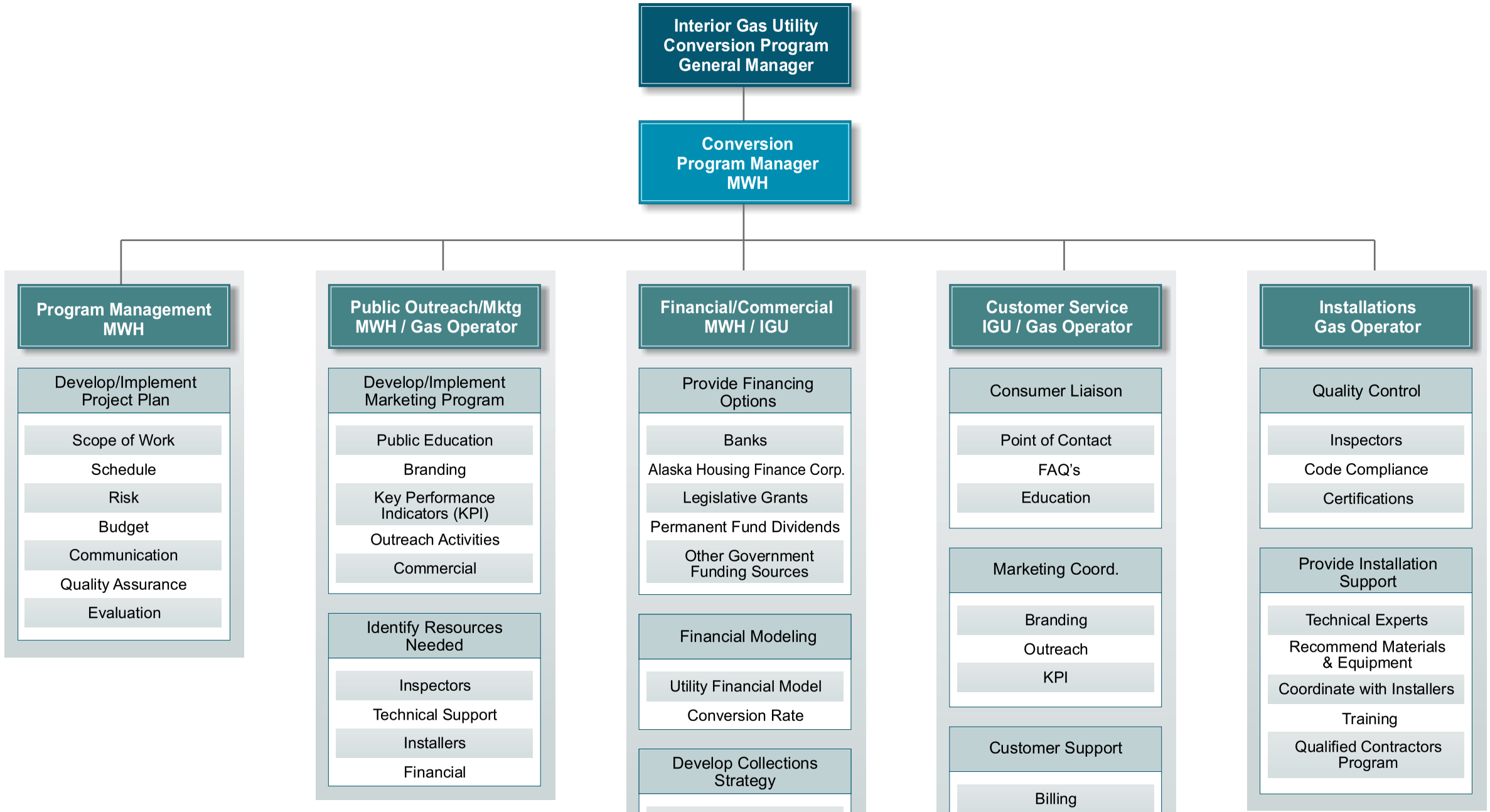
While some of the risks are outside of IGU control, others are not. As the development of the program advances, so will the identification of mitigation strategies for these and other risks. Mitigation strategies include utilizing information learned from 2014 market study efforts to maintain a strong, relevant public outreach effort and identify financing options for consumers. Identification and mitigation of risk allows IGU to create a program that meets the needs of the community and the goals of IGU.

6.2.1.2 Selection of Gas Operator

During 2015, IGU anticipates finalizing the selection of an operator for the utility system for approval by the IGU Board. Ultimately, the gas operator is a critical stakeholder in the success of the utility. The gas operator will have responsibility for providing safe, reliable, and cost effective service to the customers of IGU. Bringing the operator on-board prior to first gas allows IGU to leverage the experience of the operations staff and to integrate them into the conversion program development process. Leveraging of the gas operator's offerings such as natural gas experience and expertise, established customer service systems, and past experience with converting customers will be a significant benefit to the program.

6.2.1.3 Public Outreach and Marketing

As the program continues, IGU will work to maintain open and transparent communications within the community. In 2015, IGU will develop and implement a marketing program that outlines the approach to providing timely information to the community. This includes developing content for outreach activities, such as hosted public information sessions and



Current Assumptions:

1. Gas pricing is pending supply by Others.
2. Gas Operator is providing support under contract with IGU.
3. Installers are independent certified mechanical contractors (CMC) hired directly by the homeowners.
4. Sufficient CMC are available to complete conversions as forecasted.
5. Some homeowners may elect to complete conversions on their own; a process will be required to define quality of installation and to limit liability to IGU.
6. Project risks will be identified and complied in project risk register.

INTERIOR GAS UTILITY
NATURAL GAS CONVERSIONS PROGRAM
ORGANIZATIONAL APPROACH

FIGURE 13

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presentations. In addition, it is expected that 2015 will see additional outreach to the mechanical contracting community and involvement of the gas operator (to be selected in 2015) to support identification and forecasting of labor resources needed to perform the heating system conversions.

Examples of outreach information envisioned includes a list of qualified contractors, an efficiency heating unit guide, imagery showcasing the streamlined conversions process, financial savings app, updated conversions calculator, and other information that would provide the level of information and comfort needed to support homeowner decisions to convert as soon as natural gas is available.

6.2.1.4 Financial and Commercial

Efforts to advance definition and refinement of financing and commercial aspects of the program will be pursued by IGU. The focus for 2015 will be defining financing options and developing credit criteria, billing, loan re-pay, and collections strategies. This will be a collaborative effort and will include involvement by representatives from lending institutions, AHFC, FNSB, gas operator, and the public. In addition, IGU will reach out to public representatives and seek out opportunities to participate in other financial programs.

6.2.1.5 Customer Service

Looking at the project holistically, IGU recognizes the need and importance of developing a customer service program for the utility. It is expected that IGU will work with the contract gas operator to develop and define a comprehensive approach to providing customer service throughout the execution of the project. The activities in this core area are customer focused and consist of identifying communication strategies and protocols to address the questions, concerns, and issues of the customer. Central to this is the idea that customer service representatives will serve as the primary liaison between the utility and consumer. The roles and activities of the customer service program will evolve as the program evolves by providing: general program information, marketing coordination, customer support (from planning through operations), and installation support.

6.2.1.6 Installation Support

The process for which installations are conducted will be driven by the goals of conversion numbers. A consideration has been offered by the contracting community for implementation of "block scheduling" in order to accomplish the high numbers of conversions as listed in Figure 4. It was strongly voiced by the contracting and labor communities that this is the most ideal way to reach the high numbers of conversions in a short amount of time. Their concern noted that without this logistical approach, that the number of conversions will be reduced.

If the number of conversions is not the driving factor for IGU to meet the community and utility goals, then installations are assumed to be performed by independent CMCs under contract with homeowners. As part of the conversion program development, IGU will work with the gas

operator to define the scope of work, quality criteria, and approach for conversions. This includes:

- Working to refine the approach to estimating costs associated with conversions.
- Advancing individual system assessments.
- Developing a CMC recommendation process.
- Developing quality control process.
- Providing installation support to homeowners and CMC.

The potential exists that some homeowners may choose to perform their own conversions. IGU will need to address this option and how to assist while maintaining quality and limiting its liability.

7.0 SUMMARY

IGU made significant progress advancing the development of the conversions program during 2014. The market study work confirmed that attitudes and perceptions of the residents of the Phase 1 area are in alignment with those of the greater FNSB as studied previously, with the focus primarily being the decision, or trigger points, for residential customers relative to conversions. Predictably, total out-of-pocket cost is the primary driver for consumers. This includes the cost to convert, as well as the ultimate price of gas delivered to the home. Developing a reliable cost/pricing structure is dependent upon understanding the variables associated with creating a customer base for a new utility. Through the remainder of 2015, IGU will to continue its efforts to identify, mitigate, and qualify the variables, and utility and customer needs in order to develop a tactical program plan.

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APPENDIX A

Agnew::Beck ARS Results

Homeowners: Would you convert to natural gas?

Neighborhood Meeting
August 25, 2014

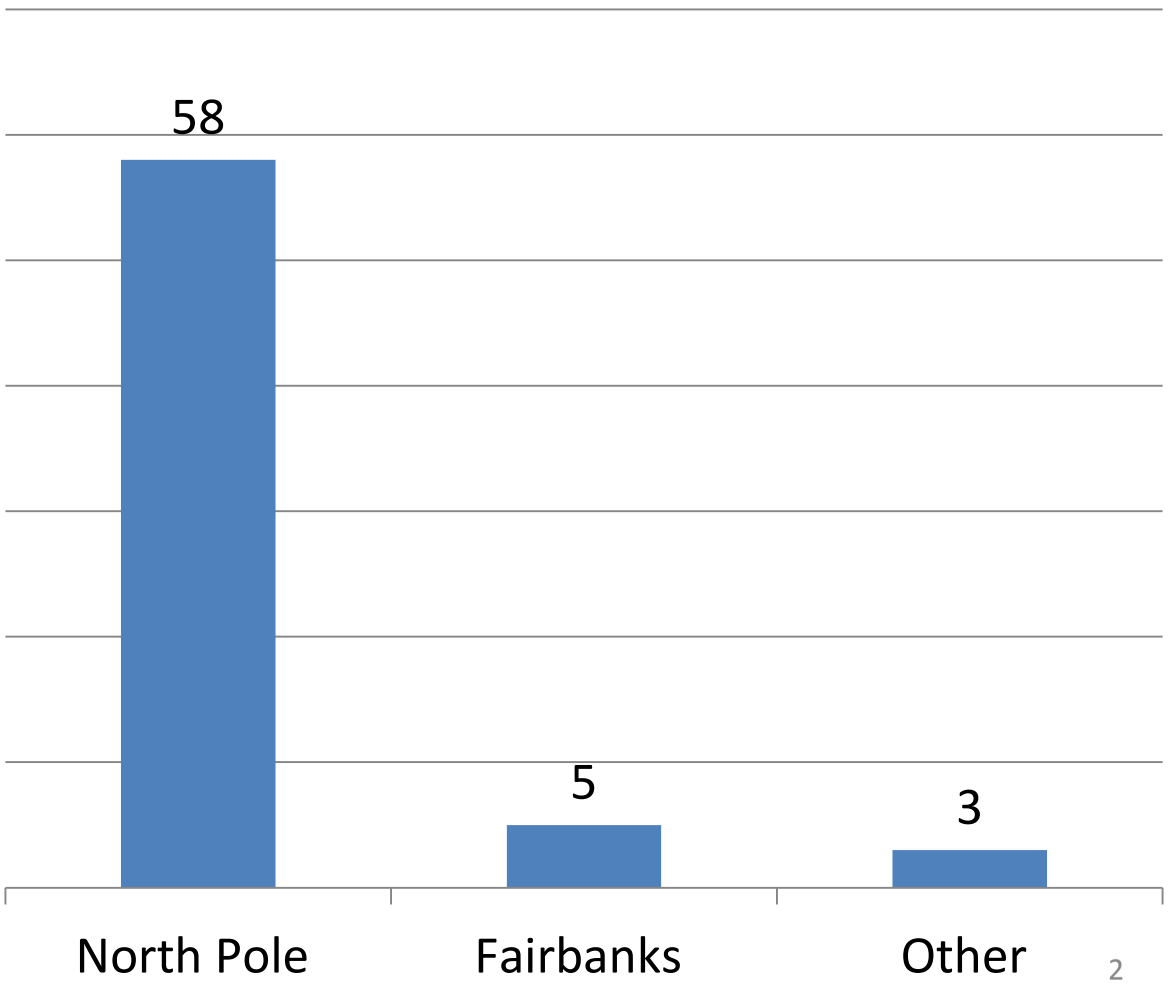
INTERIOR GAS UTILITY

NOTE: Green boxes include additional comments and notes, added *after* the meeting

Engage Plan Implement AGNEW ::BECK

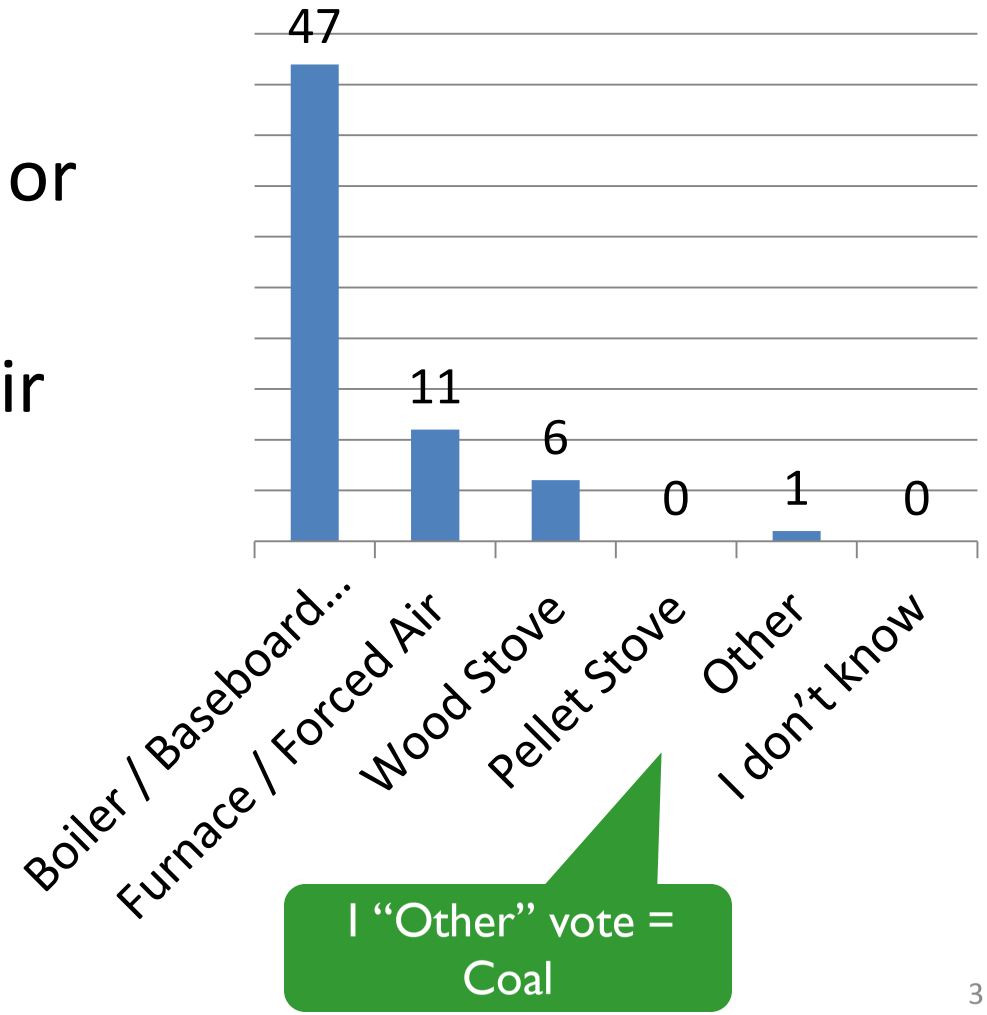
Test: Where is your primary residence?

1. North Pole
2. Fairbanks
3. Other



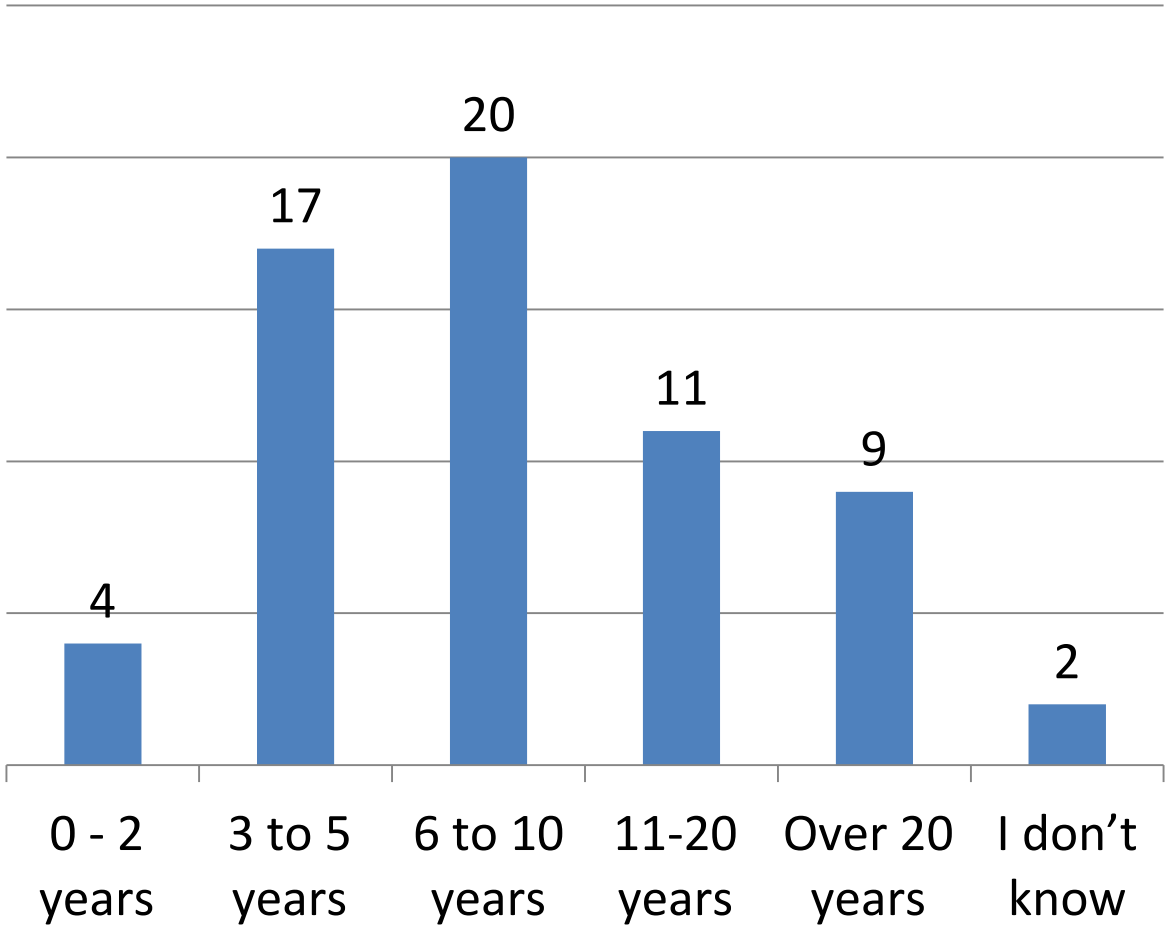
Q1: What is your primary heating system (primary residence)?

1. Boiler / Baseboard or Radiant Heat
2. Furnace / Forced Air
3. Wood Stove
4. Pellet Stove
5. Other
6. I don't know



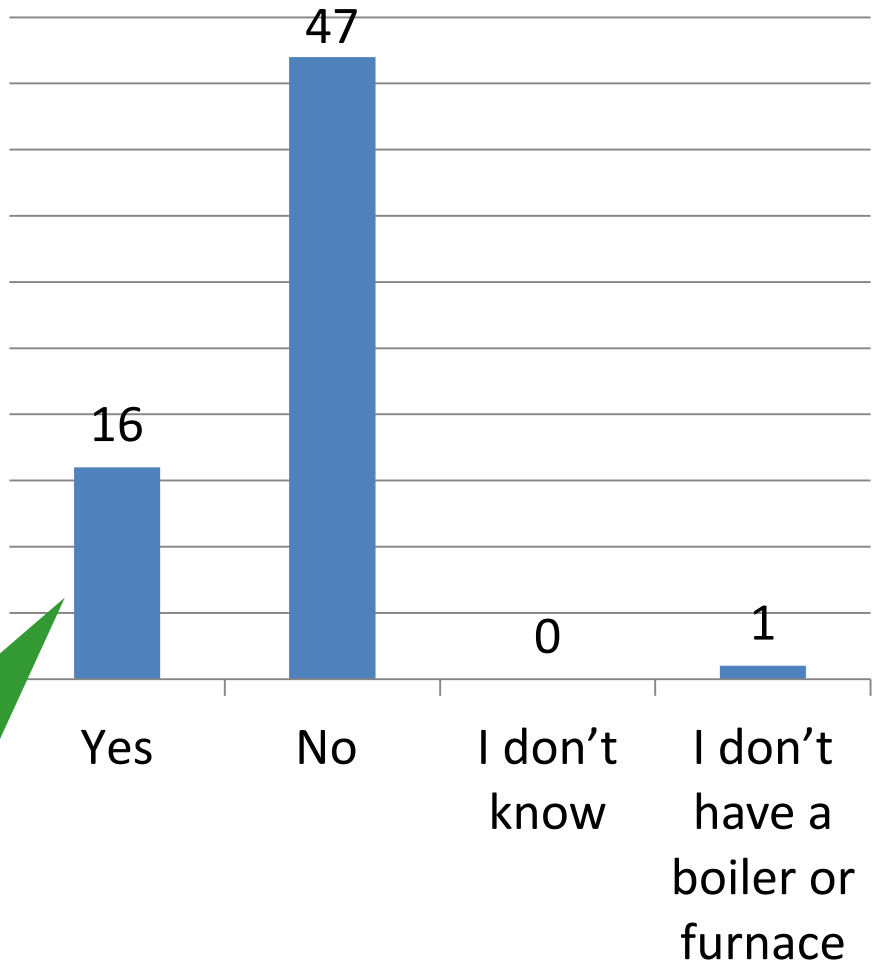
Q2: If you have a boiler or furnace, approximately how old is it?

1. 0 - 2 years
2. 3 to 5 years
3. 6 to 10 years
4. 11-20 years
5. Over 20 years
6. I don't know



Q3: Have you replaced your boiler or furnace within the last 5 years?

1. Yes
2. No
3. I don't know
4. I don't have a boiler or furnace



Of the 16 who said "Yes," they have replaced their boiler or furnace in the last five years, the types mentioned (in order of frequency) were:

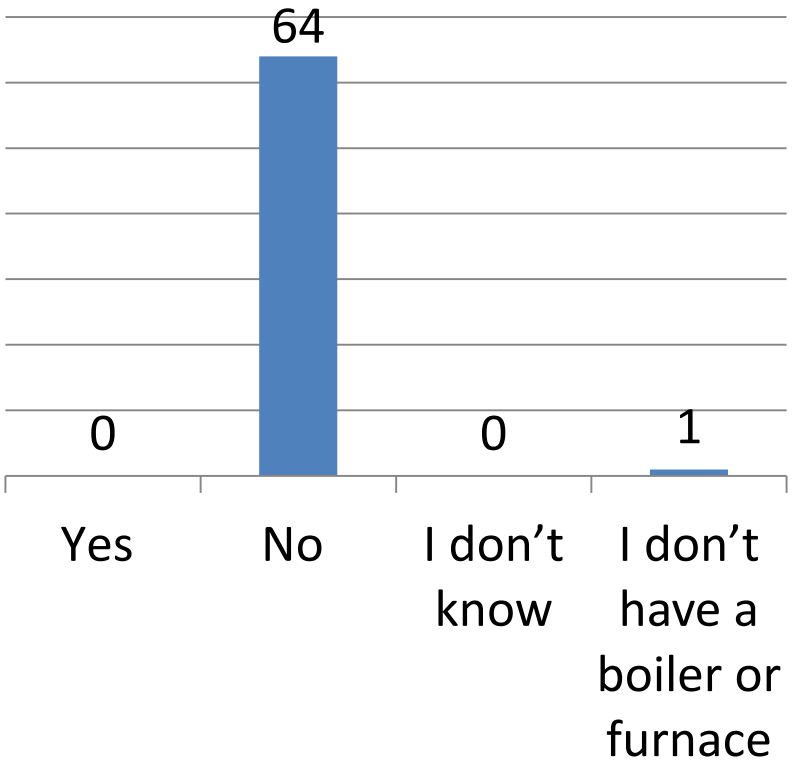
- System 2000, Wells McClain, Burnham, Triangle Tube

When asked if the new boilers/furnaces were convertible to natural gas, there was a nearly unanimous "Yes" response.

Participant quotes: "I hope so!"; "They told me it will!"

Q4: Do you use propane for your boiler or furnace?

1. Yes
2. No
3. I don’t know
4. I don’t have a boiler or furnace

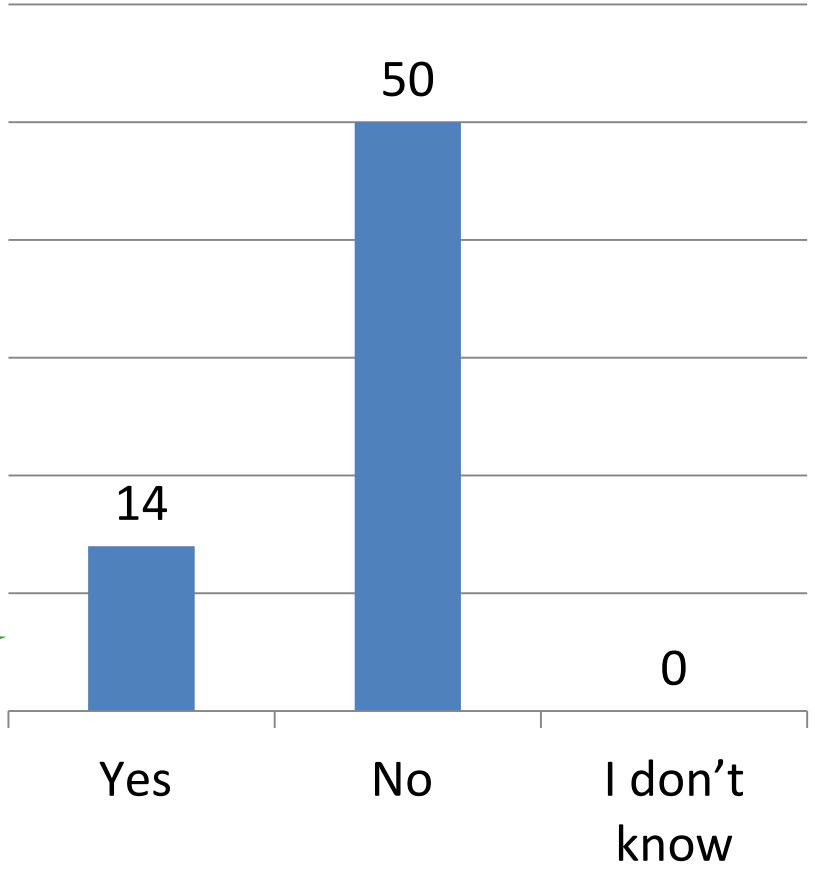


Q5: Do you use propane for any home appliances? (excluding home heating system and grill)

1. Yes
2. No
3. I don't know

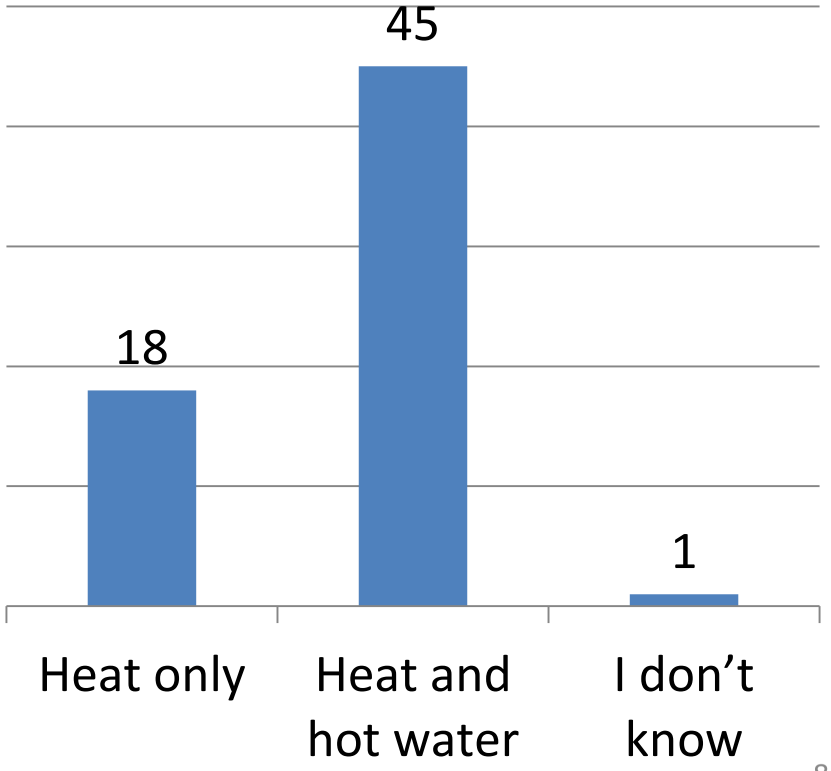
Of those who said "Yes," appliances were:

- Stove: 5-10 people
- Dryer: 1 person
- Water heater: 1 person



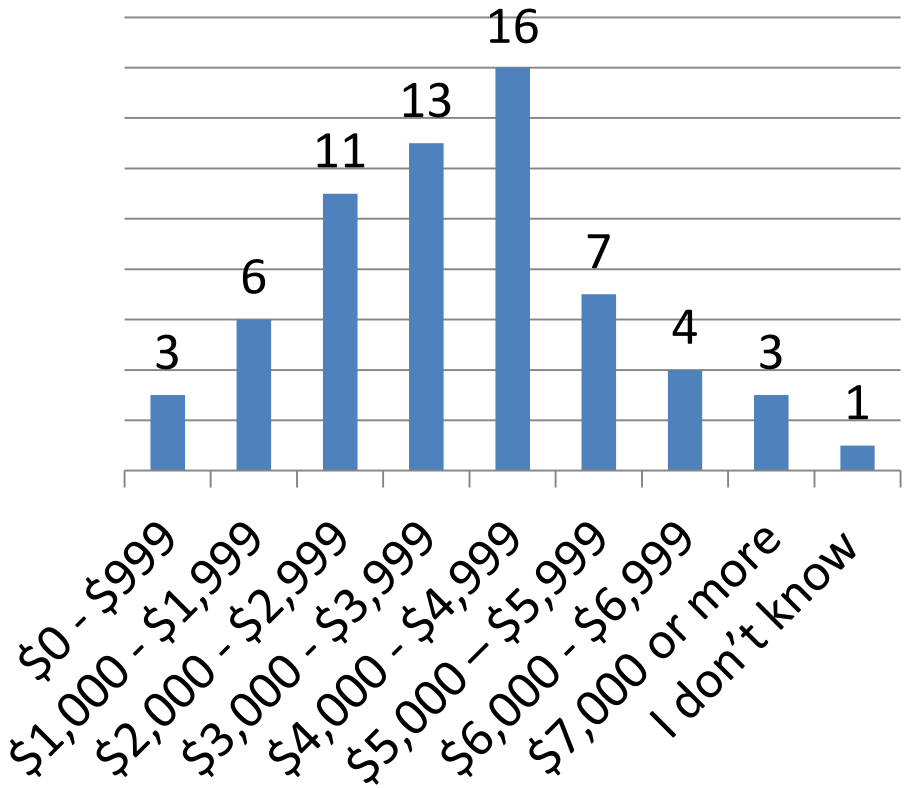
Q6: Does your primary heating system provide heat only, or does it also provide hot water for your home (primary residence)?

1. Heat only
2. Heat and hot water
3. I don't know



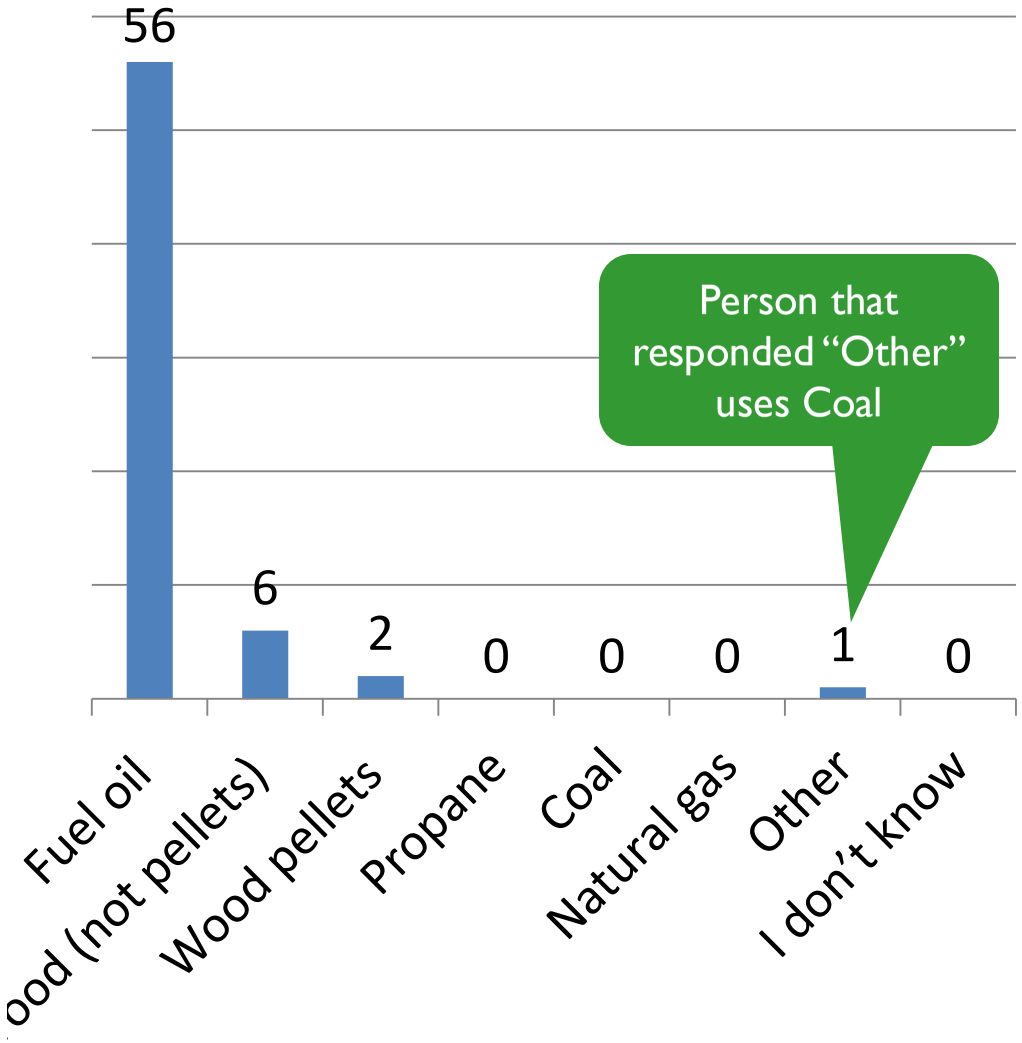
Q7: How much do you pay for your primary heating source per year? (primary residence, 3-yr average)

1. $0 - $999
2. $1,000 - $1,999
3. $2,000 - $2,999
4. $3,000 - $3,999
5. $4,000 - $4,999
6. $5,000 – $5,999
7. $6,000 - $6,999
8. $7,000 or more
9. I don’t know



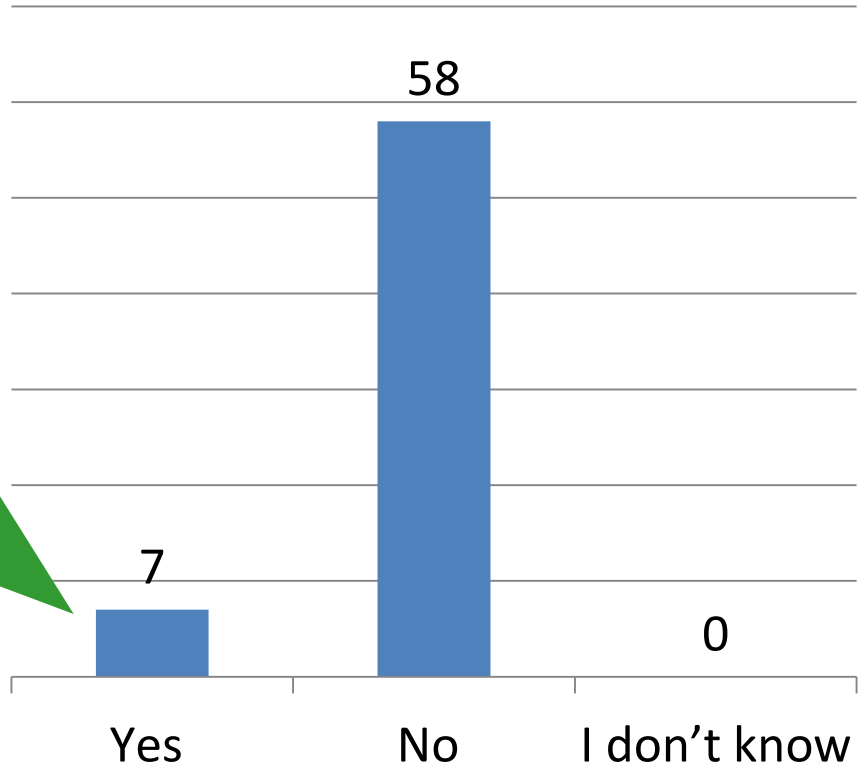
Q8: What is your primary heating source?

1. Fuel oil
2. Wood (not pellets)
3. Wood pellets
4. Propane
5. Coal
6. Natural gas
7. Other
8. I don't know



Q9: Have you changed your primary home heating source from fuel oil to some other source within the last 3 years?

1. Yes
2. No
3. I don't know

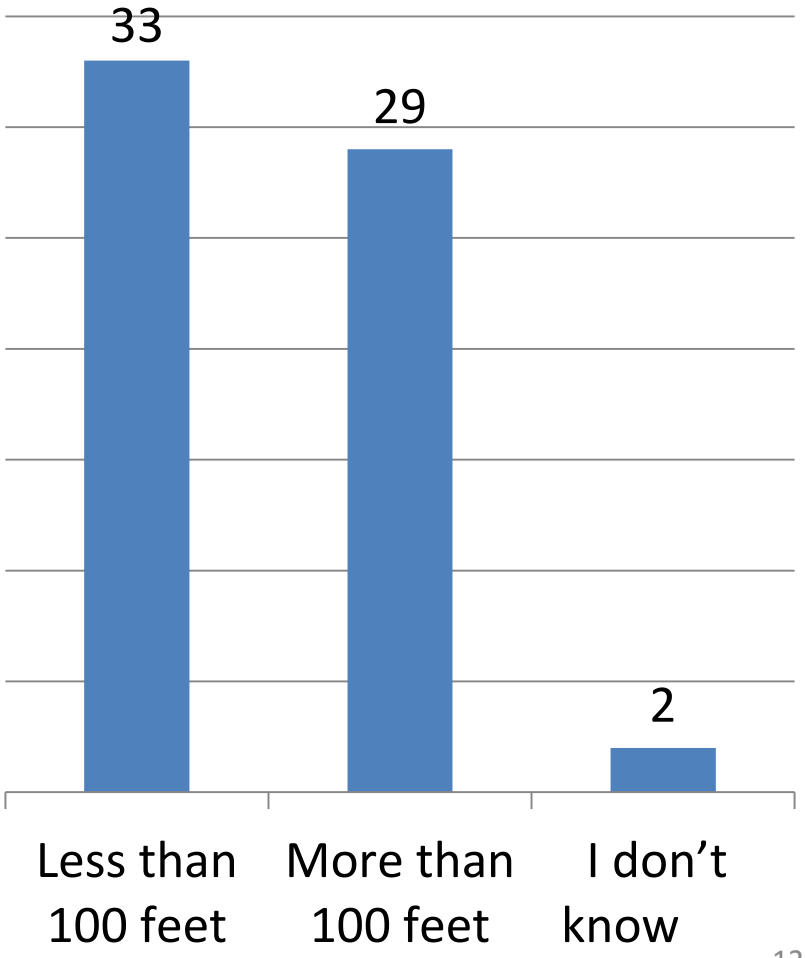


Of those who answered "Yes":
- 4 transitioned to wood
- 1 transitioned to wood pellet

When asked how many people had, in the last three years, added a supplemental heating source, **16 said "Yes"** (mostly wood, some wood pellet, and one coal).

Q10: How far do you believe your home is from the main street?

1. Less than 100 feet
2. More than 100 feet
3. I don't know

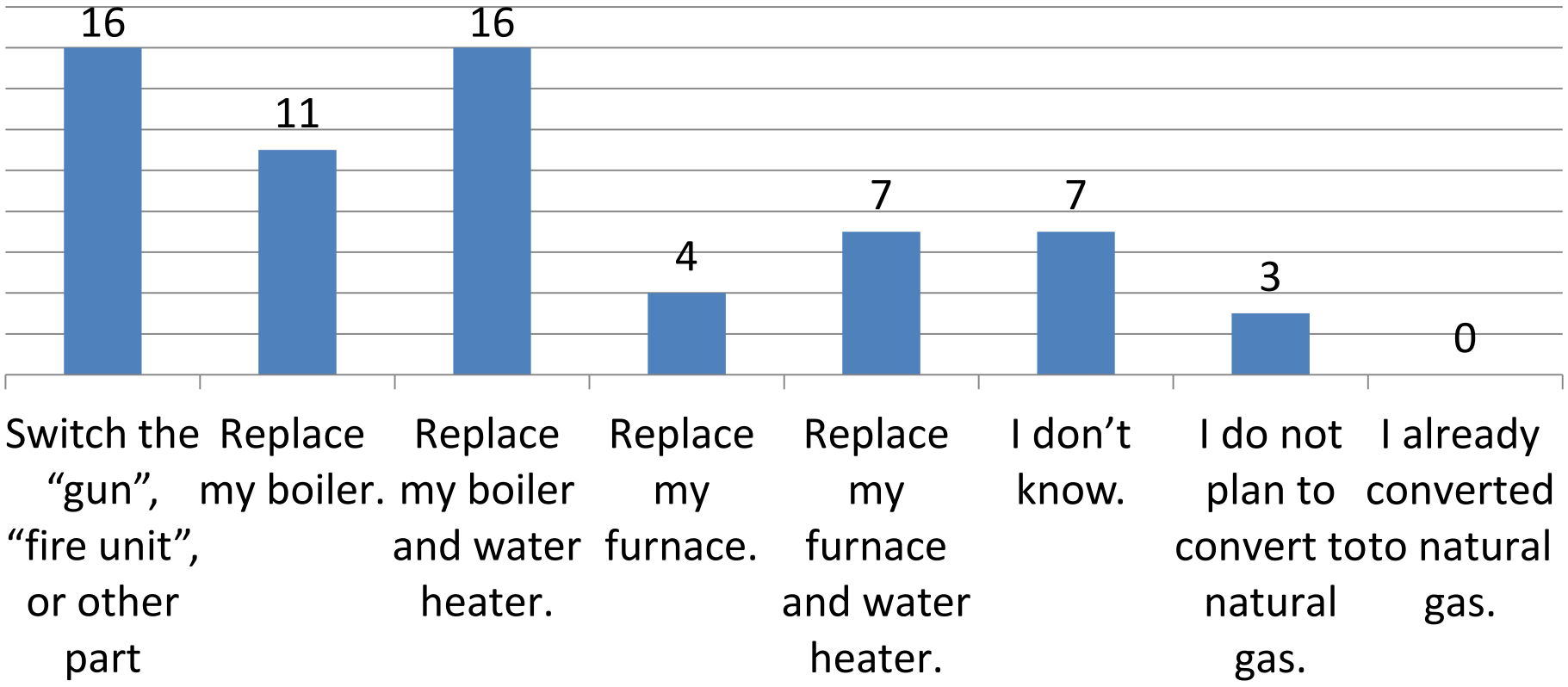


Q11: What do you think you will need to convert to natural gas?

1. Switch the “gun”, “fire unit”, or other part of existing boiler/furnace.
2. Replace my boiler.
3. Replace my boiler and water heater.
4. Replace my furnace.
5. Replace my furnace and water heater.
6. I don’t know.
7. I do not plan to convert to natural gas.
8. I already converted to natural gas.

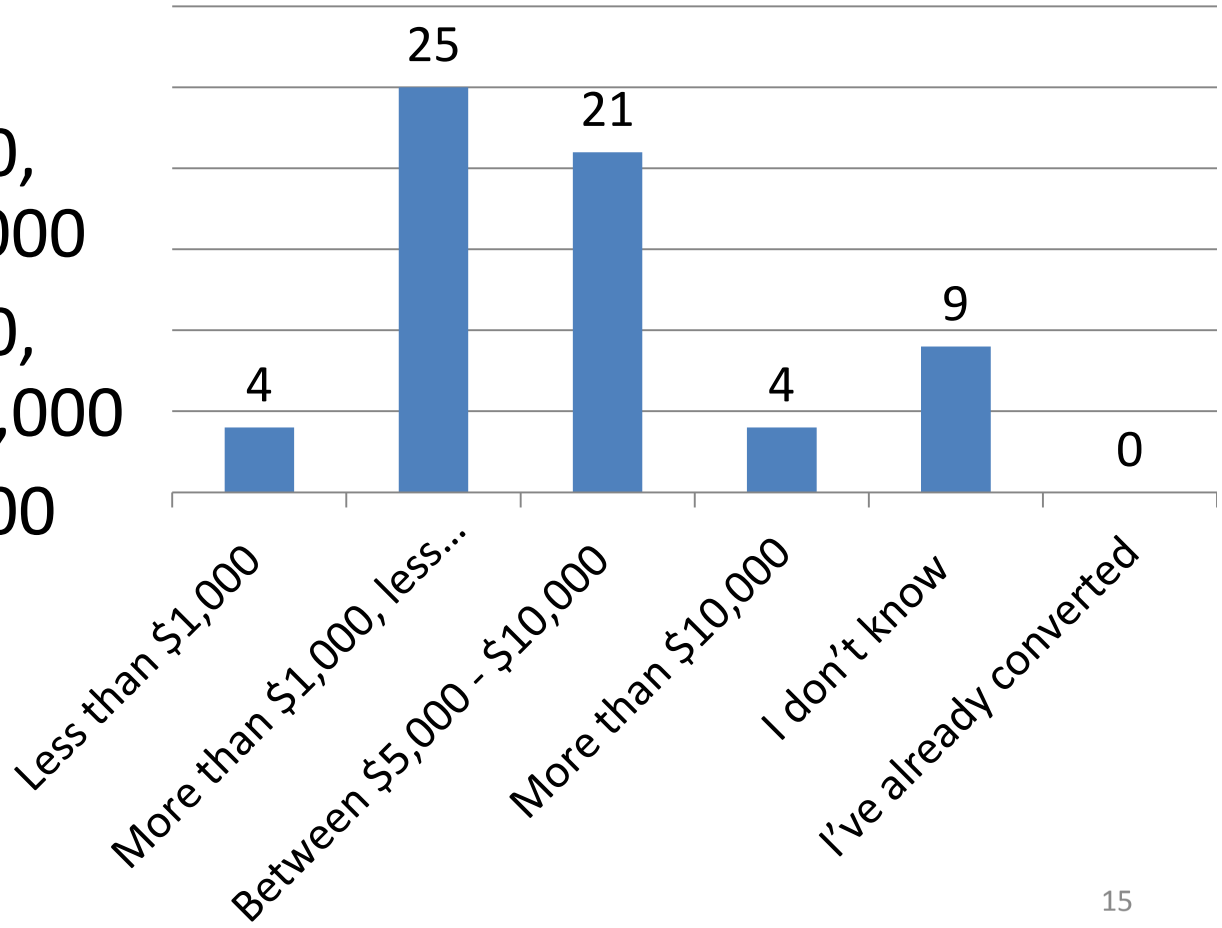
(results on the next slide)

Responses to Q11: What do you think you will need to convert to natural gas?



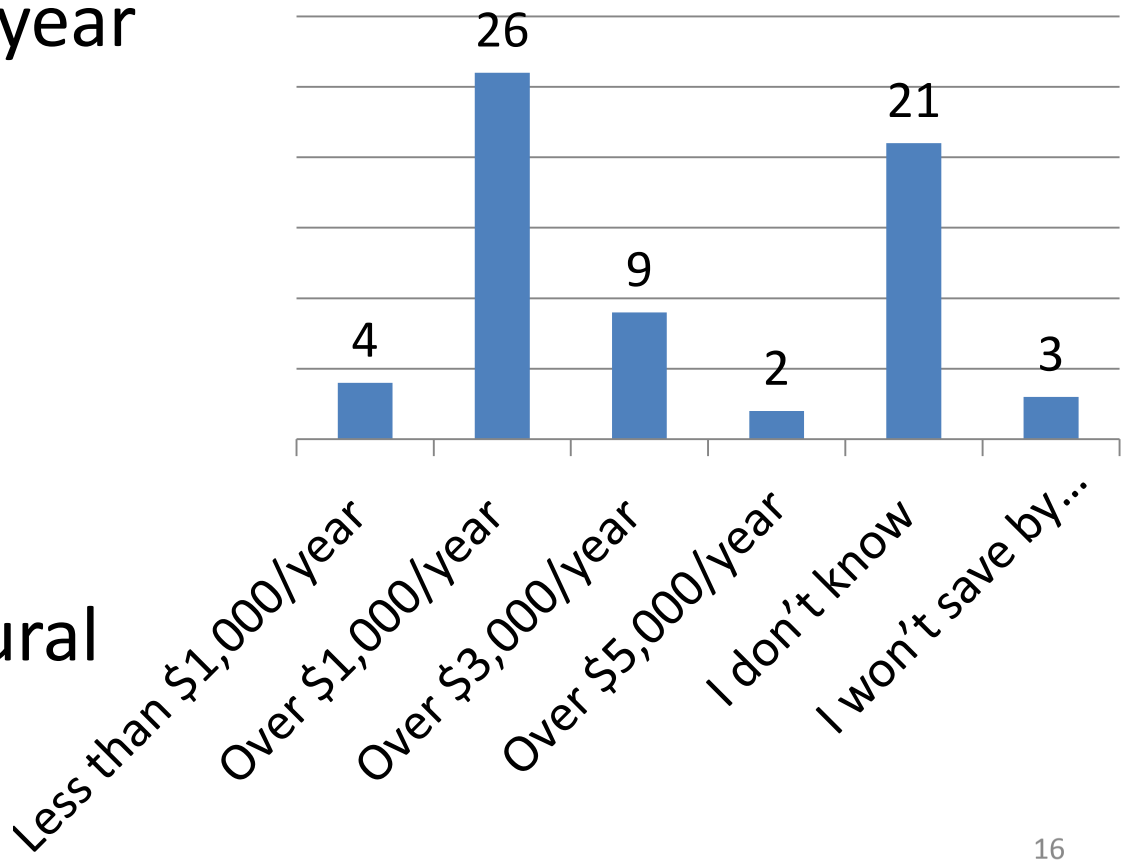
Q12: If you were to convert your house to natural gas today, what do you anticipate it costing (approximately)?

1. Less than $1,000
2. More than $1,000, but less than $5,000
3. More than $5,000, but less than $10,000
4. More than $10,000
5. I don't know
6. I've already converted



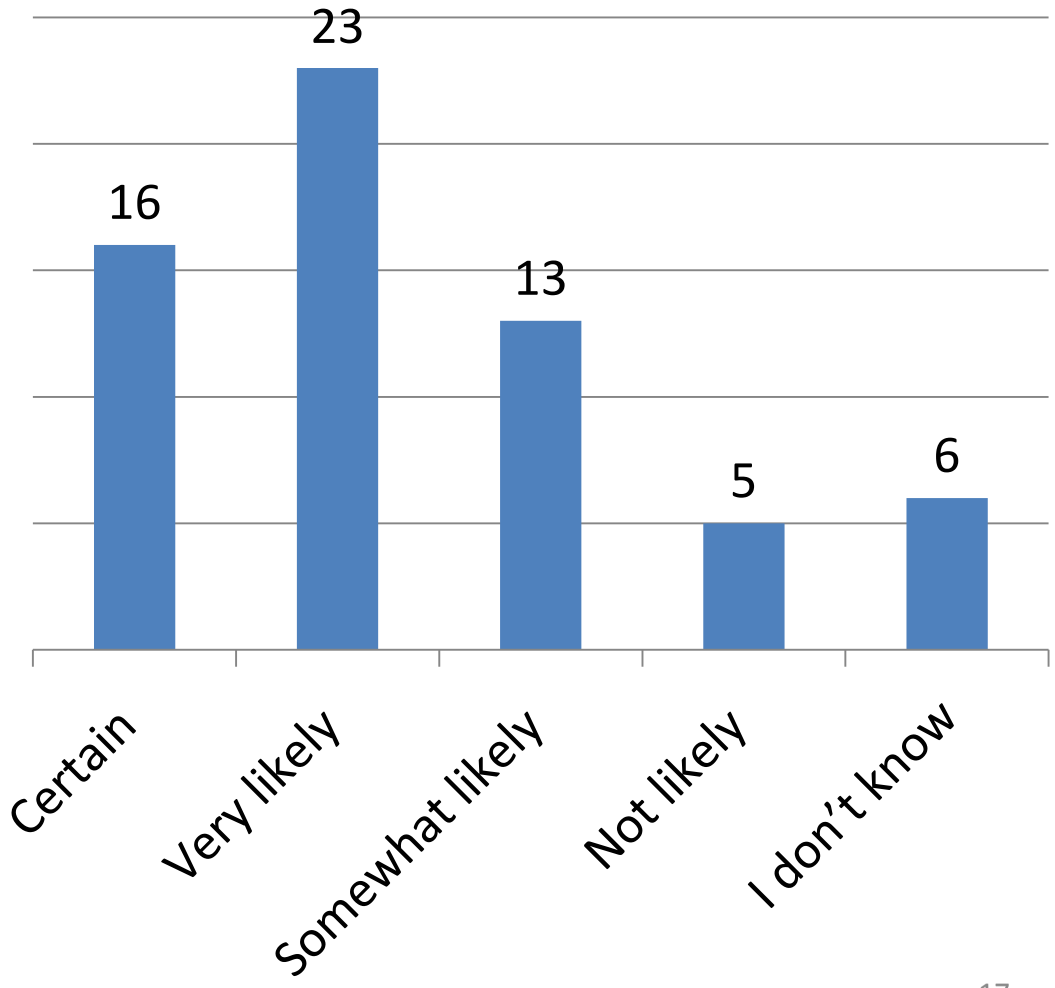
Q13: How much do you anticipate saving on an annual basis by converting to natural gas (approximately)?

1. Less than $1,000/year
2. Over $1,000/year
3. Over $3,000/year
4. Over $5,000/year
5. I don't know
6. I won't save by converting to natural gas



Q14: Are you likely to convert to natural gas?

1. Certain
2. Very likely
3. Somewhat likely
4. Not likely
5. I don’t know

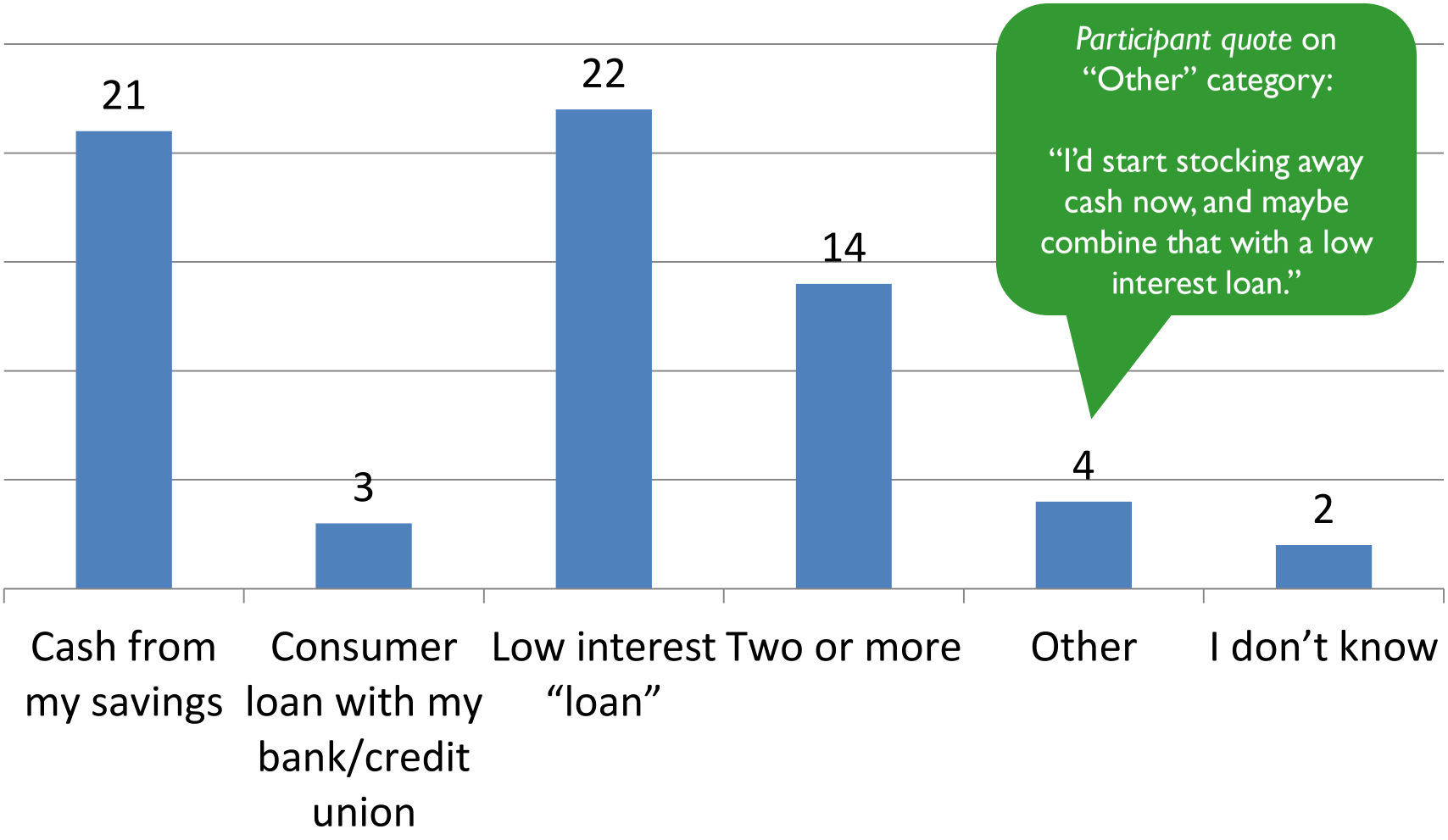


Q15: Which of the following payment options would you most prefer to pay for natural gas conversion?

1. Cash from my savings
2. Consumer loan with my bank/credit union (monthly payments over a fixed amount of time)
3. Low interest “loan” that can be paid back as part of my utility bill (monthly payments over fixed amount of time)
4. Combination of two or more of the methods above
5. Other
6. I don’t know

(results on the next slide)

Q15 Results: preferred payment options for natural gas conversion

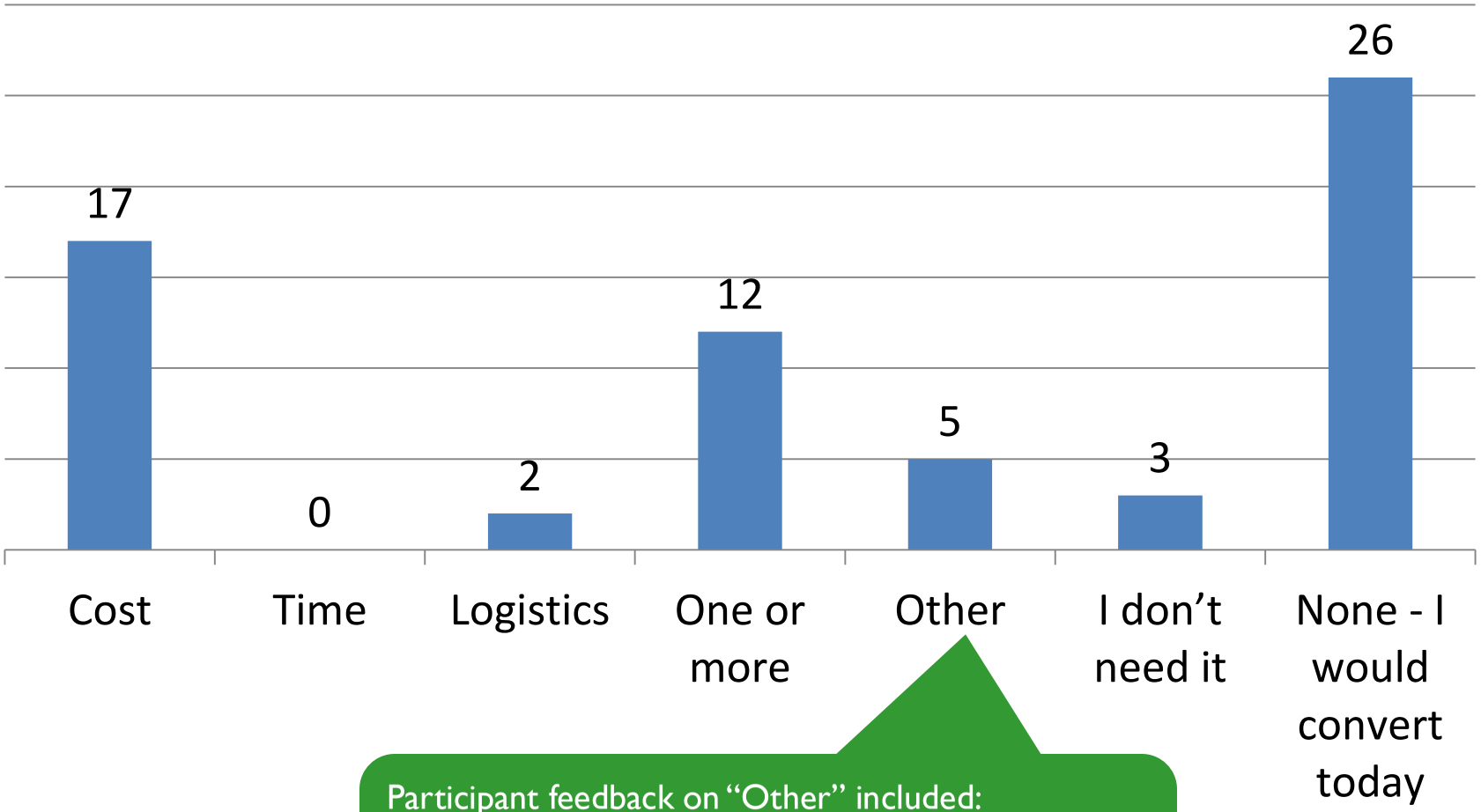


Q16: What is the biggest obstacle to converting your home to natural gas?

1. Cost – I cannot afford conversion.
2. Time – It will take too long to go through all of the steps to convert my home.
3. Logistics – I think the process will be too cumbersome.
4. A combination of one or more of the above answers.
5. Other
6. I don't need it – I have invested in and optimized my current system(s).
7. None of the above – I would convert today if I could.

(results on the next slide)

Q16 Results: Obstacles to conversion

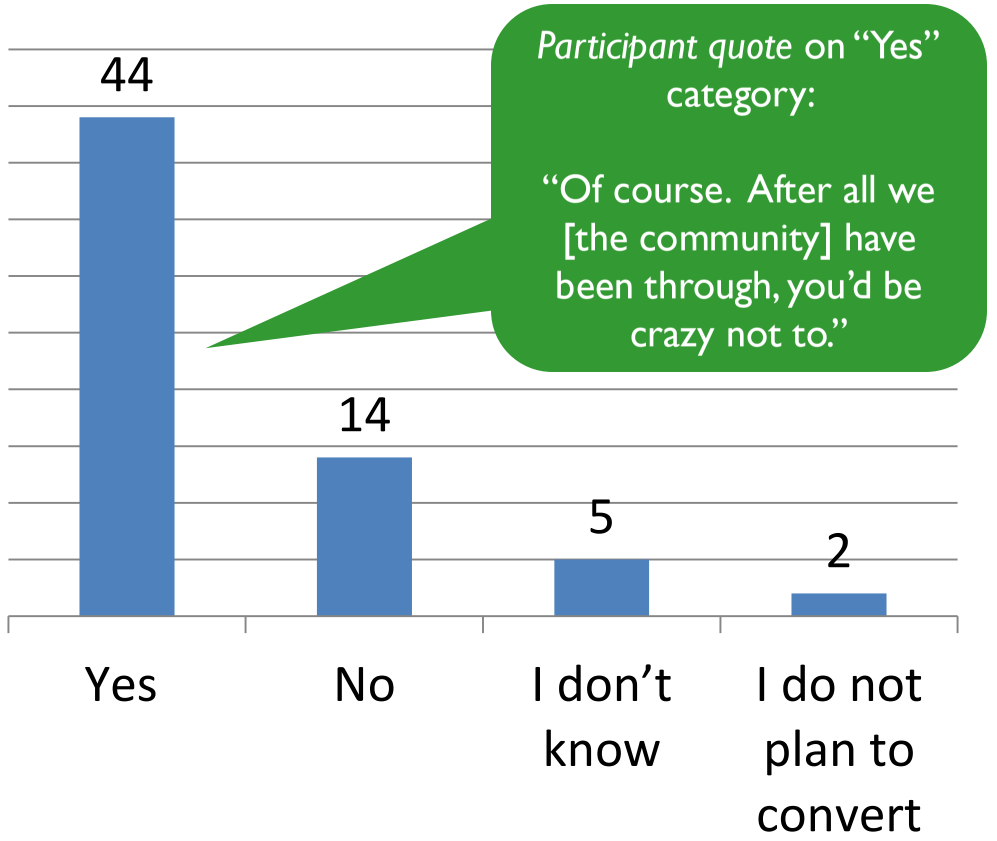


Participant feedback on "Other" included:

- The many unknowns.
- Concerns about hidden/unforeseen costs.
- Want to see how Phase I goes before converting.

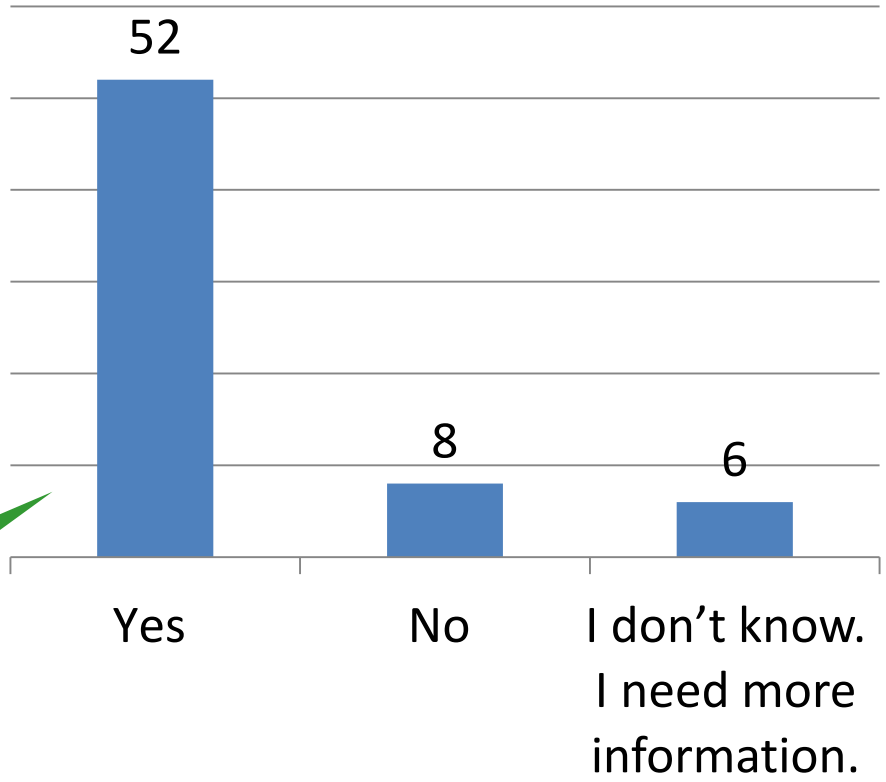
Q17: Once you connect to natural gas, do you anticipate maintaining a back-up or secondary heating system?

1. Yes
2. No
3. I don't know
4. I do not plan to convert



Q18: Would you be interested in a free inspection of your existing heating system, water heater, and appliances to determine the cost for converting your home to natural gas?

1. Yes
2. No
3. I don't know. I need more information.



Participant quote on "Yes" category:

"Yes – as long as it's free."

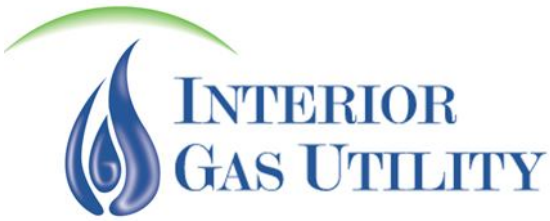
APPENDIX B

Natural Gas Conversion Research:
Interview Summary Report

NATURAL GAS CONVERSION RESEARCH: INTERVIEW SUMMARY REPORT

Prepared by Agnew::Beck Consulting for the Interior Gas Utility

September 2014



Engage Plan Implement

: : TABLE OF CONTENTS

LIST OF ABBREVIATIONS

AHFC	Alaska Housing Finance Corporation
FNG	Fairbanks Natural Gas
FNSB	Fairbanks North Star Borough
GVEA	Golden Valley Electric Association
IEP	Interior Energy Project
IGU	Interior Gas Utility
PFD	Permanent Fund Dividend

1 : : INTRODUCTION

PROJECT BACKGROUND + INTERVIEW OBJECTIVES

In summer 2014, the Interior Gas Utility (IGU) hired Agnew::Beck Consulting to conduct a series of interviews with North Pole homeowners. Interviews were aimed at learning about North Pole homeowner perspectives and concerns about natural gas and homeowners' likelihood to convert to natural gas. This report provides a summary of the project background, methodology and key findings from the interview process.

Interviews are not designed to provide statistically representative data, nor are they meant to reflect broad stakeholder input. Instead, they offer valuable qualitative data by providing thorough input from individuals and small groups of people on potentially complicated and/or sensitive topics. They provide participants the forum for sharing their individual experiences and perspectives, and the space for providing more detail than is normally achieved through electronic and/or telephone surveys. The objectives of the interviews for this project were to obtain the following:

- To further investigate attitudes, perceptions, misperceptions, concerns and level of awareness of North Pole residents regarding natural gas conversion.
- To provide a deeper understanding regarding interest and commitment to convert; identify key variables and thresholds affecting conversion decision/implementation.
- To provide a base level of educational information about IGU and past, current and projected natural gas efforts in the Interior as context for interviews.
- To identify, in their own words, what local residents believe is needed to address the local energy crisis.
- Through a synthesis of all interviews, identify key messages and effective messaging concepts in support of a conversion program.
- To gain an understanding of the perceptions of the people and organizations directly involved in the project, including IGU.

KEY FINDINGS

Outlined below is a summary of key findings. Additional details, including findings by key theme and direct quotes from participants, can be found in Chapter 3: Summary of Results.

- **Participants are excited about the prospect of natural gas.** Most interview participants support natural gas and see it as a part of the solution to addressing high energy costs. Many participants also hope that natural gas in the area will lower the cost of electricity. Some participants speculate that bringing natural gas to the area will also lower the cost of fuel oil.
- **Participants have varying degrees of understanding about the Interior Energy Project (IEP) and the Interior Gas Utility (IGU).** Most participants were unfamiliar with the IEP or with IGU, and there is some confusion about how the efforts in the Interior relate to a potential gasline. Of participants who were familiar with IGU, most people have positive or neutral impressions of the utility and believe that overall IGU is doing a good job. Participants emphasize that they value transparency, collaboration and want to make sure that creating affordable energy for residents should remain the primary priority for IGU.
- **Many participants are worried this project will not come to fruition.** The interviewed North Pole homeowners share how they have been promised energy solutions in the past, only to have them fall through at a later date. In particular, interviewees are worried about the government (local, state, federal) creating hurdles that slow the project's progress. That being said, participants feel encouraged by the level of engagement with the community, the visible presence of engineers in the field and the development of phase maps and timelines.
- **The interviewed North Pole homeowners have a wide range of heating systems, fuel sources and associated costs.** Most participants have both primary and secondary heating systems in their homes. Many participants have dedicated time, research and energy to make their particular home as energy efficient and affordable as possible by using combinations of fuel, systems and efficiency improvements. Four households have recently converted from fuel oil to wood/wood pellets. Annual heating fuel costs ranged from under $2,000 for households that cut their own wood to reduce fuel costs, to over $5,000 for households that primarily rely on fuel oil.
- **The number one influence on home heating decisions is cost.** This includes both installation and operating costs. To a lesser extent, participants also care about efficiency, ease of use, and purchasing from local businesses that offer discounts (e.g., military discounts).
- **Most participants intend to convert their homes to natural gas.** However, interviewed homeowners want more details on both the cost of conversion and the possible annual savings. Many participants have cost-related concerns, such as hidden costs (installation, taxes, etc.), being unable to afford the upfront conversion cost. Participants also have a variety of concerns and questions about the conversion process itself, including how to select a new system, what type of conversion they will need, the conversion

timeline, and the possibility of keeping a backup system intact. Most participants with newer systems estimated conversion would cost $3,000-$5,000, while other participants, especially those with older systems, estimated conversion costs between $4,000 and $12,000. One participant estimated that the service line installation to his home could increase the cost to over $15,000.

- **Most participants intend to convert their boilers and furnaces right away.** In order to spread out costs over time, many participants said they would spread out the conversion of other appliances over time.
- **For participants who can afford it, paying cash is the preferred option. The most popular conversion payment financing option is the low interest loan bill pay option.** Participants want to finance the conversion using the lowest interest rate possible and would be particularly interested in a bill pay option if the interest rate was no more than three or four percent. Most participants were not interested in the rebate program because they would be unable to cover the upfront conversion costs. Some participants suggested offering special incentives when Permanent Fund Dividends are released, so that homeowners could apply their dividend toward a down payment toward their home conversion.
- **Participants want assistance navigating the conversion process.** Most participants would like IGU to provide information on installation, including a list of certified contractors, recommended heating systems and instructions on how homeowners can do the installation on their own. Participants want this process to be streamlined and efficient.

2 : : METHODOLOGY

WHEN + WHERE

Interviews were conducted with homeowners in the City of North Pole. Phase one of the natural gas build out is scheduled to occur in the North Pole area since it has a relatively high density of customers, very poor air quality and because of its proximity to H & H Road, which is a potential storage area site. The IGU plans to start Phase 1 construction next summer (2015) and engineering, design, permitting and financing has already begun. In anticipation of the Phase 1 construction in North Pole, interviews were held with area residents on August 20-22, 2014.

RECRUITMENT

The project team used a variety of methods to recruit potential participants for the interviews. Participants could sign up for an interview by phone, email or through an online survey. To encourage participation, interview participants each received a $50 Visa gift card as an incentive/ thank you from IGU.

Participants were sought out in three ways:

- **Facebook Ads:** The project team created an event page with an associated Facebook ad that linked to an online survey. The ad reached a total of 1,976 people in the North Pole area (zip code 99705). One hundred eight (108) individuals clicked on the ad, which directed them to a survey to sign up if they were interested. Thirty-eight people began the sign-up survey; of the 38, 26 were interested in scheduling an interview.

- **Phone calls to previous natural gas distribution study participants.** In Fall 2013, Agnew::Beck worked with the Alaska Industrial Development and Export Authority, or AIDEA, to facilitate a series of four focus groups to discuss natural gas conversion. One of the focus groups was held in the North Pole area, and six of the participants stated they would be interested in staying updated and involved in the project. These six focus group attendees were each contacted and invited to participate.

- **Phone calls to the Phase 1 IGU Neighborhood meeting attendees.** Attendees at a June 2014 neighborhood meeting who included phone numbers on the meeting sign-in sheet were called and invited to participate in the interviews.

See Attachment A for a complete recruitment script.

PARTICIPANTS

A total of 17 participants representing 15 households participated in this process. Before selecting interviewees, the team compiled a brief demographic overview of North Pole using U.S. Census Bureau data (see Attachment B). During recruitment, the team worked to create an interviewee group roughly representative of Census data results for the area. Demographic characteristics of the participating households are summarized below; for detailed demographic information, please see Attachment C.

- All participating households live in single family residences in the 99705 zip code.
- Most participants have homes between 1,000 and 3,000 square feet (excluding the garage). One household has a home between 501 and 1,000 square feet; four each have homes that are 1,001-1,500 square feet and 1,501-2,000 square feet; five have homes between 2,001-3,000; and, one household has a home over 3,000 square feet.
- All participating households have heated garages.
- Almost half the households (46.7 percent) have lived in their current homes for between one and five years. One participant (6.7 percent) has been in his/her home for five-to-ten years, four participants (26.7 percent) have lived in their homes for between ten and twenty years, and three households (20 percent) have lived in their homes for over 20 years.
- While most homeowners (66.7 percent) say they are not likely to move from their home in the next five years, four (26.7 percent) say they are very likely to move and one (6.7 percent) say they are somewhat likely to move within the next five years.
- Participant ages range from late 20's to early 70's. Three participants (20 percent) are between the ages of 25 and 35, three participants (20 percent), are between the ages of 36 and 45, three participants (20 percent) are between the ages of 46 and 55, five participants (33.3 percent) are between the ages of 56 to 65, and one participant (6.7 percent) is between 66 and 75 years old.
- Participants come from a variety of income levels. Four participants (26.7 percent) have household incomes between $40,000 - $59,999, four (26.7 percent) have household incomes of $60,000-$79,999, one (6.7 percent) has a household income between $80,000-$99,999, five have household incomes between $100,000-$149,000 and one household has an income of $150,000 or more.
- Nine of the 15 participants (60 percent) are male, four (26.7 percent) are female and two households participated as a couple (13.3 percent).

INTERVIEW PROCESS

After a brief round of introductions, the interviewer shared a brief statement about the purpose of the interview. Participants were each given a fact sheet that contained the following information:

- Definitions of relevant home heating system terminology.
- A project overview infographic.
- A list of "Things to Think About" for homeowners who are considering converting their homes to natural gas.
- A table introducing a list of potential options to help pay for natural gas conversions, including pros and cons of each.

If asked, the interviewer also shared a brief introduction of the IGU project, as outlined on the Fact Sheet.

The first set of interview questions was intended to better understand the interviewee's general knowledge and impressions about both the specifics of the IGU project, more generally, energy issues in the Interior. The second set of questions discussed the participant's current home heating and energy infrastructure and costs. This included background information on the interviewee's current home heating system, an estimation of costs and a discussion on their likelihood to convert. Next the interviewer referred back to and provided a more in-depth explanation of fact sheet information which sparked dialogue about the potential savings of converting to natural gas, as well as potential conversion costs and payment option, including conversion incentives. After reviewing the various conversion options, the interviewee was asked a series of questions about conversion pricing, preferences and again asked about their likelihood to convert. Before asking a series of confidential demographic questions, aimed at better understanding, the background of each household, the interviewer used an online mapping tool provided by IGU to show homeowners in which project phase their home was situated. Approximately three interviewees were aware of this information prior to coming to the interview.

Please see Attachment D to view the fact sheet. Attachment E contains the full list of interview questions.

3 : : SUMMARY OF RESULTS

This chapter discusses the general themes and feedback from the North Pole interviews. Representative quotes are included throughout the chapter. See Attachment F for detailed interview notes.

GENERAL KNOWLEDGE + IMPRESSIONS

The first set of questions was intended to better understand the interviewee's general knowledge and impressions about both the specifics of the project and of the energy situation on the region. Participants had varying degrees of knowledge of both the project and of the various partners working to bring natural gas to the Interior. All participants voiced concern over the current energy situation and recognized a need for change. However, when it came down to specifics, there was a wide variety of impressions and thoughts on how lower energy costs could be achieved in the Interior.

THOUGHTS ON THE ENERGY SITUATION AND POTENTIAL SOLUTIONS

Natural Gas as an (one of the) Answer

Most interview participants support natural gas and see it as a part of, but not necessarily the only, solution to addressing high energy costs. Some participants know people that have left Fairbanks/North Pole to move outside of the state and/or to Anchorage because of the high cost of energy. Several participants are from the Lower 48 originally, where the cost of electricity is always fairly high but is counterbalanced by the low cost of natural gas. In Fairbanks/North Pole, residents are contending with high costs for both heat and electricity. One participant mentions she understands a lot of natural gas is being "burned off" at Prudhoe Bay as a byproduct of oil exploration and extraction, and thought that seems wasteful.

What participants have to say:

- "There are a lot of fuel thefts in this area, especially when the price goes up. They're pretty blatant."
- "I know some families right now that just tough it out and go without heat all winter because of the cost."
- "The average wage is $9/hour. People cannot afford this. For a lot of people it's fuel versus food."
- "I'm come from the Lower 48, so it just seems strange that Alaska is still without this option."

- "A lot of people are still doubting this will ever happen. They've been waiting 20 to 30 years. For some, the high cost of energy is a driving factor for retiring out of state instead of staying in Alaska. We're going to Vegas. The cost of living is one factor, but we also are tired of the hard winters."
- "Natural gas sounds great. Even the cost of wood has gone up. So anything that will bring the costs down would be a relief."
- "Natural gas is a good start. We also need to get more refineries in this state. We already have the fuel, and easy access to the gas. The fuel is just so expensive. It doesn't make any sense, especially given that it's coming from up north. Why should any of it be so expensive?"
- "It's just foolish not to get gas over oil. It lasts longer, it's cleaner, there is less maintenance. We also know there is so much of it."

Concerns about Electricity Prices

A number of participants tie part of the energy crisis to the electric bill they get from Golden Valley Electric Association (GVEA), and the fact that half of that bill is comprised of a charge for diesel fuel used to generate electricity. Two people actually provided their electric bills as proof of that point. Residents were wondering what, if any, impact natural gas would have on the cost of electricity.

What participants have to say:

- "If we opened ANWR for drilling, that would lower [fuel oil] costs to pre-2005 numbers. It would also lower the cost of our electric bill. Half of our current electric bill from GVEA is a fuel charge for diesel fuel used to generate the power that GVEA provides."
- "We also need more regulation on the electric company, and maybe natural gas would help bring those costs down, too. Right now, what we're paying in gas on our electric bill is outrageous. Could natural gas replace that diesel fuel cost?"
- "The Regulatory Commission lets GVEA get away with everything. We have to pay the fuel costs while their president makes $7,000/month."
- "Our electricity is still super high. It's in the high $300's in the winter. We got a new energy efficient washer and dryer to bring the electric costs down. We also have done all of the suggested GVEA energy efficient upgrades."

Environmental Concerns and Air Quality

Some interview participants mentioned that they are not concerned about environmental impacts from natural gas or oil drilling, and want to focus on the more pressing topic of community energy needs. Only one participant mentioned air quality as something worth considering when thinking about energy in the Interior.

What participants have to say:

- "There are so many regulations that we can do it safely now."
- "Folks might want to know how this will help improve the air quality around here. This would be a good thing for the community. I would think the community, and maybe even individual residents could get some additional federal funding, or incentives, by taking measures to improve air quality."

The Interior Needs a Combination of Energy Sources

Participants like the idea of having more options available to them (gas, oil, wood, wood pellets, etc.) Most of these homeowners recognize that natural gas could help alleviate the situation, but that it is only a part of the answer. A few participants identify increased oil and gas exploration and/or researching/using alternative energies as a potential solution. Some participants mentioned resource development projects in the Interior (Chena Hot Springs, Minto, Nenana) as prospects that are "closer to home" that could help create viable energy solutions. One participant mentioned the Eva Creek wind project but was skeptical that the project would reach completion.

What participants have to say:

- "For bigger solutions, aren't they finding natural gas down by Nenana? They're so close."
- "What they're doing out at Chena Hot Springs with geo-thermal is a good example of the creativity, and of different, alternative energies that people should be looking at."
- "I've also heard something about a potential project by Minto, but not so sure about that, because of the environment around there and the potential impact."
- "We just need more options. If we have more options, the overall price will go down."
- "Getting rid of coal and other energy sources is not the way to go. Relying on one energy source, in this case it would be natural gas, is not the way to go."
- "Solar would be great, but we ain't there with the technology yet."
- "Insulation upgrades would be most beneficial for a lot of people."

The Economics of Bringing in Natural Gas

Some participants wonder if bringing natural gas to Fairbanks/North Pole would make the energy market more competitive in the Interior, eventually bringing down the cost of fuel oil. Others voice general uncertainty about the price projections for all types of fuel, including natural gas. This may account for some residents that have decided to wait and see what happens with the first phase of the IGU project. They are waiting to see if the price of fuel oil will come down so they do not have to replace their existing systems.

What participants have to say:

- "With natural gas, I am guessing that prices will go down for fuel oil."
- "If people move to natural gas, and there is more demand, the prices will go up."
- "Right now, there is no competition for fuel oil. With natural gas as a competitor, we will have more choices and the prices will go down. In Washington state where I grew up, there were a lot of choices."

- "People burning wood is not the solution. There's the air pollution piece. Also, the demand for wood is going up, too, so the price of wood is going up. A cord of wood was $150, now it's gone up to $300."
- "I think having both, fuel and natural gas, will bring the costs down."

IMPRESSIONS OF IGU AND OTHER ENTITIES INVOLVED WITH NATURAL GAS IN THE AREA

Knowledge and Impressions of the Project

Most interview participants are not sure who is leading the North Pole natural gas conversion project. Participants spoke with varying degrees of understanding about the project and the timeline. There is concern and confusion that this project is in direct conflict with a potential gasline – will it come down to funding one project or another? How can we sustain both projects? Will the governor and the legislature support both?

A few participants say they know there is some competition between IGU and FNG; others said it is very confusing to track all the different entities that are involved with the project. Some participants are concerned about government (e.g., the Fairbanks North Star Borough) playing a role in the project and think the whole thing should be privatized.

What participants have to say:

- "Someone needs to straighten out the information. What is being shared now is confusing. We are not sure who is doing what – who are these companies?"
- "Some days you hear that the 'Big 3' are working their deal to get a natural gas line in."
- "I don't think I'm the only one that's confused about who is in charge."
- "Isn't the governor also working on some deal? Didn't he sign off on something recently related to natural gas?"
- "Are they still gonna truck it down, or are we building a pipeline?"
- "What will the service line look like? Will they have spurs going to different sections of the community?"
- "They have the phases laid out – including when and where."
- "I haven't heard anything about this project or IGU. I have very little knowledge about current events. I'm a nurse and I work nights. I can't make evening meetings."
- "What I do know is that they have been doing more of this kind of work in town (Fairbanks), and that we're eventually going to get gas out here."

- "The whole operation of getting natural gas down from the Slope via the haul road seems like a losing proposition."
- "I know that they're in the process of building a plant on the Slope. IGU is leading the North Pole project. FNG is leading the Fairbanks project."
- "When I first started hearing about this, I was afraid they would start with Fairbanks first. We were definitely pleased to see it was North Pole."
- "I think people are forgetting to ask the question of 'who is going to benefit?'. Let's quit talking and get things done before this area loses any more residents. Haven't we lost, like, 7,000-8,000 people in the last three or four years?"
- "IGU should be looking at the groups that will be coming to Eielson as part of the F35 placement. We are a preferred site. They are anticipating them coming here in 2019. That would be a big bump in the area's population."
- "This should not be a public utility. I'm very skeptical of anything that would be owned and operated by the Borough."

Confidence in the Project

While most interviewees recognize the potential for natural gas to alleviate the high energy costs in the Interior, some are skeptical of the likelihood of the project's completion. These residents are not confident the project will be accomplished due to a long history of state and community leaders "promising" natural gas to the Interior. At least two participants are concerned that no matter what positive traction IGU makes, local residents and/or "the government" will create challenges that hinder the project's progress. That being said, several participants say this is the most encouraged they have felt over the 20-year period. Homeowners state that visible progress, such as seeing surveyors in the field and the development of phase maps and timelines, increase their confidence that the project will actually happen.

What participants have to say:

- "Gas infrastructure is not there yet. I'm not convinced they're not gonna just bypass Fairbanks altogether. Is there really a plant going in at North Pole?"
- "I definitely see natural gas as a potential solution, but I'm still not expecting anything to happen for a few years. I told my wife, we still may not see anything happen in our lifetime."
- "IGU and others are trying to natural gas to Alaskans, but there are people out there that are throwing up road blocks to this kind of development. A good example of this is GVEA's recent coal proposal. There are too many governmental road blocks."
- "I said something at work about natural gas coming to North Pole and people just laughed at me. They said they'd heard that two million times before."
- "People have gotten excited before and then they are disappointed when someone from the state or local government says it can't happen for a whole bunch of reasons that don't make sense."
- "We see the actual build-out from the IGU maps and we have started to become more confident in this happening."

- "I do like the idea. I'm just cautious. Without the pipeline, I'm not sure how things will go. Asking state government to be responsible for the whole project seems like wishful thinking."
- "I have also heard that we're (our state government) more interested in exporting natural gas than they are in getting it to AK residents."
- "I know how this stuff can go though. I'm retired military and work for the government now. I know that it can difficult to get business done."
- "The one thing I would say to those guys is 'get it here faster.' 40 years is too long for any community to wait to get natural gas."
- "I think interest is definitely growing, but I think a lot of people are still in that space where they've been hearing this for years and think – 'it will never get to me.' With FNG's work, seeing some real tangible results in Fairbanks is helping a lot."

Impressions of the Interior Gas Utility

Overall there is general confusion and a lack of knowledge about IGU. For the most part, those interview participants that know IGU, have either a neutral or favorable opinion of the work they are doing. That being said, some participants are concerned about government involvement and the "public utility" concept.

In terms of interactions with IGU, a few participants attended the June meeting and had a favorable impression of IGU's presentation. One couple said they would have liked a less technical presentation and said that in general, consultant teams spoke in too many formal or mechanical teams, and people running the meeting were not technical enough. A number of participants get their information about IGU from the Daily News-Miner. Just a couple of participants had explored the IGU website.

Several participants perceive the IGU-FNG interaction as a competitive, politicized one. They feel everyone would benefit from less conflict between IGU and FNG and more collaboration to get Interior residents natural gas. Additionally, at least three participants know specific individuals that work for IGU and/or state/community leaders that have been part of the IEP and/or IGU.

Several participants appear disinterested in who is doing the project, they just want it done. Participants feel strongly that whoever is doing it has an obligation to be transparent with residents. According to the interviewed homeowners, some of that transparency should include education and details regarding how and when the project will happen at the individual homeowner level.

What participants have to say:

- "It does seem like they [IGU] are making an effort to keep the costs downs and make gas available to as many people as possible."
- "IGU should also be transparent and clear about how things are changing with the project, including the cost, savings and timelines."
- "IGU – I don't know much about them. My wife audited them – she's an accountant. She's got a CPA license. I know they're out of Fairbanks. I have a generally favorable impression of them. I think it's a good company."

- "I don't have any real impressions of IGU…it seems like they're moving forward. They've been very transparent."
- "We trust what IGU is doing completely, but we don't necessarily trust our neighbors. People don't realize how much people around here try to jerry rig things, or really try to throw good things off track."
- "That positive or low profile image of IGU might change, depending on how the project goes forward."
- "I know very little about the company that's doing these. I think it's a quasi-government group, but what is their structure? I think it should be totally privatized."
- "All I know is the FNSB should have nothing to do with it."
- "I don't know a lot about IGU, just what I've read in the paper."
- "I did briefly look at the IGU website and I have heard that I could see a return on my investment within two years."
- "I get most of my information about the project from the Daily News-Miner website."
- "I have a pretty good impression of IGU. I'm signed up for their newsletter and I get their emails".
- "Word-of-mouth will be IGU's most valuable asset, and then just getting people hooked up."
- "Overall, it seems like IGU has a plan, but not sure if they were prepared at that last meeting for what the community had to say."
- "I was very happy to see them doing the community meeting thing. That's where people will have a chance to ask questions."
- "IGU was great at saying 'we don't have all the answers.' That was good. As a result, some people did a complete switch."
- "IGU needs to evaluate their audience. During the community meeting, it would have been good to have someone that could speak to the more technical stuff, without being too technical. Someone that is a subject matter expert."
- "I was in favor of IGU getting the contract. Seems like the existing utility (FNG) was elitist. They picked the center of town to do their project. They're also a combination of commercial and people from out of state that don't have the people's best interest in mind."
- "Even though FNG lost it, we can all benefit if they cooperate. Everyone needs to just stop bickering, stop the partisanship and work together for Alaskans. They need to work together to bring costs down for the Interior. We need a statesman."
- "I would like to see IGU do this without any red tape or government interference."
- "Overall though, all of these companies – it seems like there is a lot of backstabbing and politics going on."
- "I don't know a lot about IGU except there was that big battle between them and FNG. Quite frankly, I don't care who they are, as long as they can fulfil their commitment."
- "To me, it doesn't matter if it IGU or someone else. We just need it to happen now. There needs to be some serious competition with fuel oil."

YOUR HOUSE + HOW YOU USE ENERGY

After answering a more general set of questions, the interviewer guided each homeowner through a series of specific questions about his or her particular home heating situation, including current costs, systems and likelihood to convert. While there was significant variety among interview participants, all homeowners have spent considerable time and effort trying to create the most affordable heating situation given the many financial constraints and limited availability of fuel resources.

CURRENT HEATING SYSTEMS AND FUEL SOURCES, INCLUDING COST

Most participants have both primary and secondary heating systems, although there is tremendous variance in terms of what types of systems participants use for home heating. Interviewed homeowners have homes with systems ranging from boilers with hot water baseboard and/or radiant heat, to furnaces with forced air, to wood and/or wood pellet stoves. Many participants have heating systems that also provide hot water for their homes. Others have electric water heaters. One participant has a propane water heater. A range of costs is outlined below. For full descriptions about each unique participating homeowner's household energy use, please see Attachment G.

- For participants using fuel oil only, the cost/year ranges from approximately $4,000 - $6,000, or more.
- For participants using wood only, the cost/year ranges from approximately $1,200 - $2,450, or more, using an average of six cords per year/winter.
- Many participants are using a combination of fuel sources, with the cost/year ranging widely from $1,000 - $5,000.

Changing Fuel Types and Use of Secondary Fuel Sources

Four households have made the transition from fuel oil to wood/wood pellet as their primary fuel source within the past couple of years, and two more are considering making the switch. This correlates with continued increases in fuel oil prices. Many participants have continued to experiment with the right balance of their primary and secondary systems to bring their costs down. This has been a complex and tiring effort for some participants. For example, one interviewed household has two wood stoves in separate sections of their home, with two backup boilers and an electric water heater.

What participants have to say:

- "When I first moved up here, people told me I would be paying $6,000/year. Other friends were paying $1,000/month. After changing out our woodstove to an energy efficient wood pellet stove, we cut our fuel bill in half."

- "Last year I used more wood than heating oil. I have my own supply of wood. I've got a second piece of property that I harvest wood from. Got about 5-10 years of trees left on that property."
- "We bought a new boiler, but we've been using primarily wood. When they (the fuel company) came to refuel, they thought they made a mistake. They only had to put in 90 gallons."
- "We usually go through six cords of wood a winter. It depends on the quality of the firewood. These days, I also cheat and use those compressed logs from Woodway. They are eight pound logs and they have a lot of energy. They're about $5 or $6 a log. It's like burning two regular logs at once. They're so hot. You can get 240 logs, or a pallet, for right around $600, but that lasts all winter."
- "We have lived here for four years and we have seriously been considering getting a woodstove. I am still researching that. The one that I really want, that would be high end and super energy efficient, is about $12,000. But then you are contending with the Borough and politicians that want to ban burning wood altogether."

Brand, Model and Year of Primary Systems

Participants have a variety of home heating systems in their homes. The following fuel-oil powered boiler/furnace systems were mentioned:

- Altro
- Beckett-Honeywell
- Buderas
- Burnham
- Lennox
- Slant/Fin Intrepid
- System 2000
- Weil-McLain

The following wood systems were mentioned:

- Blaze King
- Quadrafire
- Econoburn

In terms of system age, participants have systems ranging from over twenty years old to systems purchased in 2012. Four of the participants have fuel oil systems that are less than five years old. Five participants have systems that are over ten years old. At least three participants do not know the brand, model, year of their systems.

What participants have to say:

- "I did buy a Slant/Fin Intrepid oil boiler in 2006 for $2,200. I bought it when wood was inexpensive as a potential backup. I know that fuel oil isn't getting any cheaper, so I don't want that to be my primary fuel oil…I know for sure you can change the burner out to make it natural gas convertible."
- "I'm working on getting my backup burner fired up now. I put copper wiring in it and I'm working with a good boiler installer I know from Eielson. He's helping me with the installation."
- "I would actually really like to have a wood pellet boiler. We are looking at an Econoburn 150, that is a 150,000 BTU boiler. That's a little too big for the house though."
- "Even though the System 2000 is really popular, I don't like them. They're too complicated."

INFLUENCES ON HOME HEATING DECISIONS

Installation and Operating Costs

The number one cited influence on homeowner's home heating decisions is cost. Participants are willing to spend extra time investigating the costs of different businesses and using creative combinations of programs and options to keep costs down.

What participants have to say:

- "[The biggest influence is] the price tag…That is why we went with Sourdough Fuel – they were the best deal at the time."
- "For propane, I am paying $7/gallon, but, I won't have that company that much longer. They're just expensive. Also, you have to rent the tank from the propane company. It's $55/year. That cost is about the same between the three companies that do propane."
- "I try to take advantage of every program and keep our costs down."
- "I do my own research and look for the most energy efficient and low cost options available. That has meant a real hodgepodge of systems in my home."

Efficiency

Many participants cite efficiency as an important consideration when selecting energy systems. This is largely related to price, since more efficient systems require less fuel over the long term.

What participants have to say:

- "We're just trying to have an energy efficient home."
- "Wood is the most efficient system. We bought our Blaze King 15 years ago."

- "Price is the biggest driver, and efficiency. I want whatever I have to be efficient."
- "I'm a big efficiency guy. I want something that's going to be more energy efficient than what I have, versus just the cost savings piece. That's important, but how are we being more efficient is equally important. My pellet stove right now is at 96 percent efficiency. My System 2000 is also super-efficient. What is the price per BTU for oil versus gas?"

Ease of Use, Cleanliness, Comfort

Some participants prefer systems and services that are easy to use and maintain. Others enjoy the characteristics of wood-based heat sources: one participant stated that he really enjoys cutting wood, and another said she prefers the heat from a wood stove.

What participants have to say:

- "We went with Polar Fuel for our fuel oil because they had an auto bill pay option."
- "I like having auto refill (not having to track when to refill fuel tank, it happens automatically)."
- "Cost is one factor, but cutting wood has also always been a part of my life. It's what I do. It's what I've done. I've always enjoyed doing the wood cutting. I grew up in Montana as a farm boy."
- "We try to reduce our costs, but then also stay warm. The warmth you get from the wood stove is superior to what you get from a furnace."
- "For the fireplace, we occasionally use the compressed logs that come from Superior Hardwoods. They're more expensive, but they're cleaner. They're made of pulp and newspaper. I don't like having all of that wood debris in my house, so those are nice. They're minimal ash."

Discounts and Partnerships

Some local businesses offer discounts and incentive programs. Many participants cite these discounts as reasons for selecting a particular company for their heating needs. This is related to the previous point above: the number one influence on home heating decisions for the interviewed homeowners is cost.

What participants have to say:

- "I get bonus miles with AK Airlines when using Polar Fuels. So, I could rack up miles with the charge."
- "For my heating fuel, I went with Sourdough because they gave me a military discount. I think it was right around 10 percent."
- "We went with Sourdough Fuel for fuel oil because they absorbed the prior company we were using. They also give discounts to University employees."
- "We went with AK Petroleum because I get a discount as an Alaska Railroad employee."

LIKELIHOOD TO CONVERT

Participants were asked about their likelihood to convert, and any associated questions or concerns they had about the conversion process. Almost all participants are interested in converting but recognize that the variety of unknowns, especially related to the costs and savings of converting their current home heating systems, meant that they need more information before making a decision. Homeowners would like the following information before making the decision to convert their home heating system to natural gas:

- Cost to convert.
- Type of conversion needed given current heating systems.
- Advantages of converting.
- Payment options and return on investment.
- How long it will take to convert.
- When and exactly what they need to commit to.
- How to convert and/or how to do self-installation of new heating systems.
- An easily accessible list of certified/qualified contractors that can do the conversion safely, at a standard cost.

Unknown Conversion Costs

Most participants are fairly certain they will convert but note that it will ultimately come down to cost. Participants want to better understand both the cost of conversion and the annual savings before committing to convert their homes. Only two participants say they will not convert to natural gas.

What participants have to say:

- "[I would convert] within six months. Last year, there were a bunch of natural gas appliances available that would have made it easier to make the transition. People were really thinking natural gas was on its way here."
- "I understand what's needed pretty well. I have a new boiler that will last a long time with the natural gas upgrade. We're all set. My wife would be really happy."
- "No. We will not be early adopters. We want to wait and see how things go with the first group of people that convert. How will that go?"
- "I looked up the manufacturer of my unit online. Looks like it would be a simple replacement of a fire unit, at around $200. That, plus, labor, at another $200. So, about $400 for the heating system."

- "Definitely, but I would have to look at the cost of conversion first with my current system. Also, what would the cost savings look like, and, at my age, is it really cost effective?"
- "Yes. The timing would depend on how quickly we could get a contractor out to our house to make the conversions and do the related work. Cost would not be a factor for us."
- "We probably would, but I would have to see the payoff within five years."
- "Yes, I would convert. Even if it would cut our energy costs by half, it would be worth it. Economically, it just makes sense, and we could actually take our temperature up a notch because we'd be saving with natural gas."
- "Yes, but we would definitely want to understand cost first. But, we really want to do this. Force air that we get in the house right now is just nasty, and the wood debris is also a pain, and dirty."
- "No, I wouldn't convert. I have no money to do it."

Questions about the Conversion Process

Participants highlighted many uncertainties about the project. Participants wonder about the cost of converting their particular systems. One household wonders about details for the line that would be installed. Another participant voiced concern over the availability of qualified contractors to help with conversion.

What participants have to say:

- "I might convert, but I would want to know first if my boiler was convertible to natural gas. If my boiler was convertible, I would definitely consider it."
- "We already have a buried gas line outside. Would that decrease our costs and also expedite getting our home connected to natural gas?"
- "Yes, [I would convert], but there would need to be certain things in place. There have to be certified contractors that can do the conversion safely. They need to be trained and certified to do this work. That list of certified contractors should be available to residents…I don't want my neighbor working on these things themselves."

Conversion Obstacles: Cost

The biggest anticipated obstacle to conversion was cost. Some participants say they are not sure they can afford the cost of conversion, especially if there is a large upfront cost involved.

What participants have to say:

- "The biggest obstacle would definitely be money and having to do anything in a lump sum."
- "I think the largest drivers are cost. At the end of the month, we do not have a lot left over to do a conversion."

- "I think the biggest obstacle for anyone will be price. I am a manager for Walmart. Almost half (48 percent) of my staff are military. These folks cannot afford the cost of living here. They probably couldn't afford the cost to convert either. Plus, many of them are renting. It's really tough."
- "I want someone to show me that I'll be able to recoup my costs within no more than five years. I'm not planning on being here in 15 years. Once the kids are grown up, we'll leave. I don't want to still be paying for the conversion at that time."
- "[I'd like to see] A complete packet that includes: range of potential costs, savings, payment options, timeline for installation and the different phases of the whole project."
- "I am curious about what additional costs we might incur within the City of North Pole limits. Will there not also be some kind of tax (three percent)?"
- "Everyone will want to know the cost, and I would be curious, too, what the potential resell value would be on my property if I convert to natural gas. Would it increase?"
- "[The biggest obstacle is] remodeling, drilling, retro-fitting my home to accommodate natural gas. These are the things that make me hesitant. Retrofit is pricier than new construction."
- "If I were to buy a new house, I would want to buy one that had natural gas. Right now, I just can't afford to save anything to invest in converting the one I have. It's only 1,000 square feet. I can't imagine having to heat more than that. I don't want that."

Conversion Obstacles: Implementation and Process-Related Concerns and Questions

In addition to cost, homeowners have a variety of other concerns and questions about natural gas conversion. Participants want more information on the project background, timeline and construction details. Some participants note it would be beneficial to offer homeowners the resources and training to do conversion on their own. Many participants also commented that converting their homes to natural gas would not negate their existing heating systems. They plan to keep the other systems intact, especially wood or wood pellet stoves, as back-up systems.

What participants have to say:

- "Right now, I get most of my information on talk radio, so maybe doing some educational pieces on talk radio would be helpful."
- "We want to know if there's anything we can do to get ready today. What type of construction can we do to get ready, no matter what phase we're in."
- "I think the biggest thing is education. Change is hard for people. You have to be able to illustrate the benefits to them, and quickly, especially the older generation. With the younger generation, they just won't be able to afford any of this. They're struggling."
- "I also think other people, like me, are wondering about the haul road, the supply, and the future of the pipeline. How does all of this stuff work together?"
- "Where would the easement go? What side of my property would it go on?"

- "One thing we were still curious about after that last meeting was the disposal of our old tanks. How that would work?"
- "I think people really want to learn and do these things themselves. They want to do self-installation, so there should be tools for helping people do that."
- "IGU really needs to give people good information about boiler types. People don't have to have 96 percent efficient boilers. They need something that is efficient, and that's easy to install, easy to repair. For this reason, I'm partial to the Buderas, Burnham or Weil-McLain gas boilers (over the System 2000)."
- "Frontier Plumbing and HASCO guys are the best. Also K2 on Aurora. I needed to do some certification, distribution and installation packages,, so I'm working with these guys. How great would it be to have these professionals do a whole walk-through process with homeowners? So many people want to do it themselves anyway – why not teach them how to do it right?"
- "I think people will want to have multiple systems in place, just in case one system fails. How will that work?"
- "I'll be thinking about questions like – how long will it take an excavator to get out to our house? They're already stretched thin, and they can only operate in certain seasons. Will there be a giant backlog of folks waiting for their service lines to be put in? That doesn't appeal to me."
- "I still feel like there are so many unknowns for IGU, including how many people in North Pole will actually make the conversion. So many people are in this wait and see mode. They're also not really in a position to want to invest that much in their homes. They're military or more transient populations."

CONVERSION OPTIONS

The last set of questions was intended to better understand participating homeowners' thoughts on conversion costs, incentives and potential conversion finance options.

TYPE OF CONVERSION NEEDED

There is a wide range of perceived needed types of conversion. The majority of participants believe they will need to replace their existing heating system. Some participants with newer boilers/furnaces believe they need a simple exchange of a fire or gun unit. Others are not sure if their system, even if newer, is convertible to natural gas. Two participants called their heating system professional and got clarification on whether/not their systems are convertible (in both cases, the systems are convertible). Most participants mention converting their electric appliances to natural gas, but that decision would be based on cost, with the heating system and water heater being the priority conversions. Some participants have propane gas appliances that they believe and/or know are easily convertible to natural gas.

What participants have to say:

- "We have a newer boiler, so it would most likely be a simple upgrade of a part. We would also want to upgrade some appliances."

- "Right now, I've got a propane stove, water heater and dryer. I also have the part for the stove that came with it that would make the conversion to natural gas easy. Also, I would need about 200 feet of line from the road. That stuff is cheap and easy to get."
- "We would probably need to replace our boiler and water heater. Our stove is easily convertible, since it's a propane stove."
- "I just had the boiler in my house tuned up. Forgot to ask the guy if it was convertible or not. It's a 2007. So not sure about that."
- "We live about 70 feet away from the street. Not sure how much it would cost to lay the service line. Our actual home boiler is about 85-90 feet away from the street."
- "Probably a new furnace, water heater and maybe a gas washer and dryer later, since we just bought new ones. We'd also want a new stove."
- "Our boiler can be converted. That would probably be the only thing we would convert. My wife doesn't want gas appliances."
- "I know that the furnace in the house is not convertible."
- "I'm also wondering where the repair technicians will come from. That's a problem that could be fixed pretty quickly. We could fill that void and actually create jobs. We could have vocational programs that focus on just that skill. Heck, they could make an obscene amount of money."
- "When I went to Sears, they were giving a sizeable discount for all natural gas appliances."
- "I would probably need to do a big overhaul to my whole system, and also do my water heater, stove, dryer. My appliances are pretty much at a replacement phase, but still very efficient."

ESTIMATED COST OF CONVERSION

Among participants that have newer systems, they believe the average cost for conversion would be less than $5,000, maybe even less than $3,000, depending on the cost of labor, and the cost to convert their water heater and get new appliances. Among participants that believe they must replace their home heating system, the estimated costs range between $4,000 and $12,000. Some participants are interested in doing some parts of the installation themselves in order to keep costs down. Participants also wondered about indirect costs such as the removal of oil tanks, taxes/fees, the cost of the service line and installation costs.

One participant estimates the highest portion of the conversion cost would be the cost to install the service line to his home. He estimates this cost as approximately $15,000 based on his understanding of what is needed to install the line and the limited number of contractors that can do that type of work, plus the limited timeframe for digging deep in Alaska (up against winter temperatures and frozen ground).

What participants have to say:

- "I haven't seen any definite numbers regarding what I'll save, and how much it will cost."

- "Folks see the numbers flash up in terms of the savings they can have, that is important. But it's also important for them to understand how the costs to convert will actually be recouped pretty quickly by what you save by converting."
- "I feel like the biggest cost will be trenching down my driveway, installing the service line and repaving my driveway. I anticipate that costing around $15,000. So, it would be the cost of the fire unit ($400), the new gas stove ($1,500), new dryer ($1,000), don't know how much that would be, and the external things for the service line ($15,000) and removing old tanks. So, definitely over $15,000."
- "There will also be the cost to remove the old oil tanks. Not sure how much that would be."
- "The good thing, too, this would increase the value of our home, would make it more appealing for buyers."
- "I would guess somewhere around $3,000-$4,000 for the service line, fittings for my propane appliances and the new furnace."
- "I could also do the connections myself to bring the costs down."
- "No idea really what conversion would cost. Maybe in the low thousands."
- "For the furnace, around $10,000. The water heater, around $3,000-$4,000. Not sure about the washer and dryer and the stove. I'm guessing it would be right around $15,000."
- "It would just be the cost of converting our boiler to natural gas. It's fairly new, so it seems that would be minimal."
- "We would also be willing to chip in for the line, too. That hasn't happened yet, right?"
- "I would say somewhere between $8,000 and $11,000. That would include around $7,000 - $10,000 for a new boiler, $300 for a new stove, and then $100 for a new dryer."
- "I was thinking less than $1,000 because we have a newer boiler and would just need to do the conversion with the right part for that. And, for the installation, now would be the time when there's some competition."
- "I think the cost, and how much you would save in the end, would be influenced by how well your house was built. I built my house."
- "I'm guessing somewhere between $4,000 and $10,000."
- "I'm thinking it would be up around $12,000."
- "I think it could vary quite a bit, depending on what type of boiler I get. It wouldn't have to be the best, so maybe we could stay below the $10,000 line for everything, including appliances."

CONVERTING HOME APPLIANCES

When asked about which appliances they would convert, most participants say they would convert their boiler/furnace right away. Many state they would convert their water heater (in households with integrated systems, this would happen automatically). Some say they would

convert their other appliances immediately, while others would transition their appliances over time, mostly to spread out costs. Participants with propane appliances say they would transition their appliances over immediately.

What participants have to say:

- "We would definitely want to convert our stove and water heater, and maybe our dryer last."
- "We would do the fire unit on our new boiler first. The appliances would come later as we need new ones."
- "Our stove is electric. It could go to natural gas. Although, all of our appliances have been replaced to be highly efficient. We have an older washer and dryer; they're six years old, but they're energy efficient Kenmores."
- "We would probably need to figure out a new system. If we went to natural gas, could we get one unit that would heat both the house and the addition, so all 2,400 square feet? We would also want to get a new dryer and water heater. I would probably not get a gas stove. I just got a new stove last year. Not sure if it is convertible, and if not, we would wait until that lived its life to get a new one. Basically, we would do whatever we could."
- "We would probably do that other stuff last. The boiler would be the priority. Get that in working order, see how that impacts the cost of energy. And, we really couldn't afford to do anything else."
- "We have a propane stove and dryer, so that seems like it would be an easy change over."
- "Whatever we have now that is propane, fuel oil, it would be worth it to do the changeover."
- "Yes, but I would convert in stages, starting with switching my boiler system and then eventually my appliances as my old ones breakdown. The biggest factor is cost and having reassurance that this will be cost effective in the long run."

CONVERSION PAYMENT PREFERENCES

Participants were asked how they would prefer to pay for natural gas conversion. A list of possible conversion finance options was discussed and participants were asked about preferred conversion finance program characteristics. Homeowners were also asked about their participation in and thoughts on other related energy programs, including the AHFC Home Energy Rebate Program and the Fairbanks North Star Borough Wood Stove Change-Out Program.

Thoughts on Different Finance Options

While most participants would prefer to pay cash, only a few say they have access to perceived thousands of dollars it would take to convert their existing system today. Even for participants that believe they can pay cash for the conversion, there is an upper limit to what they would be willing to pay out of pocket, typically in the $5,000 to $7,000 range: "After that I would have to borrow money." No participants are

currently saving for conversion or home energy improvements, although some participants mention they are willing to start saving now if there is a guarantee of getting natural gas in the near future.

In terms of potential finance options, most participants prefer the idea of the low interest loan bill pay option. Most participants believe if the interest rate was low enough, below three or four percent, more people would convert. The energy program idea is not very popular given the requirement to provide upfront funding. Several participants like the idea of offering some type of incentive program around Permanent Fund Dividend time when almost every Alaskan resident has "extra cash" that they could contribute as a "down payment" to their home conversion.

What participants have to say – paying cash:

- "Most appealing for me is the cash option, but I would have to draw the line at $6,000 - $7,000. After that, I would need to borrow money. "
- "We would definitely prefer to pay cash. The idea is to save money, not to rack up debt. But, above $5,000, we might have to think about getting a loan. We have an excellent credit rating, somewhere in the 750-760 range."
- "I would pay cash. I don't like payments. If you have the money, you should go for it."

What participants have to say – loans:

- "We have been trying to work ourselves out of a difficult financial situation and get our credit score up. So, not sure what interest rate would look like for us right now, or if we could even qualify for a consumer loan. That's why the low interest loan via bill pay would be the best option for us."
- "Some people might also qualify for a low interest construction loan."
- "The lowest interest rate option would be the best, but we would also need to pay off our credit card first. We've gotten in a little deep with our credit cards."
- "We would prefer something like Option #3 [referring to the fact sheet options], the energy rebate program, unless there was a very low interest loan. The idea of a set payment per month that would include the loan is also really appealing. When our payment fluctuates from month-to-month, that is hard to budget for."
- "We would not do a loan with our credit union. We would wait until there was something through IGU. I am guessing they will work to get me the best deal they can if they're trying to get me to be a customer. If it was over two or three percent for the loan, we wouldn't be interested. We could do it on a credit card faster."
- "For us it would probably be cash. But, the average person would not be able to afford this. The idea of doing it as part of a bill is great, especially if it was a low interest rate. Seven or eight percent, like you would normally get with a credit card or normal loan, would be too high. Somewhere in the two to four percent range would be about right. A 10-year loan would be good, too, and seems like it would be manageable."

- "We would want to pay cash, but we just can't afford it. When I asked my wife about it, I was surprised to learn just how little we had in savings. The bill payment is the only option that would really work for us."
- "I would pay cash, for sure, but I like the idea of some type of low interest loan, like around three percent. Even that low rate might hook me. Why take it out of my savings if I can get a decent loan?"
- "I don't believe in borrowing money, but the low interest bill pay option does seem appealing. That would actually be tolerable."
- "For most, I think the bill pay option would be the most favorable option, especially for the population of North Pole."
- "The other thing I just thought of is if you wrap the loan into your utility bill, you may not even notice a difference in your monthly, yearly budget, until you pay that loan off, and then it would be great. I think people would do that – everyone buys everything on credit anyway."

What participants have to say – direct payments (e.g., AHFC Home Energy Rebate Program):

- "The energy program sounds like a good option. I've never used that, but we did do the audit. That could be the backup, or used in combination with the other options."
- "If I were to choose, I would say the low interest bill pay option. The rebate option doesn't make sense to me. That one seems like everyone that could take advantage of it would have already done that."

What participants have to say – general comments on payment preferences:

- "I am willing to pay more up front if it will pay off in the long run."
- "If we could pay back what we owed within two years, like around the $6,000 range, we would be doing really well."
- "The way they did this back home (Michigan), was to do a bond for the whole area to enhance the public water system. The cost of paying back that bond was rolled into everyone's utility bill. The cost that people were paying back on was the infrastructure cost. Then, if someone wanted to tap into the new system, they paid a flat rate of $1,500. There was also a service line charge, home to street, of $7/foot."
- "I would want to know with the bank loan, would the homeowner be required to work with a certified installer. That is often the case when you take out loans."
- "You can be thrifty and find appliances at a cheaper rate. Like I said, last year, when people were really talking a lot and getting excited about the trucking business, local distributors were buying up and selling natural gas appliances. They were cheaper."
- "It would definitely depend on the timing and if we had the cash available. We would probably do some combination of cash, loans and maybe credit cards. We would also have our friends help us that have these skills. My husband knows a lot of people in the construction/engineering business that could help us install the line and the new system. That would definitely help us lower the costs."

DESIRED CONVERSION PAYMENT PROGRAM CHARACTERISTICS

Most participants would like to see a return on their investment within five years of converting to natural gas. This is especially true of participants that would need to do a more intensive, costly conversion. For older participants and/or participants that plan to leave their homes within the next five years, a shorter return on investment is an important factor in whether or not they will convert. Participants would also like to see IGU offer support and guidance for the installation process in order to make the conversion process easy and straightforward. Last, some participants suggest that IGU start signing people up and accepting down payments prior to the installation dates in order to streamline the process and get a head start on conversions.

Of the potential conversion payment options shared with participants (from October focus group list of questions), the following were identified as the most important aspects:

- Offer the cheapest conversion possible.
- Offering the most annual savings possible.
- Providing upfront funding.

What participants have to say – conversion characteristics:

- "IGU should make this offer to people around PFD time when they have some money they could put toward this and aren't feeling as pressured by the costs of winter heating."
- "If people knew/understood that signing up now would make things move faster, I think you would have folks lining up to make a deposit. $50 is too cheap; it would need to be a larger investment – at least $500. IGU should send a letter to potential customers with this type of offer. It could almost look like an invoice. 'Pay this much and get your gas connected faster.' Then, make an offer to tie into a bill that people are already used to paying, like a property tax bill. This might be better than the utility bill pay, as it would not be a 'new' really large bill that included cost of converting and the gas cost. I think something like this is the thing to really get people engaged and talking to their neighbors."
- "The sign-up fee could be multi-tiered, depending on income, sort of a sliding scale. And then, maybe tie it into their tax bill."
- "If I saw a monthly, and then definitely a yearly decrease in my heating bill, that would be very helpful."
- "If I had to lay down my own money, I would do everything in stages. I don't need everything today – the stove, the dryer could wait."
- "I would rather not tap into my savings and other resources to do this. If the Borough is serious, they will absorb most of the costs. They need to invest, not the individual property owner."
- "[IGU should] have an installer, or have an installer program for residents."
- "Making some kind of easy install package would be the most efficient, and then, if people do the finance thing, tying it altogether so that it's one easy transaction."
- "You would be in business in no time if you made it easy for folks. 'Convert to gas? Call us!'"

- "I would be comfortable paying $1,500 now just to be signed up and ready to go. Cash equity. Even though I'm Phase 3, I would still want to pay now. I think this is the approach IGU needs to take."

PARTICIPATION IN ENERGY-RELATED PROGRAMS

Three participants have participated in the Alaska Housing Finance Corporation (AHFC) Energy Rebate Program – three have had audits and one has used the program to pay for a new boiler. One participant wanted to participate in the AHFC Energy Program but could not because the previous homeowner had participated. Several participants mention the following as limitations to the AHFC Energy Program:

- Homeowners are required to pay upfront costs.
- Homes are rated at 4 or 5 already, so they cannot recoup any costs (must raise energy rating a certain level to get money back).
- The process takes a really long time, from getting the audit to when you actually get your money back (if you even qualify).

Three participants have participated in the Fairbanks North Star Borough (FNSB) Woodstove Change-Out Program and had positive experiences. Characteristics that made the experience positive included:

- Amount given for existing woodstove was ample for covering cost of new system.
- Referral system worked well.
- Received a voucher for wood pellets with the check for existing system.
- Required very little paperwork – overall, the process was fast and efficient.

What participants have to say about the AHFC Energy Rebate Program:

- "I wanted to participate in the AHFC Energy Program, but the previous homeowner did something with them back in 2008."
- "No, but I've heard about the utility one, and then the audit. I'm afraid of what the outcome would be for our house and what they would say we need to do. I know for sure that we need to put some foam in the cracks of our windows to get them to seal. We keep our temperature down at 66°F and we recently got insulated window shades."
- "Yes. We used the energy rebate program to help cover the costs of our new boiler in 2009. That covered all of it."
- "We just applied for the home energy program audit."
- "I've heard of the weatherization program, but we did all of those changes before the programs existed, including the additional insulation in the attic and the new AK-style windows -like 8 to10 of them. We also did put in new garage doors from Overhead and they're air tight. They don't have any windows in them. If they did the audit on our house today, we would be air tight."

- "We were going to do the Energy Rebate Program, but did the audit and we were a four. It's a 70s house, so we were surprised."
- "We have a 5-star rated home. We don't qualify because of that rating. We have the new boiler, and also have double pane windows and great insulation. I don't think there's anything else we could do to improve our energy efficiency, aside from getting natural gas, of course."
- "No. I don't want to do anything that could add value to my home. I don't want the Borough to see improvements and tax me more."

What participants have to say about the FNSB Wood Stove Change-Out Program:

- "We used the FNSB woodstove change-out program to buy a new stove. Most of that was covered. It was $3,000. What we didn't realize was that reimbursement that we got for the stove was taxable income. That was a little alarming when we did our taxes."
- "Yes. We did the FNSB woodstove change-out program. We got about $3,000 for our old stove and used that to pay for our $4,000 wood pellet stove. It was a great deal. Plus, they sent me a $500 voucher for pellets at Superior. I was stunned – FNSB is buying pellets for me!"
- "We've also done the woodstove change-out program. There was a cap of $4,000. The one thing about that was it felt like they were working it, the guys at Woodway. They told us we needed a new chimney, but we really didn't. We ended up going with the guys from Alaska Hearth and Home. It just seems like there's no competition for doing woodstoves."
- "We considered the wood change-out program, but I wasn't all that impressed with what they were offering me for my woodstove, only $900, so we passed. My woodstove was only 10 years old. It just didn't seem right."
- "Yes. We did the woodstove change-out and upgraded our pellet stove. It was great. Easily accessible, little paperwork. Very efficient."

4 : : POTENTIAL RECOMMENDATIONS

This chapter provides a preliminary set of recommendations and strategies for supporting and working with North Pole homeowners on converting their homes to natural gas. Many of these recommendations come directly from interviewed participants. These recommendations are a starting point, they will likely need to be further refined and explored before implementation.

EDUCATIONAL RESOURCES + INFORMATION ON CONVERSION

Most interviewed homeowners have dedicated considerable time and resources to making their existing home heating systems as affordable as possible. Homeowners want facts and reliable information to help them make decisions. The following list includes preliminary recommendations on how IGU can help homeowners make decisions and the types of information that participants would like to see.

- **Help homeowners understand the overall project plan and schedule.** Where is the natural gas coming from? How is the project being funded? Who is involved in the project? When is natural gas expected to be available?
- **Acknowledge that residents may be skeptical about the project's success.** Homeowners in the area have gotten excited about energy solutions in the past, only to have them fall though. Whenever possible, highlight progress and forward momentum to reassure residents that this project is becoming a reality.
- **Recognize that every home situation is unique.** Participants have a very diverse range of heating systems and fuel types, and many participants are juggling two fuel sources to find the most affordable combination at any given time of the year. When sharing information and estimates on conversion, remember that there are very few "average" homes.
- **Cost is the biggest influence on home heating decisions.** While some participants indicate there are some secondary influences—efficiency, ease of use, cleanliness, air quality and the availability of discounts—cost is by far the most important factor when making decisions about home heating.

NOTES ON CONVERSION FINANCING

Participants responded with fairly consistent feedback on conversion financing. While there are many other factors that influence what types of financing will be possible, the following list includes some preliminary recommendations on potential characteristics and interviewee preferences on conversion financing options.

- **For those who can afford it, paying cash is the preferred option.** These participants would rather avoid the interest rates and paperwork, and simply pay cash.
- **Sign homeowners up for conversion when PFD dividends are released.** Residents are more likely to have some extra cash on hand. One participant suggested offering a program where the dividend could be applied as a deposit toward conversion.
- **For participants who would like help paying for conversion, the low interest loan utility bill pay option was the most popular.** Participants want to finance the conversion using the lowest interest rate possible and would be particularly interested in a utility bill pay option if the interest rate was no more than three or four percent.
- **Some homeowners want to be able to sign-up in advance.** Participants think this would help facilitate a faster and easier conversion process, and would reassure residents that they are on the list as the project moves forward. Some participants also advocated for including a down payment with the early sign-up, which would officially guarantee that natural gas would be made available to their home within a given period of time.
- **Participants appreciate discounts and incentives.** If possible, consider offering military, senior citizen, or other specific/special population discounts and/or incentives.

SUPPORTING HOMEOWNERS THROUGH THE CONVERSION PROCESS

In addition to help with financing the conversion process, homeowners expect IGU to take an active support role as they figure out how best to convert their homes. The following list includes some preliminary recommendations for how IGU can support homeowners through the conversion process

- **Homeowners want recommendations on selecting a heating system and finding a certified contractor**. Homeowners are wary of the variety of options and expect IGU to provide guidance on the installation process.
- **Some homeowners would like to reduce costs by doing all or some of the installation themselves.** For these individuals, consider offering guidance through printed or online instructions/resources, and potentially classes, workshops or certification course, to help homeowners understand what steps they can safely take to reduce their installation costs.
- **Participants want IGU to take an active role throughout the conversion process**. While participant homeowners recognize the potential of natural gas to lower energy prices, many also recognize that not all local residents are convinced, and that apprehension may stifle the project's progress. Generally, participants understand the connection between getting as many people signed on to convert as possible, and the success of the project. That being said, they are of the opinion that IGU is responsible for making sure as many homes convert as possible. Homeowners believe it is IGU's responsibility to lead the conversion process and expect IGU to help homeowners every step of the way.

ATTACHMENTS

ATTACHMENT A: INTERVIEW RECRUITMENT SCRIPT

ATTACHMENT B: NORTH POLE AK DEMOGRAPHICS

ATTACHMENT C: PARTICIPANT DEMOGRAPHIC SUMMARY

ATTACHMENT D: FACT SHEET

ATTACHMENT E: INTERVIEW QUESTIONS

ATTACHMENT F: DETAILED INTERVIEW NOTES

ATTACHMENT G: INTERVIEWEE HEATING SYSTEMS

Attachment A: Interview Recruitment Script

IGU CONVERSION RESEARCH
Interview Recruitment Phone Script – DRAFT
August 12, 2014

INTRODUCTION

- Hi. My name is Shelly/Molly.

- I'm calling on behalf of the Interior Gas Utility, or IGU.

A. IF PREVIOUSLY INVOLVED IN THE FAIRBANKS LNG FOCUS GROUPS:

- Last fall (October 2013), you participated in a focus group (small group discussion) for the Alaska Industrial Development and Export Authority, or AIDEA, to talk about converting your home to natural gas. Is that correct?

- We're now having one-on-one conversations with North Pole homeowners to learn a little bit more about:
  - what (and/or who?) influences your home heating decisions;
  - your likelihood to convert to natural gas;
  - what information you need, or what you would like to know, before making that decision.

(Folks might ask – why North Pole? If so, refer to language below from IGU website:

- IGU is a new public utility with plans to install natural gas pipelines in the North Pole area beginning in 2015.

- Construction will begin in the North Pole area, since it has a relatively high density of customers and very poor air quality.

- The IGU plans to start Phase 1 construction next summer (2015), and engineering, design, permitting and financing has already begun.

- IGU anticipates delivering first gas, immediately upon its availability from the North Slope, expected in the 3rd Quarter of 2016.

- Each conversation should take approximately one hour and you will receive a $50 gift card as a thank you. Is this something that you are interested in?

B. IF NEW TO THE PROJECT:

- We got your contact information from XXXX and we are calling to see if you may be interested in participating in our project.

- We are meeting with North Pole homeowners to discuss natural gas conversion. Specifically, we are interested in learning:
  - what influences your home heating decisions;
  - your likelihood to convert to natural gas;
  - what information you need, or what you would like to know, before making that decision.

- We are holding one-on-one conversations with North Pole residents to discuss these topics.
- Each conversation should take approximately one hour and we will give you a $50 gift card as a thank you for your time. Is this something that you are interested in?

C. IF "NO" – Thank you for your time. Would you be interested in receiving future updates on the IGU project?

(If yes on receiving info, confirm email and/or collect mailing address – depends what info we have for that individual)

D. IF "YES"

- Great! Just to confirm – you are a homeowner? **(if yes, continue)**
    - If no – Thanks for clarifying that. At this point in the process, we are talking with homeowners specifically. Do you know of any homeowners who may be interested in meeting with us? Thank you for your time.
- We will be in North Pole conducting the interviews on Wednesday, August 20th, and Thursday, August 21st, tentatively planned at the Leaf + Bean Internet Café (in Beaverbrook Mall).
    - Are you available either of those days?
    - What time works best for you? (**confirm + record date and time**)
    - I'd like to send an email confirmation before we meet. Is there a good email for me to reach you? **(record e-mail)**

NOTE: Some folks may not be able to confirm a date/time on the spot. If that's the case, be sure to set a date/time for following up with them.

E. IF "CONFIRMED":

I have a couple of quick additional background questions. These questions are confidential and will help us learn more about who is participating. **(record responses)**

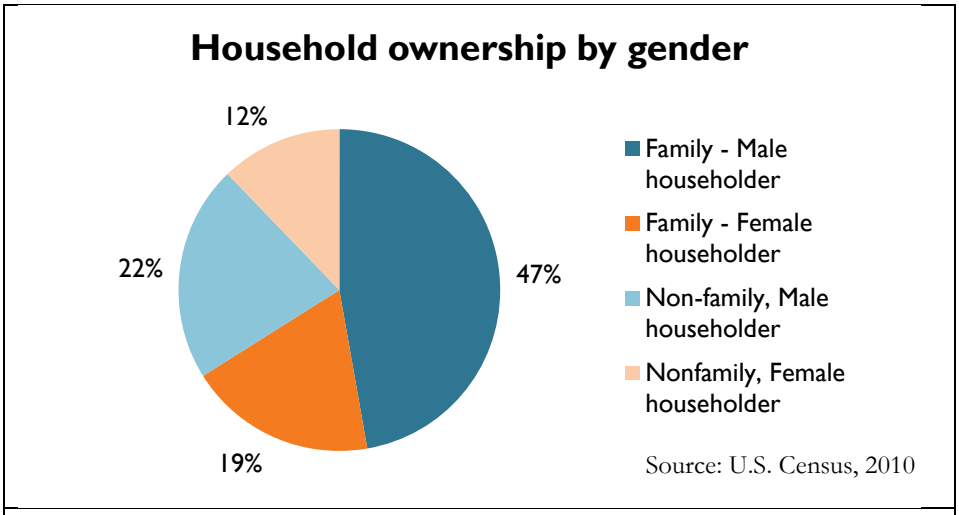
- What is your full name?
- What is your gender? **(this should be apparent, but…)**
- Which of the following best describes your age range? I have five choices for you:
    - 20-29
    - 30-39
    - 40-49
    - 50-59
    - 60+

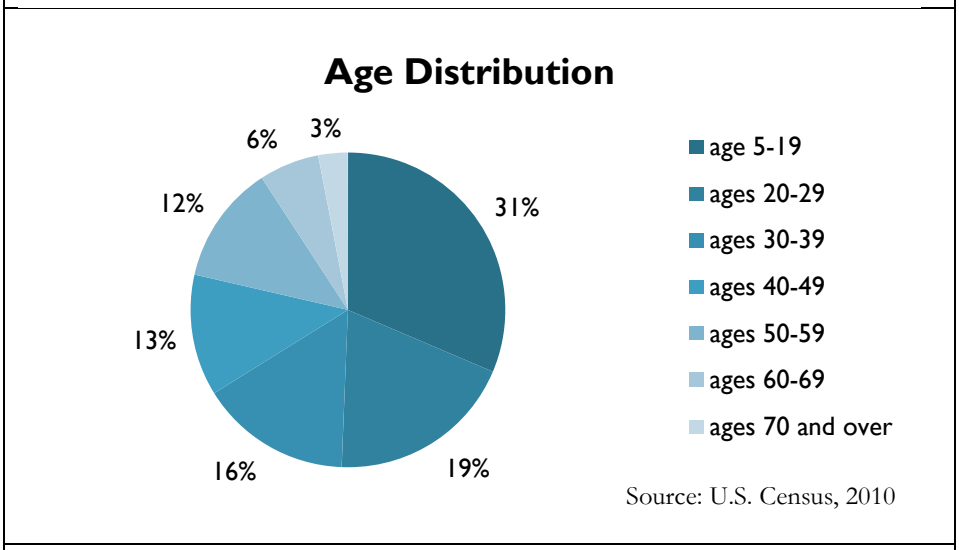
- Which of the following income ranges best describes your household income? I have three choices for you:
    - Under $50,000
    - $50,000 - $100,000
    - Over $100,000
- What is your primary heat source?
- Do you have a secondary heat source? If so, what is it?
    - Do you own any properties in North Pole besides your primary residence?
      If "yes": Can you tell me a little bit about it? What kind of property is it?
- Do you know anyone else who might be interested in speaking with us?
    - **If "yes":**
        - Can you share their contact information with us?
        - Or, please feel free to have them contact us about participating in a one-on-one conversation. **(share Shelly's info – email and cell)**

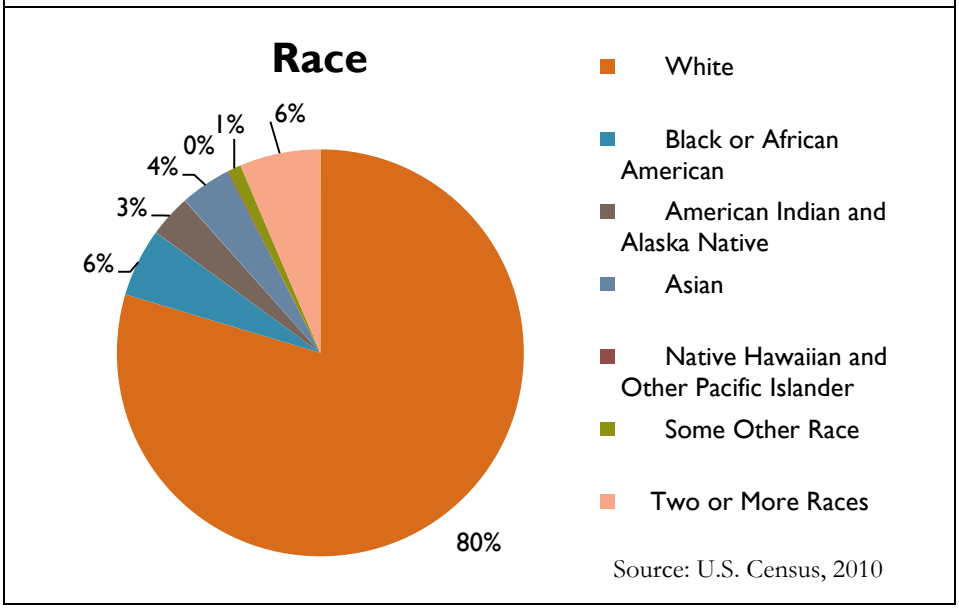
- Do you have any final questions for me?
- We look forward to meeting with you next week. Thank you for your time!

Attachment B: North Pole, Alaska Demographics

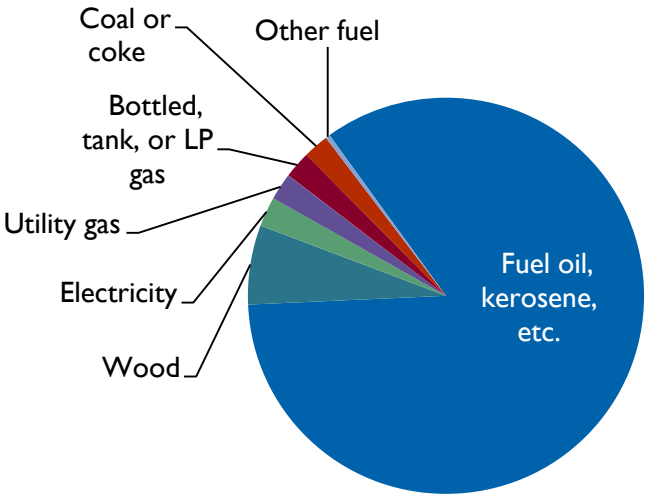
DEMOGRAPHIC CHARACTERISTICS OF THE CITY OF NORTH POLE





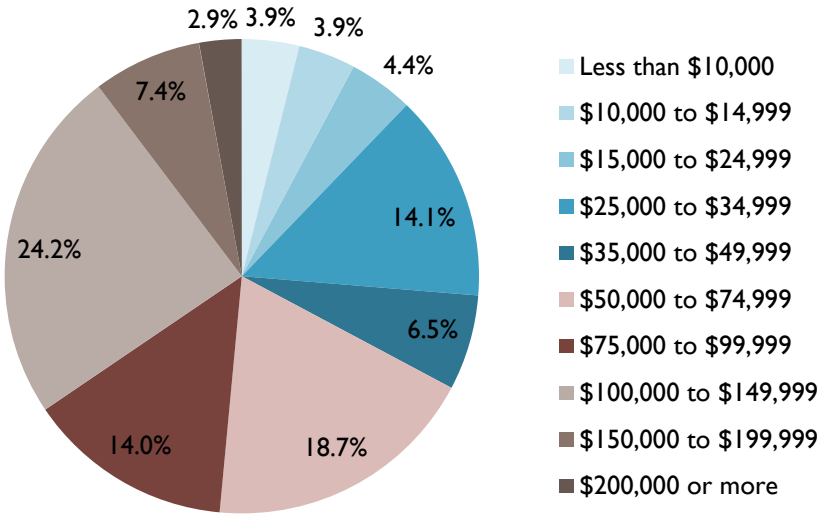


North Pole City: House Heating Fuel



Source: 2008-2012 American Community Survey 5-Year Estimates

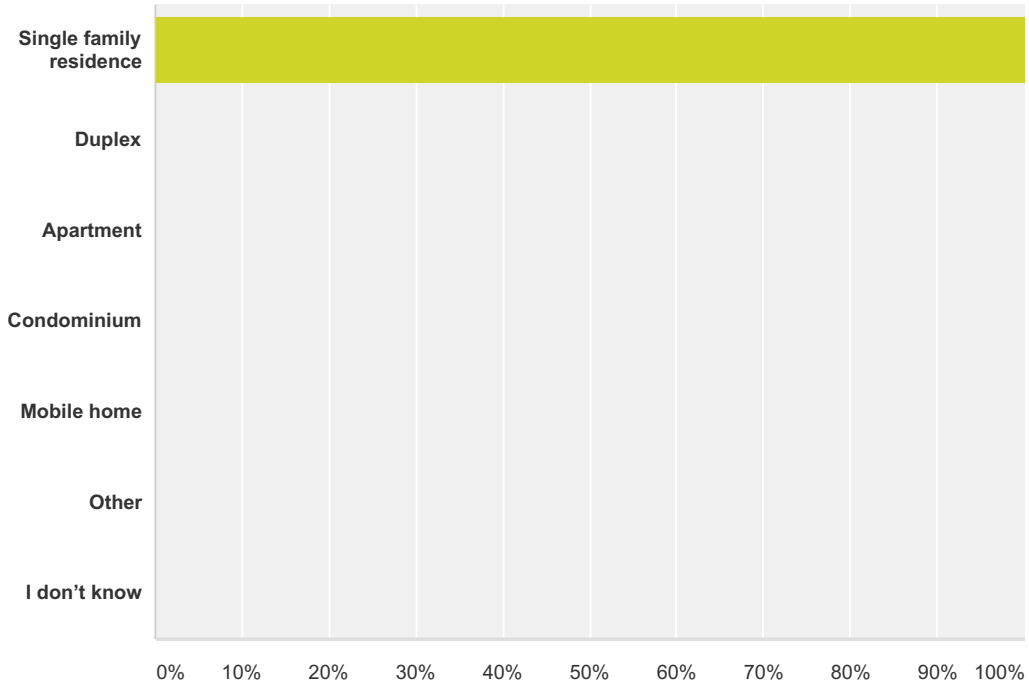
Household Income



Source: 2008-2012 American Community Survey 5-Year Estimates

Q1 What type of residence do you live in?

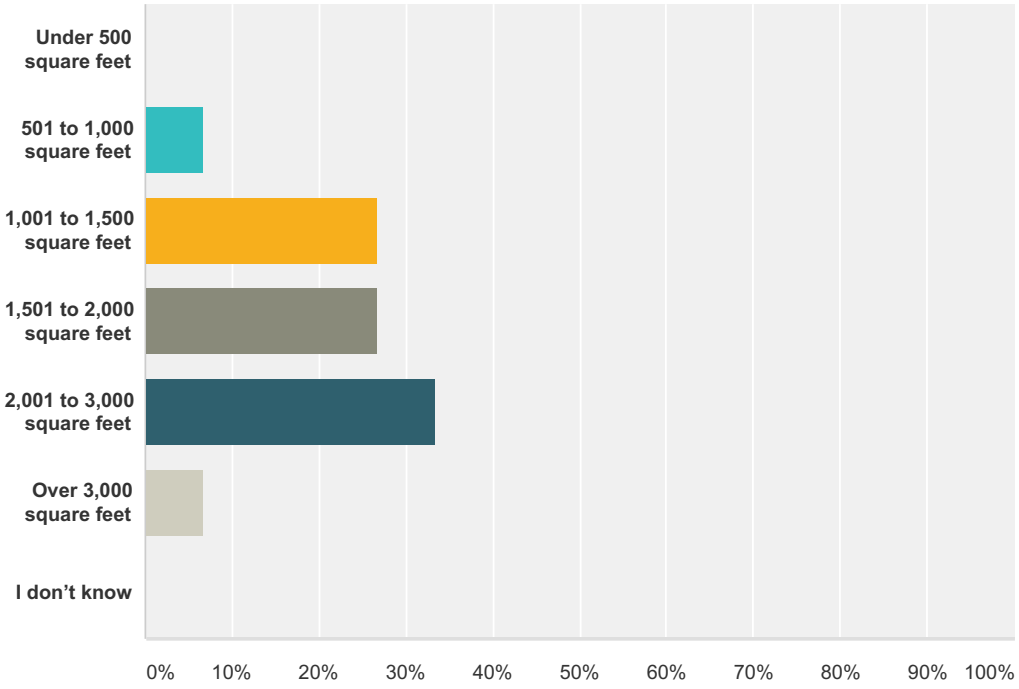
Answered: 15 Skipped: 0



Answer Choices	Responses	
Single family residence	**100.00%**	15
Duplex	**0.00%**	0
Apartment	**0.00%**	0
Condominium	**0.00%**	0
Mobile home	**0.00%**	0
Other	**0.00%**	0
I don't know	**0.00%**	0
Total		**15**

Q2 What is the approximate size of your home (not including garage)?

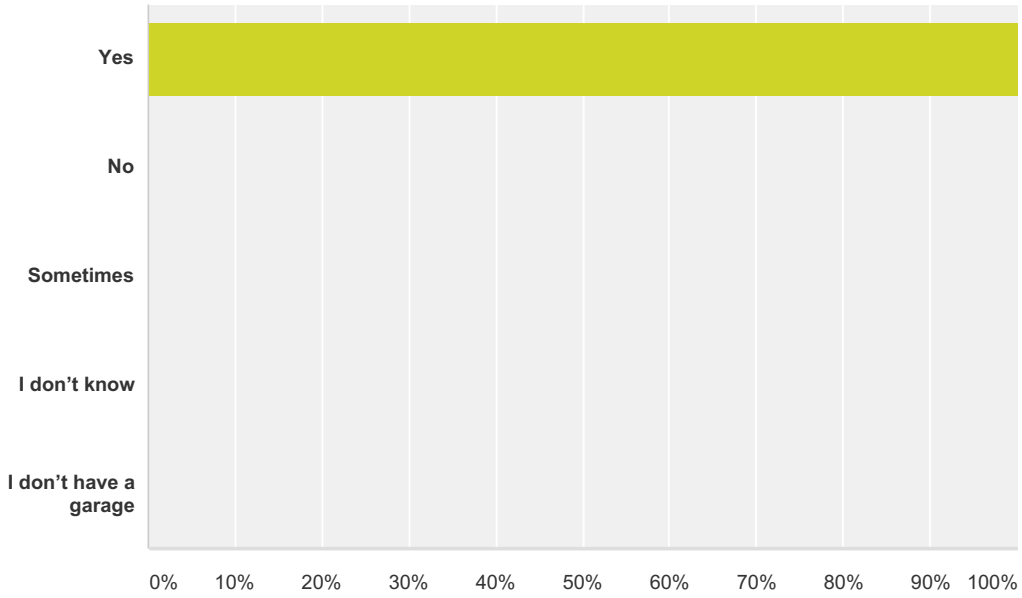
Answered: 15 Skipped: 0



Answer Choices	Responses	
Under 500 square feet	**0.00%**	0
501 to 1,000 square feet	**6.67%**	1
1,001 to 1,500 square feet	**26.67%**	4
1,501 to 2,000 square feet	**26.67%**	4
2,001 to 3,000 square feet	**33.33%**	5
Over 3,000 square feet	**6.67%**	1
I don't know	**0.00%**	0
Total		**15**

Q3 Do you have a heated garage?

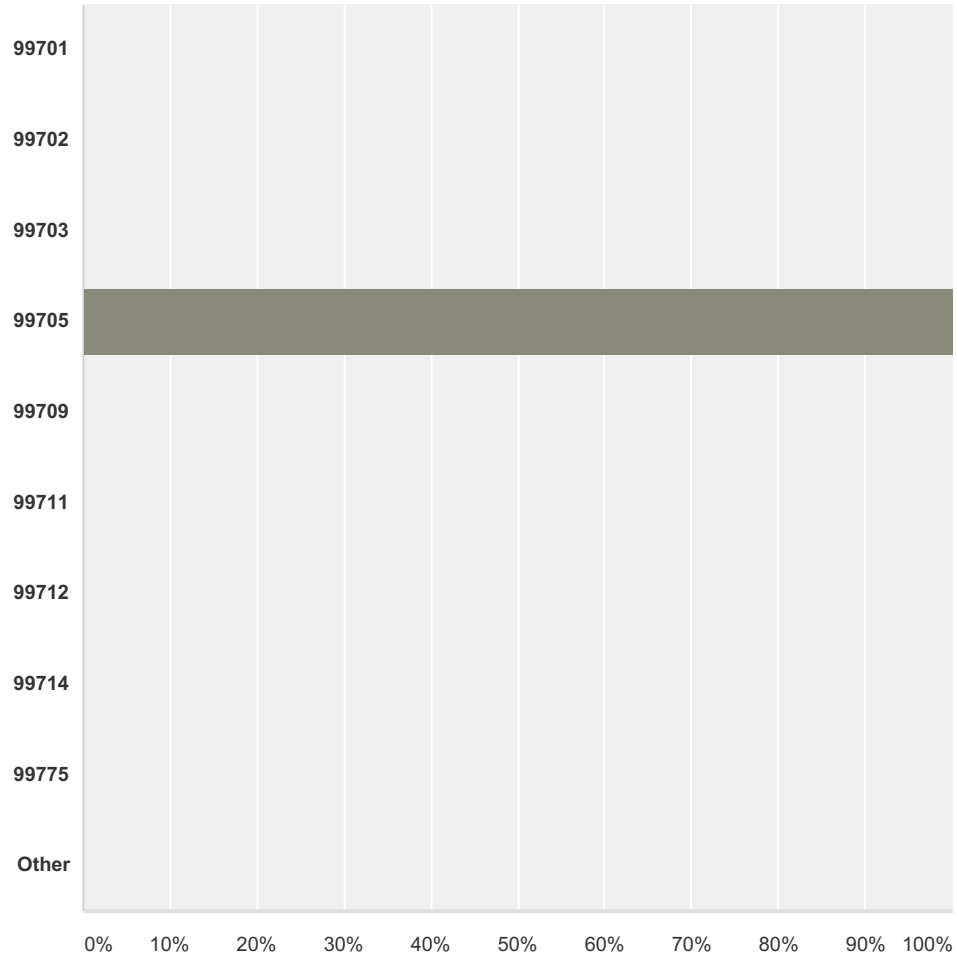
Answered: 15 Skipped: 0



Answer Choices	Responses	
Yes	**100.00%**	15
No	**0.00%**	0
Sometimes	**0.00%**	0
I don’t know	**0.00%**	0
I don’t have a garage	**0.00%**	0
Total		**15**

Q4 What is your zip code?

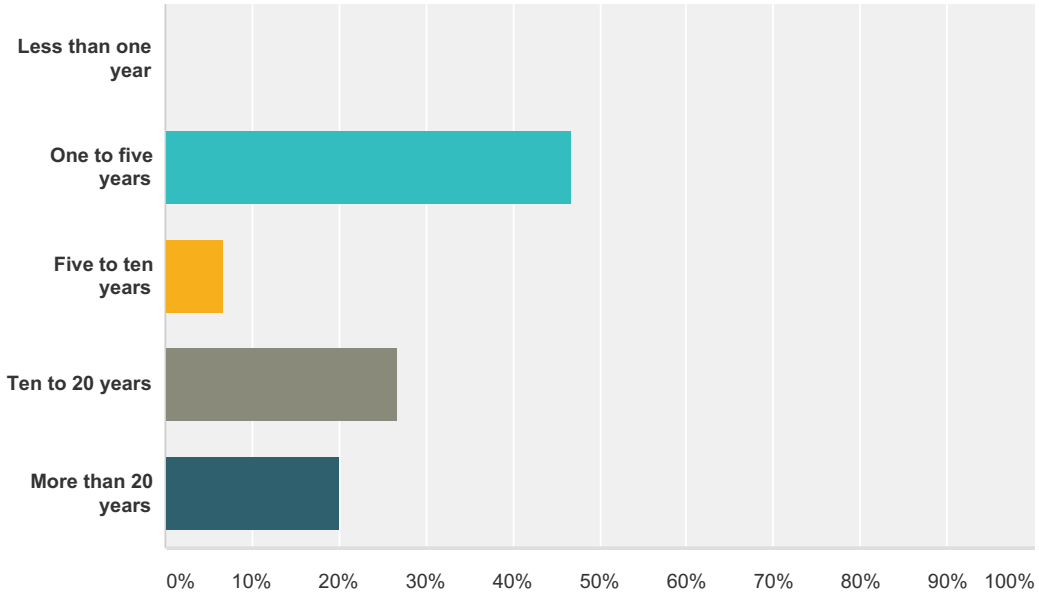
Answered: 15 Skipped: 0



Answer Choices	Responses	
99701	**0.00%**	0
99702	**0.00%**	0
99703	**0.00%**	0
99705	**100.00%**	15
99709	**0.00%**	0
99711	**0.00%**	0
99712	**0.00%**	0
99714	**0.00%**	0
99775	**0.00%**	0
Other	**0.00%**	0
Total		**15**

Q5 How long have you lived in your current home?

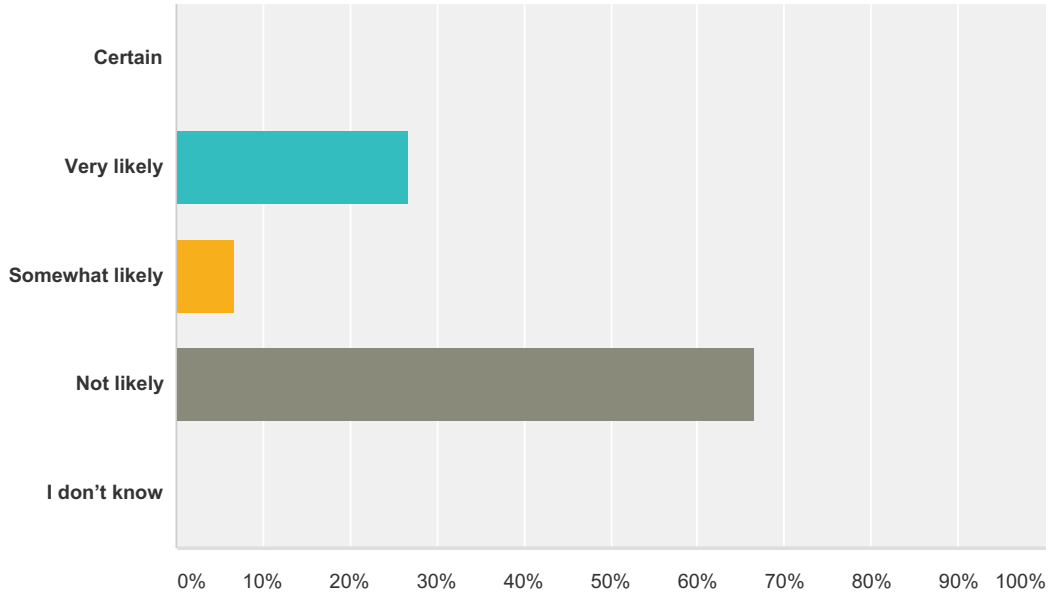
Answered: 15 Skipped: 0



Answer Choices	Responses	
Less than one year	**0.00%**	0
One to five years	**46.67%**	7
Five to ten years	**6.67%**	1
Ten to 20 years	**26.67%**	4
More than 20 years	**20.00%**	3
Total		**15**

Q6 How likely are you to move from your home sometime in the next 5 years?

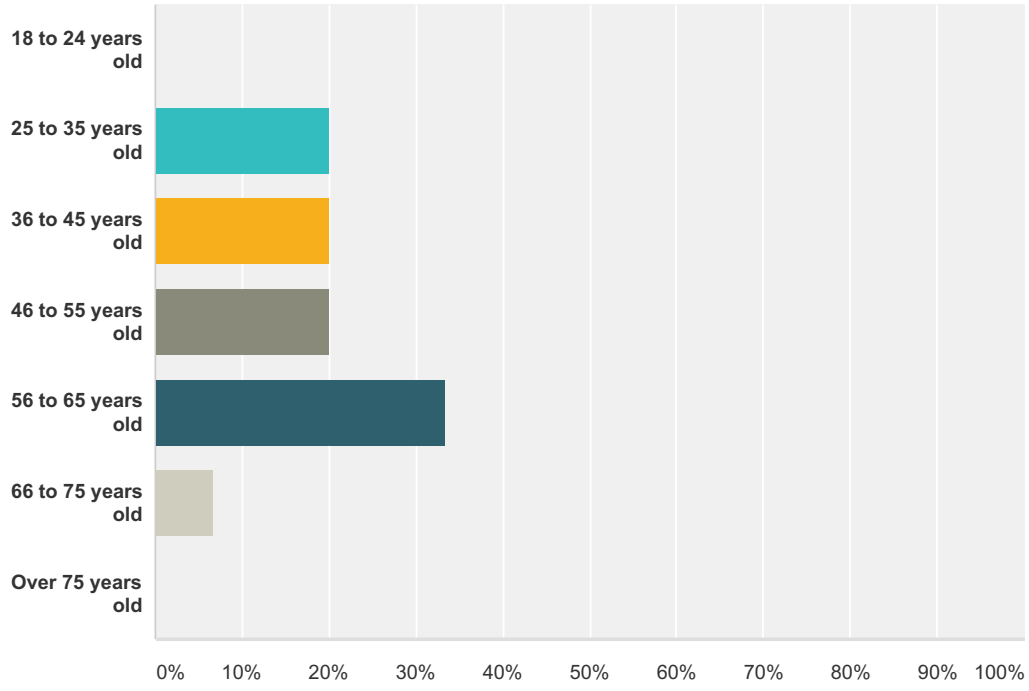
Answered: 15 Skipped: 0



Answer Choices	Responses	
Certain	**0.00%**	0
Very likely	**26.67%**	4
Somewhat likely	**6.67%**	1
Not likely	**66.67%**	10
I don't know	**0.00%**	0
Total		**15**

Q7 How old are you?

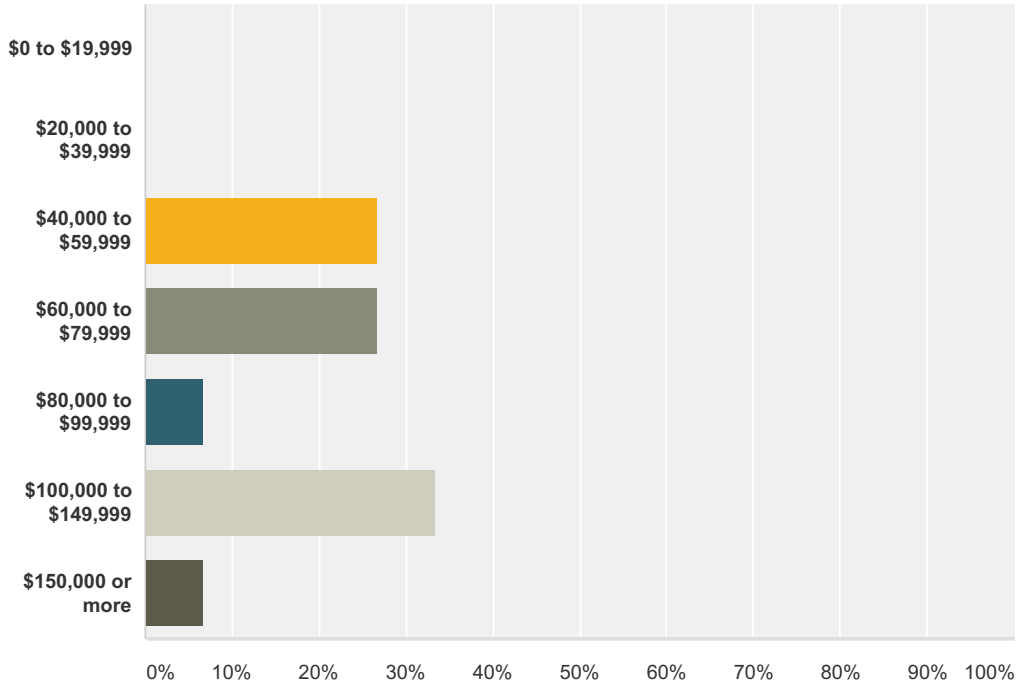
Answered: 15 Skipped: 0



Answer Choices	Responses	
18 to 24 years old	**0.00%**	0
25 to 35 years old	**20.00%**	3
36 to 45 years old	**20.00%**	3
46 to 55 years old	**20.00%**	3
56 to 65 years old	**33.33%**	5
66 to 75 years old	**6.67%**	1
Over 75 years old	**0.00%**	0
Total		**15**

Q8 In which of the broad categories does your total household income fall?

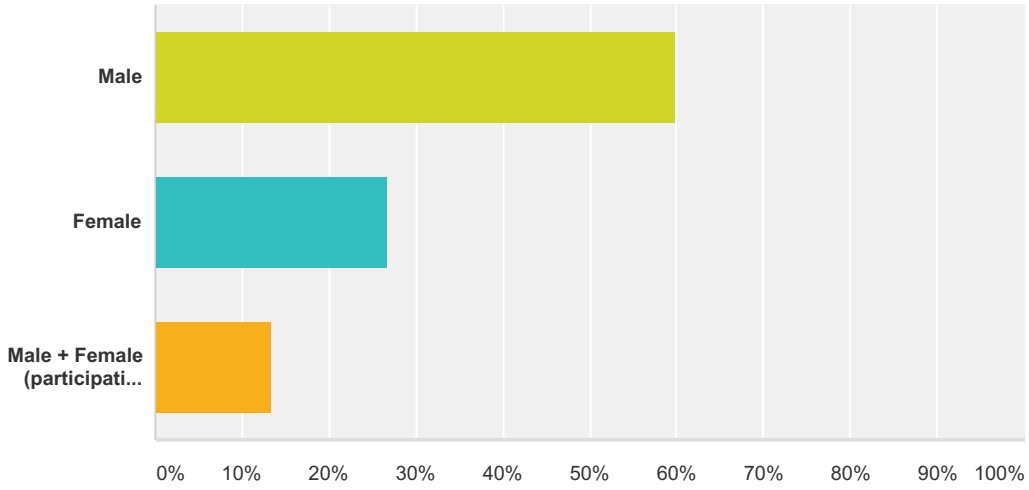
Answered: 15 Skipped: 0



Answer Choices	Responses	
$0 to $19,999	0.00%	0
$20,000 to $39,999	0.00%	0
$40,000 to $59,999	26.67%	4
$60,000 to $79,999	26.67%	4
$80,000 to $99,999	6.67%	1
$100,000 to $149,999	33.33%	5
$150,000 or more	6.67%	1
Total		15

Q9 What is your gender?

Answered: 15 Skipped: 0



Answer Choices	Responses	
Male	**60.00%**	9
Female	**26.67%**	4
Male + Female (participating as a couple)	**13.33%**	2
Total		**15**

Attachment D: IGU Fact Sheet

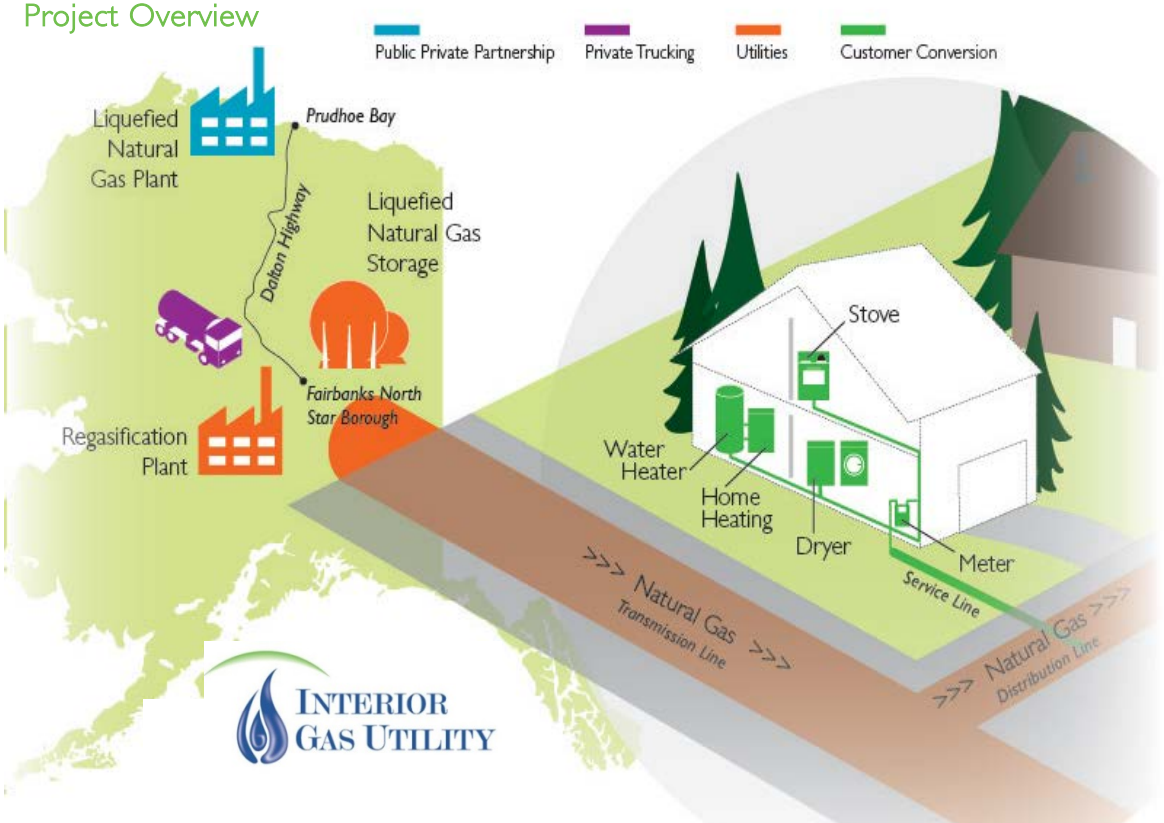
Interior Gas Utility (IGU) Conversion Interviews: Fact Sheet

Terminology	
Boiler for home heating	Heating system that uses hot water to heat your home. Requires baseboards, panel radiators, or radiant floor heat to circulate (see definition of circulation options below). Fuel oil boilers with baseboards are most common in Fairbanks.
Circulation Options for Heat Produced by a Boiler	1. Baseboards. Placed along the floor. Used to circulate water warmed to 180 degrees. Least efficient. Most common in Fairbanks. 2. Panel radiators. European technology. Replaces baseboards and are placed on the wall. Circulates water warmed to 150 to 170 degrees. More efficient than baseboards. Expensive to retrofit homes. 3. In-floor radiant heat. Plastic pipes in floor concrete to circulate water warmed to 140 degrees. Most efficient. Very expensive to retrofit.
Efficiency	The rate of energy use. More efficient uses less energy. Less efficient uses more energy.
Fuel oil	Liquid petroleum product burned in a boiler or furnace and used to heat buildings or water.
Furnace	Type of heating system that blows forced warm air throughout your house. Uses vents to circulate warm air. Less efficient than boilers.
Home heating system	Describes the type of heating system used in your house to keep you warm
Water heater	Device that heats your water. Indirect water heater uses heat from your whole house boiler. Direct water heater has its own boiler to heat the water.

Home Conversion: Things to think about …

- ☐ Does my house use a furnace or a boiler?
- ☐ Can I switch out the gun in my boiler or do I need a new boiler?
- ☐ What type of boiler or furnace do I want? How energy efficient?
- ☐ Should I change out my circulation system?
- ☐ Do I need a new water heater?
- ☐ Will I do the installation or will I hire a contractor? Do I live in the City of Fairbanks and need a permit?
- ☐ Will I replace other appliances, such as a range or dryer?

Project Overview



Options to Pay for Conversion to Natural Gas

#	Option	Description	Examples	Pros	Cons
1	**Pay cash**	Take money out of savings.	Household purchase	• Quick + easy • No appliance requirements	• Requires savings
2	**Consumer loan (market dictates interest rate)**	• Bank loan or credit card • Loan from family or friends	AlaskaUSA Extra Credit Loan	• Simple • Few (if any) requirements on appliances or eligibility • Upfront costs covered	• High interest payments • Credit score can impact eligibility • Loan stays with you if you sell the house
3	**Low Interest On-Bill Pay Financing**	Pre-fixed loan spread across utility bill.	On-bill payment	• Simple • Lower interest than market • Immediate cost savings • Loan stays with the house if you sell the house	• 3-10 year payback • split savings between heating costs and conversion
4	**Direct payments (rebates)**	• Offsets conversion costs • Typically a rebate	AHFC Home Energy Rebate	• No interest expense • Funding to offset homeowner's expense	• Process can be lengthy • Funding provided after installation • AHFC program requires energy efficiency improvements

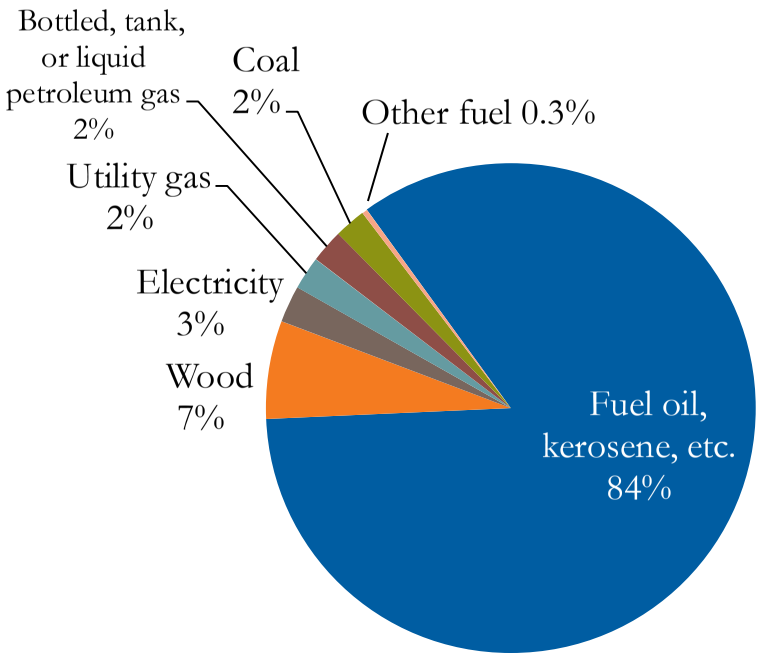
INTERIOR GAS UTILITY

Fuel Oil Costs vs. Natural Gas Costs

Item	Fuel Oil	Natural Gas	Estimated Savings
Per Year	$6,300	$3,300	**$3,000**
Per Month, Winter	$1,000	$500	**$500**
Per Month, Summer	$200	$100	**$100**
Per Month, Average	$525	$275	**$250**

Source:
AIDEA Development Project Financing for a Liquefied Natural Gas Production and Distribution System, from the 28th Legislative Session, 2013
http://www.interiorenergyproject.com/Resources%20and%20Documents/Interior%20Energy%20Plan%20Legislative%20Presentation.pdf

North Pole City: House Heating Fuel



Source: 2008-2012 American Community Survey 5-Year Estimates

Who's Who?

Interior Energy Project (IEP): Interior Energy Project (IEP): Through SB 23, IEP was created to bring natural gas from the North Slope to distribute in the Interior of Alaska. The project is administered by AIDEA and was funded at $332.5 million using SETS loans, grants, and bonds.

Interior Gas Utility (IGU): A public utility installing gas pipelines in the North Pole area. Construction is set to begin in 2015.

Fairbanks Natural Gas (FNG): A private utility company serving approximately 1,100 residents in Fairbanks.

INTERIOR GAS UTILITY

Fairbanks – North Pole Home Heating System Cost Comparison

	Wood (dry)	Oil + Birch (green) (50/50)	Fuel Oil	Natural Gas
Annual heat load for home (Btus)	*190 million*	*190 million*	*190 million*	*190 million*
Btu Per Fuel Unit (Gallon, Cord, Mcf)[1]	20.9 million[5]	134,000 and 23.6 million [6]	134,000	1 million
Heating System Efficiency [2, 3, 3]	67.5%	90% and 67.5%	90%	90%
Cost per fuel unit (Gallon, Cord, Mcf)	$375[7]	$4.00 and $250	$4.00	$14.00 - $17.00
Average annual home heating costs	**$5,063**	**$4,642**	**$6,302**	**$2,956 - $3,589**

Sources and notes:

1 University of Alaska Fairbanks, Cooperative Extension Service, Wood Energy Content, Website (http://alaskawoodheating.com/energy_content.php) 2 AkWarm Software, Available at (http://www.analysisnorth.com/AkWarm/AkWarm2download.html) accessed October 14, 2013.

3 Assumes condensing oil and natural gas boiler

4 Assumes the average efficiency between a catalytic (72%)and non-catalytic woodstove (63%)

5 Assumes a 50/50 mix of dry spruce and dry birch.

6 Assumes green wood is cured for an extended period (less than a year) to achieve a moisture content of 20%

7 Average price for a dry cord of spruce and birch, $300 and $450 per cord, respectively.

INTERIOR GAS UTILITY

IGU Conversion Research
North Pole Homeowner Discussion Questions
August 20-22, 2014

General Knowledge + Impressions

1. In your opinion, what is needed to address the local energy crisis?

    a. What are some potential solutions for meeting energy demands and/or lowering the cost of energy?

2. What do you know about current efforts to bring natural gas to North Pole and surrounding areas?

    a. What do you know about the entities that are working to bring natural gas to North Pole?

        - What is your impression of those entities?

Your House + How You Use Energy

3. What is your primary heating system?

    a. Does your home primary system provide heat only, or does it also provide hot water for your home?

    b. What is your secondary heating system?

4. What is the brand, model and year of your home heating system?

5. What is your primary fuel heating source?

    a. How much do your pay for your primary fuel source a year?

    b. What is your secondary fuel heating source?

    c. How much do your pay for your secondary system a year?

6. How much do you typically pay for heating per month in the summer, in the winter, and on average?

7. Who and what influences your home heating decisions?

   a. If natural gas were available today, would you be likely to convert to natural gas?

   b. If yes, why and how quickly?

   c. If no, why? For you, what would be the biggest obstacles to converting?

8. What kind of information do you need/would be helpful for you to know before making that decision?

Conversion Options

9. What type of conversation do you think you will need?

10. How much do you believe it is going to cost you to convert? Do you believe you will be able to afford it?

11. Are you saving for home energy upgrades, or conversion to natural gas right now? If there was a savings program, would you participate?

12. Which of your home appliances would you expect to convert to natural gas?

13. What would be the easiest way for you to convert your home to natural gas?

14. How would you prefer to pay for conversion?

   a. Which are the **most** desirable? Why?

   b. Which are the **least** desirable? Why?

15. Are there other incentives that we haven't covered that would increase the likelihood you would convert?

   a. If yes, what are they?

16. What would the ideal incentive program look like? What aspects of an incentive program are the most important to you?

17. Given the information I have just shared and our discussion, does that change your decision to convert/not convert?

   a. If yes, why and how quickly?

   b. If no, why?

18. Have you participated in any energy-related programs?

   a. If yes:
      - What was that experience like?
      - Were there specific things you liked/disliked about that/those program(s)?

   b. If no, is there a specific reason why you haven't participated?

Demographic Information (9 questions)

Wrap-Up

Attachment F: Detailed Interview Notes

IGU Conversion Research
North Pole Homeowner:
Occupation: (male) unemployed public safety dispatcher; (female) cashier at the Ft. Wainwright commissary **Date:** August 20, 2014

General Knowledge + Impressions

1. In your opinion, what is needed to address the local energy crisis?
   a. What are some potential solutions for meeting energy demands and/or lowering the cost of energy?
      - If people move to natural gas, and there is more demand, the prices will go up.
      - If we opened ANWR for drilling, that would lower cost to pre-2005 numbers. It would also lower the cost of our electric bill. Half of our current electric bill from GVEA is a fuel charge for diesel fuel used to generate the power that GVEA provides.
      - We need to tap into other resources to lower prices.

2. What do you know about current efforts to bring natural gas to North Pole and surrounding areas?
   a. What do you know about the entities that are working to bring natural gas to North Pole? What is your impression of those entities?
      - Someone needs to straighten out the information. What is being shared now is confusing. We are not sure who is doing what – who are these companies?
      - I (female) have been hearing both favorable and unfavorable things about current efforts.
      - I (male) don't think they are doing enough to get the natural gas out here. IGU's recent efforts and this level of activity are encouraging.
      - Like the Usibelli Coal Mines, however, IGU and others that are trying to natural gas to Alaskans, there are people out there that are throwing up road blocks to this kind of development. A good example of this is GVEA's recent coal proposal. There are too many governmental road blocks.
      - But, natural gas is a really good idea. We want to see it happen.

Your House + How You Use Energy

3. What is your primary heating system?
      - Boiler/hot water baseboard.

   a. Does your home primary system provide heat only, or does it also provide hot water for your home?
      - Provides hot water.

   b. What is your secondary heating system?
      - None.

4. What is the brand, model and year of your home heating system?
      - Burnham, 2003.
      - We bought a new build house that was about 98 percent complete in 2005. The boiler was a couple of years old.
      - Our home is rated as a 5-star home.
      - Right now, we have some strange vents that need to be replaced.

5. What is your primary fuel heating source?
      - Fuel oil.

   a. How much do your pay for your primary fuel source a year?
      - $4,090. We also pay for diesel fuel on our electric bill every month. Half of our electric bill (showed me a copy of the bill) is for diesel fuel that helps to generate the electricity. Our bill is normally about $100. Half of that ($50) is for the diesel fuel.

   b. What is your secondary fuel heating source?
      - N/A

   c. How much do your pay for your secondary system a year?
      - N/A

6. How much do you typically pay for heating per month in the summer, in the winter, and on average?
      - $340/month average

7. Who and what influences your home heating decisions?
    - The price tag. At the time, that is why we went with Sourdough Fuel – they were the best deal at the time.

    a. If natural gas were available today, would you be likely to convert to natural gas?
        - Yes, I would. Most of what is produced in the state should come to Alaskans first, and then go out of the state. We shouldn't have to pay big shipping bills – it's here.

    b. If yes, why and how quickly?
        - Depends on our finances. If the money is available, like the option #2 (bill pay) on this fact sheet, we would be interested immediately. Option #3 (rebate) would also be interesting, but we wouldn't have the upfront money.

    c. If no, why? For you, what would be the biggest obstacles to converting? N/A

8. What kind of information do you need/would be helpful for you to know before making that decision?
    - What will be available in the form of financial packages.

Conversion Options

9. What type of conversation do you think you will need?
    - We have a newer boiler, so it would most likely be a simple upgrade of a part. We would also want to upgrade some appliances.

10. How much do you believe it is going to cost you to convert? Do you believe you will be able to afford it?
    - I'm not sure.

11. Are you saving for home energy upgrades, or conversion to natural gas right now? If there was a savings program, would you participate?
    - We have a newer boiler, so it would most likely be a simple upgrade of a part. We would also want to upgrade some appliances.

12. Which of your home appliances would you expect to convert to natural gas?
    - We would definitely want to convert our stove and water heater, and maybe our drier last.

13. What would be the easiest way for you to convert your home to natural gas?
    - See above and below.

14. How would you prefer to pay for conversion?
    - We have been trying to work ourselves out of a difficult financial situation and get our credit score up. So, not sure what interest rate would look like for us right now, or if we could even qualify for a consumer loan. That's why the low interest loan via bill pay would be the best option for us.

15. Are there other incentives that we haven't covered that would increase the likelihood you would convert? No.

16. What would the ideal incentive program look like? What aspects of an incentive program are the most important to you?
    - We think offering the cheapest conversion possible, offering the most annual savings and providing upfront funding.

17. Given the information I have just shared and our discussion, does that change your decision to convert/not convert? N/A

18. Have you participated in any energy-related programs?
    - We have not.

    a. If yes:
        - What was that experience like?
        - Were there specific things you liked/disliked about that/those program(s)?

    b. If no, is there a specific reason why you haven't participated? We just weren't interested.

IGU Conversion Research
North Pole Homeowner:
Occupation: Unknown
Date: August 20, 2014

General Knowledge + Impressions

1. In your opinion, what is needed to address the local energy crisis?
   a. What are some potential solutions for meeting energy demands and/or lowering the cost of energy?
      - We just need more options. If we have more options, the overall price will go down.
      - Getting rid of coal and other energy sources is not the way to go. Relying on one energy source, in this case it would be natural gas, is not the way to go.
      - I'm a free market kind of guy.

2. What do you know about current efforts to bring natural gas to North Pole and surrounding areas?

   a. What do you know about the entities that are working to bring natural gas to North Pole? What is your impression of those entities?
      - I've been in the Interior for two years.
      - I said something at work about natural gas coming to North Pole and people just laughed at me. They said they'd heard that two million times before.
      - People have gotten excited before and then they are disappointed when someone from the state, local government it can't happen for a whole bunch of reasons that don't make sense.
      - But then, we see the actual build-out from the IGU maps and we have started to become more confident in this happening.
      - Still, I know very little about the company that's doing these. I think it's a quasi-government group, but what is their structure? I think it should be totally privatized.
      - It does seem like they are making an effort to keep the costs downs and make gas available to as many people as possible.
      - I haven't seen any definite numbers re: what I'll save, much it will cost.
      - I did briefly look at the IGU website and I have heard that I could see a return on my investment within two years.

Your House + How You Use Energy

3. What is your primary heating system?
      - Now, it's wood pellet stove. My house was originally designed as fuel oil (boiler) primary and woodstove secondary, but I have changed that.

   a. Does your home primary system provide heat only, or does it also provide hot water for your home?
      - Heat only. See below for information on hot water heater.

   b. What is your secondary heating system?
      - We use the boiler as a secondary heating system. It heats the kids' bedrooms downstairs at night, and also heats our hot water.

4. What is the brand, model and year of your home heating system?
      - System 2000 (purchased in 2010). Got at the Home Show.

5. What is your primary fuel heating source?
      - Wood pellets.

   a. How much do your pay for your primary fuel source a year?
      - When I first moved up here, people told me I would be paying $6,000/year. Other friends were paying $1,000/month.
      - After changing out our woodstove to an energy efficient wood pellet stove, we cut our fuel bill in half. We are now using about 350 gallons a year, paying about $1,300. I have some friends that are paying that much for fuel oil in one month, especially during the winter months.
      - We changed to the wood pellet stove this last year, so I only have one year's worth of information, plus we had a mild winter. We used approximately three tons of wood pellets this last year. That costs us right around $1,400.
      - That's about $3,000/year total for my home heating systems. That's half of what I was told I'd be paying when I moved here.

   b. What is your secondary fuel heating source?

- See above.

c. How much do your pay for your secondary system a year?
   - See above.

6. How much do you typically pay for heating per month in the summer, in the winter, and on average?
   - There's really no variation.

7. Who and what influences your home heating decisions?
   - We went with Polar Fuel for our fuel oil because they had an auto bill pay option and I got bonus miles with AK Airlines when for using them. So, I could rack up miles with the charge and bonus miles.

   a. If natural gas were available today, would you be likely to convert to natural gas?
      - I would have to do the analysis to see if I would really save by converting.
      - I would need to look at the cost for converting my oil-fired boiler to a gas-fired boiler.
      - I looked up the manufacturer of my unit online. Looks like it would be a simple replacement of a fire unit, at around $200. That, plus, labor, at another $200. So, about $400 for the heating system.

   b. If yes, why and how quickly? See above.

   c. If no, why? For you, what would be the biggest obstacles to converting?
      - See above.

8. What kind of information do you need/would be helpful for you to know before making that decision?
   - I want someone to show me that I'll be able to recoup my costs within no more than five years. I'm not planning on being here in 15 years. Once the kids are grown up, we'll leave. I don't want to still be paying for the conversion at that time.
   - I'm a big efficiency guy. I want something that's going to be more energy efficient than what I have, versus just the cost savings piece. That's important, but how are we being more efficient is equally important. My pellet stove right now is at 96 percent efficiency. My System 2000 is also super-efficient. What is the price per BTU for oil versus gas?
   - Also, I think people will want to have multiple systems in place, just in case one system fails. How will that work?
   - I need more information in general. I'm not an impulse buyer. I like to do my research.

Conversion Options

9. What type of conversation do you think you will need?
   - The fire unit I mentioned before for my boiler, and, I would prefer a gas stove. I would probably also get a new dryer.

10. How much do you believe it is going to cost you to convert? Do you believe you will be able to afford it?
    - I feel like the biggest cost will be trenching down my driveway, installing the service line and repaving my driveway. I anticipate that costing around $15,000.
    - There will also be the cost to remove the old oil tanks. Not sure how much that would be.
    - So, it would be the cost of the fire unit ($400), the new gas stove ($1,500), new dryer ($1,000), don't know how much that would be, and the external things for the service line ($15,000) and removing old tanks. So, definitely over $15,000.
    - The good thing, too, this would increase the value of our home, would make it more appealing for buyers.

11. Are you saving for home energy upgrades, or conversion to natural gas right now? If there was a savings program, would you participate?
    - No.

12. Which of your home appliances would you expect to convert to natural gas?
    - See above.

13. What would be the easiest way for you to convert your home to natural gas?
    - See above.

14. How would you prefer to pay for conversion?

- The way they did this back home (Michigan), was to do a bond for the whole area to enhance the public water system. The cost of paying back that bond was rolled into everyone's utility bill. The cost that people were paying back on was the infrastructure cost. Then, if someone wanted to tap into the new system, they paid a flat rate of $1,500. There was also a service line charge, home to street, of $7/foot.
- I would rather not tap into my savings and other resources to do this. If the Borough is serious, they will absorb most of the costs. They need to invest, not the individual property owner.
- If I had to lay down my own money, I would do everything in stages. I don't need everything today – the stove, the dryer could wait.

15. Are there other incentives that we haven't covered that would increase the likelihood you would convert? N/A

16. What would the ideal incentive program look like? What aspects of an incentive program are the most important to you?
    - Getting the most people converted, offering the cheapest conversion possible, and providing upfront funding.

17. Given the information I have just shared and our discussion, does that change your decision to convert/not convert?

    a. If yes, why and how quickly?
    - Yes, but I would do it in stages, starting with switching my boiler system and then eventually my appliances as my old ones breakdown. The biggest factor is cost and having reassurance that this will be cost effective in the long run.
    - Remodeling, drilling, retro-fitting my home to accommodate natural gas. These are the things that make me hesitant. Retrofit is pricier than new construction.
    - I'll be thinking about questions like – how long will it take an excavator to get out to our house. They're already stretched thin, and they can only operate in certain seasons. Will there be a giant backlog of folks waiting for their service lines to be put in? That doesn't appeal to me.

    b. If no, why? N/A

18. Have you participated in any energy-related programs?
    - Yes. We did the FNSB woodstove change-out program. We got about $3,000 for our old stove and used that to pay for our $4,000 wood pellet stove. It was a great deal. Plus, they sent me a $500 voucher for pellets at Superior. I was stunned – FNSB is buying pellets for me!
    - I wanted to participate in the AHFC Energy Program, but the previous homeowner did something with them back in 2008.

    a. If yes: See above.
        - What was that experience like?
        - Were there specific things you liked/disliked about that/those program(s)?

    b. If no, is there a specific reason why you haven't participated? See above.

Other

- Home was built in 1984, but everything has been remodeled.
- Address – Phase 1; we live on Granite, over by the flood project.
- I'm not a fan of town hall meetings. We wait hours to hear what we want to hear and then the loudest voice in the room gets the most attention.

IGU Conversion Research
North Pole Homeowner:
Occupation: Retired
Date: August 20, 2014

General Knowledge + Impressions

1. In your opinion, what is needed to address the local energy crisis?
   a. What are some potential solutions for meeting energy demands and/or lowering the cost of energy?
      - Natural gas would be a big help.
      - We also need more regulation on the electric company, and maybe natural gas would help bring those costs down, too. Right now, what we're paying in gas on our electric bill is outrageous. Could natural gas replace that diesel fuel cost?
      - The Regulatory Commission lets GVEA get away with everything. We have to pay the fuel costs while their president makes $7,000/month.
      - Eva Creek is a joke. They refused to sign on to the Delta project.
      - Solar would be great, but we ain't there with the technology yet.
      - Gas infrastructure is not there yet. I'm not convinced there not gonna just bypass Fairbanks altogether. Is there really a plant going in at North Pole? Or, are they gonna reopen that plant they closed on Kenai?

2. What do you know about current efforts to bring natural gas to North Pole and surrounding areas?
   a. What do you know about the entities that are working to bring natural gas to North Pole? What is your impression of those entities?
      - I just can't help but wonder, is it even coming here?
      - Some days you here that the "Big 3" are working they're deal to get a natural gas line in.
      - I heard one story about them going through Minto, and then bypassing Fairbanks.
      - They've been talking about this for five years, and the people in charge keep changing.
      - I don't think I'm the only one that's confused about who is charge.
      - Is it ever really gonna happen?
      - Most people will say dream on.
      - Isn't the governor also working on some deal? Didn't he sign off on something recently related to natural gas?
      - Who is in control of this mess?
      - Are they still gonna truck it down, or are we building a pipeline? How will one affect the other?
      - I've not heard of the phases of this project at all.
      - I have also heard that we're (our state government) is more interested in exporting natural gas than they are in getting it to AK residents.
      - It does seem like trucking is the best, most speedy option.

Your House + How You Use Energy

3. What is your primary heating system?
      - Furnace with forced air. Although, last year, we used to the wood stove more than the furnace.

   a. Does your home primary system provide heat only, or does it also provide hot water for your home?
      - Heat only.
      - Our water heater is propane run. It has a pilot light, like our heating system. They're both "on demand" systems. We cut down on costs by a couple hundred bucks by doing that alone.

   b. What is your secondary heating system?
      - Wood stove.

4. What is the brand, model and year of your home heating system?
      - Lennox. 2012. It's very high efficiency. Just before I bought it, the people that owned the house put in a brand new Altrol furnace, but they didn't get a maintenance contract with it.

5. What is your primary fuel heating source?
      - Fuel oil, backed with wood. But again, last year I used more wood than heating oil. I have my own supply of wood. I've got a second piece of property that I harvest wood from. Got about 5-10 years of trees left on that property. That property is out behind Fort Wainwright.

   a. How much do your pay for your primary fuel source a year?
      - About $2,400/year, but I did cut that number down a little by using more wood. I usually get my tank filled twice in a year. It's about a 300 gallon tank.

b. What is your secondary fuel heating source?
   - See above.

c. How much do your pay for your secondary system a year?
   - See above.

6. How much do you typically pay for heating per month in the summer, in the winter, and on average?
   - It definitely varies between seasons. I end up running the furnace longer in the winter/spring months, but even then, I can keep the furnace down around 50 degrees.

7. Who and what influences your home heating decisions?
   - For my heating fuel, I went with Sourdough because they gave me a military discount. I think it was right around 10 percent. Another company that has a yellow truck was and is always higher.
   - For propane, I am paying $7/gallon, but, I won't have that company that much longer. They're just expensive. Also, you have to rent the tank from the propane company. It's $55/year. That cost is about the same between the three companies that do propane.
   - I'd also like know what the deal is with the pipeline thing. Would that bring our costs down, or what? With what IGU is talking about, that seems like a competing proposition. Is it one or the other?
   - Seems to me like there are three or four entities that are competing and none of them is really doing anything. At the same time, I know they're just burning the stuff off at Deadhorse.
   - Also, what will the service line look like? Will they have spurs going to different sections of the community?

a. If natural gas were available today, would you be likely to convert to natural gas?
   - I think definitely. Within six months. Last year, there were a bunch of natural gas appliances available that would have made it easier to make the transition. People were really thinking natural gas was on its way here.

b. If yes, why and how quickly? See above.

8. What kind of information do you need/would be helpful for you to know before making that decision? See above and below.

Conversion Options

9. What type of conversation do you think you will need?
   - Not a lot – Right now, I've got a propane stove, water heater and dryer. I also have the part for the stove that came with it that would make the conversion to natural gas easy. Also, I would need about 200 foot of line from the road. That stuff is cheap and easy to get.
   - I would probably need a new furnace, too. Don't think mine converts to natural gas.
   - I also have a new fridge that's way ahead of its time. It's got a great energy rating.

10. How much do you believe it is going to cost you to convert? Do you believe you will be able to afford it?
   - I would guess somewhere around $3,000-$4,000 for the service line, fittings for my propane appliances and the new furnace.
   - I could also do the connections myself to bring the costs down.

11. Are you saving for home energy upgrades, or conversion to natural gas right now? If there was a savings program, would you participate?
   - No.

12. Which of your home appliances would you expect to convert to natural gas?
   - See above.

13. What would be the easiest way for you to convert your home to natural gas?
   - Have an installer, or have an installer program for residents.
   - It would be great to have a subcontractor come out and do connections, and then have some cheaper, easier way of having furnaces available.
   - Making some kind of easy install package would be the most efficient, and then, if people do the finance thing, tying it altogether so that it's one easy transaction.
   - You would be in business in no time if you made it easy for folks. Convert to gas? Call us!
   - For the financing, it would be good if you presented it so that it shows people they only have to pay an extra $100/month, or something like that to finance their new system. And, how long it will take to pay off on that investment.

14. How would you prefer to pay for conversion?
    - Most appealing for me is the cash option, but I would have to draw the line at $6,000 - $7,000. After that, I would need to borrow money.
    - You could really appeal to folks if this happened around dividend time in October.
    - Some people might also qualify for a low interest construction loan.
    - And, even better, if SBS ordered a bunch of these appliances and heating systems in bulk, we could get the prices down.
    - The energy program sounds like a good option. I've never used that, but we did do the audit. That could be the backup, or used in combination with the other options.
    - You can be thrifty and find appliances at a cheaper rate. Like I said, last year, when people were really talking a lot and getting excited about the trucking business, local distributors were buying up and selling natural gas appliances. They were cheaper.
    - I am willing to pay more up front if it will pay off in the long run.

15. Are there other incentives that we haven't covered that would increase the likelihood you would convert? N/A

    a. If yes, what are they?

16. What would the ideal incentive program look like? What aspects of an incentive program are the most important to you? N/A

17. Given the information I have just shared and our discussion, does that change your decision to convert/not convert? N/A

18. Have you participated in any energy-related programs? See above.

    a. If yes: See above.
        - What was that experience like?
        - Were there specific things you liked/disliked about that/those program(s)?

    b. If no, is there a specific reason why you haven't participated? See above.

Other

- Home was built in 1984, but everything has been remodeled.
- Not likely to move. Kids don't want to change schools. We have the best schools out here. I have a special needs child at Badger Road Elementary and those teachers are amazing.
- Address – Phase 1

IGU Conversion Research
North Pole Homeowner:
Occupation: Unknown
Date: August 20, 2014

General Knowledge + Impressions

1. In your opinion, what is needed to address the local energy crisis?
   a. What are some potential solutions for meeting energy demands and/or lowering the cost of energy?
      - Insulation upgrades would be most beneficial for a lot of people.
      - We had an addition put on 12 years ago that had thicker walls. We also put more insulation in our attic, but 2/3 of our house is still 2 x 4.
      - For bigger solutions, aren't they finding natural gas down by Nenana? They're so close.
      - I've also heard something about a potential project by Minto, but not so sure about that, the environment around there and the potential impact.

2. What do you know about current efforts to bring natural gas to North Pole and surrounding areas?
   a. What do you know about the entities that are working to bring natural gas to North Pole? What is your impression of those entities?
      - We have a dedicated utility now. We have a plan.
      - I believe I am in Phase 2. I live between Nordale and Bradway on the slough.
      - The utility was just decided on late last/early this year.
      - They have the phases laid out – including when and where.
      - It seems like things are progressing. They've got a good start, but construction could bring potential snags.
      - I get most of my information about the project from the Anchorage Daily News website.
      - I was in favor of IGU getting the contract. Seems like the existing utility (FNG) was elitist. They picked the center of town to do their project. They're also a combination of commercial and people from out of state that don't have the people's best interest in mind.
      - Overall, it sounds like there's some thinking going on and that's really encouraging.

Your House + How You Use Energy

3. What is your primary heating system?
      - Boiler.

   a. Does your home primary system provide heat only, or does it also provide hot water for your home?
      - Also provides hot water.

   b. What is your secondary heating system?
      - None.

4. What is the brand, model and year of your home heating system?
      - Buderus G115WS/5. 2012. I called our boiler guy. It can be converted to natural gas. It would take a $1,700 fire unit. Out of pocket, this same new boiler with natural gas would cost around $20,000.

5. What is your primary fuel heating source?
      - Fuel oil, backed with wood. But again, last year I used more wood than heating oil. I have my own supply of wood. I've got a second piece of property that I harvest wood from. Got about 5-10 years of trees left on that property. That property is out behind Fort Wainwright.

   a. How much do your pay for your primary fuel source a year?
      - About $4,000 - $5,000/year. We get our fuel tank topped off right around 4 to 5 times a year. We have a 500 gallon tank.

   b. What is your secondary fuel heating source?
      - N/A

   c. How much do your pay for your secondary system a year?
      - N/A

6. How much do you typically pay for heating per month in the summer, in the winter, and on average?

7. Who and what influences your home heating decisions?

- We went with Sourdough Fuel for fuel oil because they absorbed the prior company we were using. They also give discounts to university employees.
- Errol Fuel is another company in town.
- I haven't done any real research to see if it would be cheaper for me to go with another company.

a. If natural gas were available today, would you be likely to convert to natural gas?
   - Yes. The timing would depend on how quickly we could get a contractor out to our house to make the conversions and do the related work. Cost would not be a factor for us.
   - What type of line would we be looking at? That would also be a factor in the timing. Would it be a 1/2" or 5/8" pipe?
   - We do have an existing propane line at our place. The pipe indoors is ½" and then transitions to a ¾" outside.
   - We used to have a propane hot water heater.
   - So, we already have a buried gas line outside. Would that decrease our costs and also expedite getting our home connected to natural gas?
   - I understand what's needed pretty well. I have a new boiler that will last a long time with the natural gas upgrade. We're all set. My wife would be really happy.

b. If yes, why and how quickly? See above.

c. If no, why? For you, what would be the biggest obstacles to converting?

8. What kind of information do you need/would be helpful for you to know before making that decision?
   - I would be curious to know the differences, efficiencies between them, including the advantage of having baseboard versus radiant heating. I hear a lot about the System 2000 systems. What is the difference between these and the Buderas I just purchased.

Conversion Options

9. What type of conversation do you think you will need?
   - See above and below.

10. How much do you believe it is going to cost you to convert? Do you believe you will be able to afford it?
    - Not really sure. Mostly, it would just be the fire unit on the boiler, around $1,700. And, maybe we would have to pay something for the service line?

11. Are you saving for home energy upgrades, or conversion to natural gas right now? If there was a savings program, would you participate?
    - No.

12. Which of your home appliances would you expect to convert to natural gas?
    - We would do the fire unit on our new boiler first. The appliances would come later as we need new ones.

13. What would be the easiest way for you to convert your home to natural gas? N/A

14. How would you prefer to pay for conversion?
    - We would definitely prefer to pay cash. The idea is to save money, not to rack up debt. But, above $5,000, we might have to think about getting a loan. We have an excellent credit rating, somewhere in the 750-760 range.
    - And on the loan, I would just have to go with the better deal – loan vs. loan.
    - If we could pay back what we owed within two years, like around the $6,000 range, we would be doing really well.

15. Are there other incentives that we haven't covered that would increase the likelihood you would convert? N/A

    a. If yes, what are they?

16. What would the ideal incentive program look like? What aspects of an incentive program are the most important to you? N/A

17. Given the information I have just shared and our discussion, does that change your decision to convert/not convert? N/A

18. Have you participated in any energy-related programs?
    - No, but I've heard about the utility one, and then the audit. I'm afraid of what the outcome would be for our house and what they would say we need to do. I know for sure that we need to put some foam in the cracks of our windows to get them to seal. We keep our temperature down at 66 and we recently got insulated window shades.

    a. If yes: See above.
        - What was that experience like?
        - Were there specific things you liked/disliked about that/those program(s)?

    b. If no, is there a specific reason why you haven't participated? See above.

Other

- Been in current home since November 1978.
- It is definitely not on our radar to move within the next five years.
- Address – Phase 2

IGU Conversion Research
North Pole Homeowner: (was 40 minutes late to the interview, so we only talked for 20 minutes)
Occupation: Nurse
Date: August 20, 2014

General Knowledge + Impressions

1. In your opinion, what is needed to address the local energy crisis?
   a. What are some potential solutions for meeting energy demands and/or lowering the cost of energy?
      - I would love to have natural gas. One of my friends moved to Anchorage and will never come back because of that.

2. What do you know about current efforts to bring natural gas to North Pole and surrounding areas?
   a. What do you know about the entities that are working to bring natural gas to North Pole? What is your impression of those entities?
      - I haven't heard anything about this project or IGU.
      - I have very little knowledge about current events. I'm a nurse and I work nights. I can't make evening meetings.

Your House + How You Use Energy

3. What is your primary heating system?
      - We bought a new boiler in 2009, but we've been using primarily wood. Last year, we did the woodstove change-out program. When they (the fuel company) came to refuel, they thought they made a mistake. They only had to put in 90 gallons.
      - We have a blow heater in the garage.
      - We also have a propane stove that could easily be switched to natural gas.

   a. Does your home primary system provide heat only, or does it also provide hot water for your home?
      - Hot water, too.

   b. What is your secondary heating system?
      - Was woodstove, now wood stove is our primary heating system (see above). We used the FNSB woodstove change-out program to buy a new stove. Most of that was covered. It was $3,000. What we didn't realize was that reimbursement that we got for the stove was taxable income. That was a little alarming when we did our taxes.

4. What is the brand, model and year of your home heating system?
      - Not sure.

5. What is your primary fuel heating source?
      - Was fuel oil, now it's wood.

   a. How much do your pay for your primary fuel source a year?
      - We just bought some wood. Five cords of birch was $900. It was logs. We have to split it. That should last us through the winter. The summer before, we spent the summer cutting wood ourselves.

   b. What is your secondary fuel heating source?
      - We are paying about $1,200 a year for fuel oil now. It's highest in the winter months.

   c. How much do your pay for your secondary system a year?
      - See above.

6. How much do you typically pay for heating per month in the summer, in the winter, and on average?
      - We usually pay a little more in the winter months for fuel oil. We're using more to supplement the wood.

7. Who and what influences your home heating decisions?

   a. If natural gas were available today, would you be likely to convert to natural gas?
      - I might, but I would want to know first if my boiler was convertible to natural gas. If my boiler was convertible, I would definitely consider it.

- Our new boiler cost us around $5,400. My uncle knew the distributor, and also helped install it. My husband helped, too.

b. If yes, why and how quickly? See above.

c. If no, why? For you, what would be the biggest obstacles to converting? See above.

8. What kind of information do you need/would be helpful for you to know before making that decision?
   - Right now, I get most of my information on talk radio, so maybe doing some educational pieces on talk radio would be helpful.
   - Also, again, I would want to know the costs.

Conversion Options

9. What type of conversation do you think you will need?
   - It really depends on my boiler.

10. How much do you believe it is going to cost you to convert? Do you believe you will be able to afford it?
    - Really not sure. Again, depends on what I need to do with my boiler. If I have to replace that, it will obviously be a lot more expensive.

11. Are you saving for home energy upgrades, or conversion to natural gas right now? If there was a savings program, would you participate?
    - No, but maybe we could start putting some money into savings, like $200/paycheck. It's hard to say. My husband just got a job, but he's making $1,000 less a month than me. We have a lot of bills to pay.
    - We are also getting killed by our electric bill. GVEA is crazy expensive. Why hasn't GVEA swapped to a less expensive fuel (over diesel).

12. Which of your home appliances would you expect to convert to natural gas?
    - Boiler, as needed.
    - Stove.

13. What would be the easiest way for you to convert your home to natural gas? See below.

14. How would you prefer to pay for conversion?
    - The lowest interest rate option would be the best, but we would also need to pay off our credit card first. We've gotten in a little deep with our credit cards.
    - I would also not want to be in the hole for very long.
    - If I saw a monthly, and then definitely a yearly decrease in my heating bill, that would be very helpful.

15. Are there other incentives that we haven't covered that would increase the likelihood you would convert? N/A

16. What would the ideal incentive program look like? What aspects of an incentive program are the most important to you? N/A

17. Given the information I have just shared and our discussion, does that change your decision to convert/not convert? N/A

18. Have you participated in any energy-related programs?
    - Yes. We used the energy rebate program to help cover the costs of our new boiler in 2009. That covered all of it.
    - See above for details re: woodstove change-out.

a. If yes: See above.
   - What was that experience like?
   - Were there specific things you liked/disliked about that/those program(s)?

b. If no, is there a specific reason why you haven't participated? See above.

Other

- Address – Phase 1

IGU Conversion Research
North Pole Homeowner: Husband, Wife and Son
Occupation: Air Force
Date: August 20, 2014

General Knowledge + Impressions

1. In your opinion, what is needed to address the local energy crisis? da
   a. What are some potential solutions for meeting energy demands and/or lowering the cost of energy?
      - We are from California, where electricity is on the higher end, but then we have natural gas. There, natural gas was cheap. Here fuel is so expensive.

2. What do you know about current efforts to bring natural gas to North Pole and surrounding areas?

   a. What do you know about the entities that are working to bring natural gas to North Pole? What is your impression of those entities?
      - We attended the first meeting, back in June.
      - We know that we're in Phase 2.
      - We would convert today if we could, and provided it would be financeable.
      - We trust what IGU is doing completely, but we don't necessarily trust our neighbors. People don't realize how much people around here try to jerry rig things, or really try to throw good things off track.
      - People will see you can't do it for free, and then won't want to do it. Or, they will try to siphon it off for free.
      - Overall, it seems like IGU has a plan, but not sure if they were prepared at that last meeting for what the community had to say.
      - People were really bitching about getting natural gas.
      - IGU was great with saying "we don't have all the answers". That was good. As a result, some people did a complete switch.
      - One thing we were still curious about after that last meeting was the disposal of our old tanks, how that would work. Also, the cost of switching over. That wasn't really covered. And also if financial assistance would be available.
      - IGU needs to evaluate their audience. During the community, it would have been good to have someone that could speak to the more technical stuff, without being too technical. Someone that is a subject matter expert.

Your House + How You Use Energy

3. What is your primary heating system?
      - We have a boiler with radiant floor heating.
      - We have a zoned radiant heating system and a heated garage. We can manipulate it to one way or the other.

   a. Does your home primary system provide heat only, or does it also provide hot water for your home?
      - Provides hot water, too.

   b. What is your secondary heating system?
      - Pellet stove.

4. What is the brand, model and year of your home heating system?
      - 2006

5. What is your primary fuel heating source?
      - It has been fuel oil, but this year we hope to transition to pellet stove as the primary source. Hoping that will really bring costs down. But then, we're still dealing with a fairly expensive electric bill, too.

   a. How much do your pay for your primary fuel source a year?
      - We have a 5-star energy rated home, but we are still paying $3,600 a year, or right around $300/month. We also have a propane stove.
      - We also try to keep the costs down by keeping the temperature down on the radiant heat, to like 55 degrees. So, with the radiant heat and the pellet stove, the house sits around 67 degrees.

   b. What is your secondary fuel heating source?
      - Pellet stove that is going to be the primary source of fuel this winter.

c. How much do your pay for your secondary system a year?
   - We're using right around a bag a day. That works out to about $160/month.
   - We paid $5,000 out-of-pocket for the pellet stove. That was for the stove and labor to install it. We went with the pellets because we don't want to waste the time chopping logs.
   - We just paid for a pallet of pellets – that was $1,000. We're hoping that gets us through the winter. It better get us through the winter.

6. How much do you typically pay for heating per month in the summer, in the winter, and on average? N/A

7. Who and what influences your home heating decisions?

   a. If natural gas were available today, would you be likely to convert to natural gas?
      - Yes, but there would need to be certain things in place. There have to be certified contractors that can do the conversion safely. They need to be trained and certified to do this work. That list of certified contractors should be available to residents.
      - I don't want my neighbor working on these things themselves.

   b. If yes, why and how quickly? See above.

   c. If no, why? For you, what would be the biggest obstacles to converting? See above.

8. What kind of information do you need/would be helpful for you to know before making that decision? See above.

Conversion Options

9. What type of conversation do you think you will need?
   - We would probably need to replace our boiler and water heater. Our stove is easily convertible, since it's a propane stove.

10. How much do you believe it is going to cost you to convert? Do you believe you will be able to afford it?
    - No idea really what that would cost. Maybe in the low thousands.

11. Are you saving for home energy upgrades, or conversion to natural gas right now? If there was a savings program, would you participate?
    - We are not currently saving for a new boiler.

12. Which of your home appliances would you expect to convert to natural gas? See above.

13. What would be the easiest way for you to convert your home to natural gas? See below.

14. How would you prefer to pay for conversion?
    - We would prefer something like Option #3, the energy rebate program, unless there was a very low interest loan. The idea of a set payment per month that would include the loan is also really appealing. When our payment fluctuates from month-to-month, that is hard to budget for.
    - Should make this offer to people around PFD time when they have some money they could put toward this and aren't feeling as pressured by the costs of winter heating.

15. Are there other incentives that we haven't covered that would increase the likelihood you would convert? N/A

    a. If yes, what are they?

16. What would the ideal incentive program look like? What aspects of an incentive program are the most important to you?
    - Offering the cheapest conversion possible, offering the most annual savings possible, and providing upfront funding.

17. Given the information I have just shared and our discussion, does that change your decision to convert/not convert? N/A

    a. If yes, why and how quickly?

    b. If no, why?

18. Have you participated in any energy-related programs?
    - We just applied for the home energy program audit.

    a. If yes: See above.
        - What was that experience like?
        - Were there specific things you liked/disliked about that/those program(s)?

    b. If no, is there a specific reason why you haven't participated? See above.

Other

- Home was built in 2005.
- Address – Phase 1
- 2,100 to 2,200 square feet.
- We've been here a year. We're probably going to move as soon as we can (via the air force). It is highly likely this will happen within the next year. We just don't like this area all that much.
- We look at the conversion to natural gas as a resale investment. Maybe we can realize some of the savings if it gets here quick enough, and then also up the value of our home when we sell it.
- IGU should be looking at the groups that will be coming to Eielson as part of the F35 placement. We are a preferred site. They are anticipating them coming here in 2019. That would be a big bump in the area's population.

IGU Conversion Research North
Pole Homeowner:
Occupation: Retired
Date: August 21, 2014

General Knowledge + Impressions

1. In your opinion, what is needed to address the local energy crisis?
   a. What are some potential solutions for meeting energy demands and/or lowering the cost of energy?
      - Natural gas is the solution if we can get it here.

2. What do you know about current efforts to bring natural gas to North Pole and surrounding areas?
   a. What do you know about the entities that are working to bring natural gas to North Pole? What is your impression of those entities?
      - They have definitely made significant leaps and bounds.
      - At one point, I talked to Gene (Therriault). I told him this wasn't going to happen in my life time, but here we are.
      - And, I've been reading in the paper that we're making significant progress.
      - IGU – I don't know much about them. My wife audited them – she's an accountant. She's got a CPA license. I know they're out of Fairbanks. I have a generally favorable impression of them. I think it's a good company.
      - Overall though, all of these companies – it seems like there is a lot of backstabbing and politics going on.
      - I know how this stuff can go though. I'm retired military and work for the government now. I know that it can difficult to get business done.

Your House + How You Use Energy

3. What is your primary heating system?
      - Blaze King woodstove.

   a. Does your home primary system provide heat only, or does it also provide hot water for your home?
      - Has electric water heater. Our electric is expensive. That costs us about $150/month.

   b. What is your secondary heating system?
      - We've got a Burnham, high efficiency boiler. Bought it in 2007. We had a Weil-McClain before, but the Burnham was rated better. We also have put in new windows, doors, and additional insulation in the attic. We also have double wall construction.
      - Last year, we only used 130 gallons of fuel. The winter before, we used 150 gallons.
      - I also have a shop that's 40x44 that we heat. It's about 150 feet away from the house. I've got another Burnham out there. I would look at converting our house to natural gas and then putting the Blaze King woodstove out in the shop. But I don't know – maybe there is also a cost effective way to get natural gas to the shop, too.

4. What is the brand, model and year of your home heating system?
      - See above.

5. What is your primary fuel heating source?
      - Wood.

   a. How much do your pay for your primary fuel source a year?
      - We use about 5-6 cords a year. This last year, we purchased it for the first time. In the past, we would harvest our own at a place off of Chena Hot Springs Road. It was about $180/cord and was pole length. We would have to cut and split it. That would take me about 2.5 days to do that.

   b. What is your secondary fuel heating source?
      - Fuel oil.

   c. How much do your pay for your secondary system a year?
      - About $500-$600/year.

6. How much do you typically pay for heating per month in the summer, in the winter, and on average? N/A

7. Who and what influences your home heating decisions?

- Wood is the most efficient system. We bought our Blaze King 15 years ago.

a. If natural gas were available today, would you be likely to convert to natural gas?
   - Definitely, but I would have to look at the cost of conversion first with my current system. Also, what would the cost savings look like, and, at my age, is it really cost effective.

b. If yes, why and how quickly? See above.

c. If no, why? For you, what would be the biggest obstacles to converting? See above.

8. What kind of information do you need/would be helpful for you to know before making that decision?
   - I would really want to be reassured that by switching out my system, I could really be more efficient.
   - My neighbor is leaving the state because they just can't afford their energy and electric bills anymore. Of course, they're also keeping their vehicles plugged in all night and didn't have them on timers. They were paying about $400/month for their energy bill. It's crazy. This guy is a longtime BLM employee and makes good money.

Conversion Options

9. What type of conversation do you think you will need?
   - I just had the boiler in my house tuned up. Forgot to ask the guy if it was convertible or not. It's a 2007. So not sure about that.
   - We also live about 70 feet away from the street. Not sure how much it would cost to lay the service line. Our actual home boiler is about 85-90 feet away from the street.

10. How much do you believe it is going to cost you to convert? Do you believe you will be able to afford it?
    - I could guess an exact dollar amount. Whatever it would cost to upgrade my boiler, and if it's not convertible, whatever it would cost to get a new boiler. Also, we would do our stove, and maybe other appliances later.

11. Are you saving for home energy upgrades, or conversion to natural gas right now? If there was a savings program, would you participate? No, we are not.

12. Which of your home appliances would you expect to convert to natural gas?
    - Our stove is electric. It could go to natural gas. Although, all of our appliances have been replaced to be highly efficient. We have an older washer and dryer; they're six years old, but they're energy efficient Kenmores.

13. What would be the easiest way for you to convert your home to natural gas? See below.

14. How would you prefer to pay for conversion?
    - I would pay cash. I don't like payments. If you have the money, you should go for it.

15. Are there other incentives that we haven't covered that would increase the likelihood you would convert? N/A

16. What would the ideal incentive program look like? What aspects of an incentive program are the most important to you? N/A

17. Given the information I have just shared and our discussion, does that change your decision to convert/not convert? N/A

18. Have you participated in any energy-related programs?
    - I've heard of the weatherization program, but we did all of those changes before the programs existed including the additional insulation in the attic, the new AK-style windows, like 8 to10 of them. We also did put in new garage doors from Overhead and they're air tight. They don't have any windows in them. If they did the audit on our house today, we would be air tight.

a. If yes: See above.
   - What was that experience like?
   - Were there specific things you liked/disliked about that/those program(s)?

b. If no, is there a specific reason why you haven't participated? See above.

Other

- Address – We live at 3356 White Spruce Street. Phase 1.
- Been in house since June/July 1988.
- If it's up to me, I'm never moving.

IGU Conversion Research
North Pole Homeowner: (expecting her second child) and son
Occupation: Homemaker
Date: August 21, 2014

General Knowledge + Impressions

1. In your opinion, what is needed to address the local energy crisis?
   a. What are some potential solutions for meeting energy demands and/or lowering the cost of energy?
      - No matter what I do, there will always be people that won't want to change to natural gas.
      - With natural gas, I am guessing that prices will go down for fuel oil.
      - Right now, there is no competition for fuel oil. With natural gas as a competitor, we will have more choices and the prices will go down. In Washington state where I grew up, there were a lot of choices.
      - I am totally for drilling everywhere. I am pretty conservative.
      - My husband actually works for Alyeska Pipeline.
      - There are so many regulations that we can do it safely now.
      - I'm not a big environmentalist.

2. What do you know about current efforts to bring natural gas to North Pole and surrounding areas?
   a. What do you know about the entities that are working to bring natural gas to North Pole? What is your impression of those entities?
      - I have heard mainly that they have been talking about getting natural gas to the interior for like 10-20 years.
      - I know that at Prudhoe Bay they burn the gas off because they have to get rid of it when they're drilling for oil. That seems like a big waste. I don't like waste.
      - I don't know a lot about IGU, just what I've read in the paper.

Your House + How You Use Energy

3. What is your primary heating system?
      - Furnace with forced air that was purchased in 2009.
      - We also have forced air in the garage and my husband just put a Toyostove in there.

   a. Does your home primary system provide heat only, or does it also provide hot water for your home?
      - Hot water, too.

   b. What is your secondary heating system?
      - Woodstove – Quadrafire.

4. What is the brand, model and year of your home heating system?
      - See above.

5. What is your primary fuel heating source?
      - Fuel oil.

   a. How much do your pay for your primary fuel source a year?
      - $1,200 per year.

   b. What is your secondary fuel heating source?
      - Wood.

   c. How much do your pay for your secondary system a year?
      - It varies, but is around four to five cords a year. We pay about $200/cord. So, around $800-$1,000.

6. How much do you typically pay for heating per month in the summer, in the winter, and on average?
      - When we first bought the house, August of that year, they filled the 500 gallon tank. Then, in January, they only had to add 350 gallons. The following month of August it gallons. Now, we're averaging about 300 gallons a year. So, it's only costing us around $1,200.
      - Our electricity is still super high. It's in the high $300's in the winter.
      - We also got a new energy efficient washer and dryer to bring the electric costs down. We also have done all of the suggested GVEA energy efficient upgrades.

7. Who and what influences your home heating decisions?

- Cost. I try to take advantage of every program and keep our costs down.

a. If natural gas were available today, would you be likely to convert to natural gas?
   - We probably would, but I would have to see the payoff within five years.

b. If yes, why and how quickly? See above.

c. If no, why? For you, what would be the biggest obstacles to converting? See above.

8. What kind of information do you need/would be helpful for you to know before making that decision?
   - We would really want to know if it would be worth it to change out. Would we get the return on our investment within five years?
   - We would also want to know what, if anything, it would cost to get the service line installed.

Conversion Options

9. What type of conversation do you think you will need?
   - Probably a new furnace, water heater and maybe a gas washer and dryer later, since we just bought the new ones. We'd also want a new stove.

10. How much do you believe it is going to cost you to convert? Do you believe you will be able to afford it?
    - For the furnace, around $10,000. The water heater, around $3,000-$4,000. Not sure about the washer and dryer and the stove. I'm guessing it would be right around $15,000.

11. Are you saving for home energy upgrades, or conversion to natural gas right now? If there was a savings program, would you participate?
    - No. We couldn't afford the conversion out of pocket.

12. Which of your home appliances would you expect to convert to natural gas? See above.

13. What would be the easiest way for you to convert your home to natural gas? See below.

14. How would you prefer to pay for conversion?
    - We would not do a loan with our credit union. We would wait until there was something through IGU. I am guessing they will work to get me the best deal they can if they're trying to get me to be a customer. If it was over two or three percent for the loan, we wouldn't be interested. We could do it on a credit card faster.

15. Are there other incentives that we haven't covered that would increase the likelihood you would convert? N/A

16. What would the ideal incentive program look like? What aspects of an incentive program are the most important to you?

17. Given the information I have just shared and our discussion, does that change your decision to convert/not convert? N/A

18. Have you participated in any energy-related programs?
    - We were going to do the Energy Rebate Program, but did the audit and we were a four. It's a 70s house, so we were surprised.
    - We've also done the woodstove change-out program. There was a cap of $4,000. The one thing about that was it felt like they were working it, the guys at Woodway. They told us we needed a new chimney, but we really didn't. We ended up going with the guys from Alaska Hearth and Home. It just seems like there's no competition for doing woodstoves.
    - We just did the Firewise program, too. We cleared tons of wood and dead brush from around the house.

a. If yes: See above.
   - What was that experience like?
   - Were there specific things you liked/disliked about that/those program(s)?

b. If no, is there a specific reason why you haven't participated? See above.

Other

- Address – Phase 1.

- I don't like living here. I am from Bellingham and moved here to be with my husband. He grew up here. I am really hoping to leave soon.

IGU Conversion Research
North Pole Homeowner:
Occupation: Retired Air Force; now an Alaska State Trooper (retiring in five years) **Date:** August 21, 2014

General Knowledge + Impressions

1. In your opinion, what is needed to address the local energy crisis?
   a. What are some potential solutions for meeting energy demands and/or lowering the cost of energy?
      - A potential solution definitely includes getting natural gas to this area.
      - When I moved here in 1998, fuel oil was only $.74/gallon. Two or three years ago, it was at its highest at over $4/gallon. Now, it's hovering around $3.70 - $3.85/gallon. It's definitely one of my biggest costs during the winter time.
      - Compared to other troopers that live in Anchorage and Palmer, I have high costs.
      - We also have high electric costs. There is a diesel plant that helps generate the electricity. So half of our electric bill is fuel costs.
      - My wife and I make good money, but it's still taxing.
      - The average wage is $9/hour. People cannot afford this. For a lot of people it's fuel versus food.
      - There are a lot of fuel thefts in this area, especially when the price goes up. They're pretty blatant.
      - People burning wood is not the solution. There's the air pollution piece. Also, the demand for wood is going up, too, so the price of wood is going up. A cord of wood was $150, now it's gone up to $300.
      - All of these energy questions, they're all combined and connected.

2. What do you know about current efforts to bring natural gas to North Pole and surrounding areas?
   a. What do you know about the entities that are working to bring natural gas to North Pole? What is your impression of those entities?
      - I'm glad that something is finally being done, but, as they say, I'll believe it when there is a check in hand, in my red hot hands.
      - They have been talking about this a long time.
      - When I first started hearing about this, I was afraid they would start with Fairbanks first. We were definitely pleased to see it was North Pole.
      - I didn't attend the first meeting.
      - I don't know a lot about IGU except there was that big battle them and FNG. Quite frankly, I don't care who they are, as long as they can fulfil their commitment.
      - Even though FNG lost it, we can all benefit if they cooperate. Everyone needs to just stop bickering, stop the partisanship and work together for Alaskans. They need to work together to bring costs down for the Interior. We need a statesman.

Your House + How You Use Energy

3. What is your primary heating system?
      - Boiler with hot water baseboard in the upper level and radiant heat in the lower level.
      - We also have a heated garage.

   a. Does your home primary system provide heat only, or does it also provide hot water for your home?
      - Hot water, too.

   b. What is your secondary heating system?
      - None.

4. What is the brand, model and year of your home heating system?
      - System 2000. It's two years old.

5. What is your primary fuel heating source?
      - Fuel oil.

   a. How much do your pay for your primary fuel source a year?
      - A lot. We pay $600 - $700 every time they fill up. They fill up every 4-7 weeks. It's 4 weeks when we're dealing with extreme winter temperatures. So, we're paying between $4,000-$6,000/year. We've got a 300 gallon tank. We actually even paid $900 for a fill up at the high end.

   b. What is your secondary fuel heating source?
      - N/A

How much do your pay for your secondary system a year?
- N/A

6. How much do you typically pay for heating per month in the summer, in the winter, and on average? See above.

7. Who and what influences your home heating decisions?
   - We're just trying to have an energy efficient home.

   a. If natural gas were available today, would you be likely to convert to natural gas?
      - Yes, I would convert. Even if it would cut our energy costs by half, it would be worth it. Economically, it just makes sense, and we could actually take our temperature up a notch because we'd be saving with natural gas.

   b. If yes, why and how quickly?

   c. If no, why? For you, what would be the biggest obstacles to converting? See above.

8. What kind of information do you need/would be helpful for you to know before making that decision?
   - A complete packet that includes: range of potential costs, savings, payment options, timeline for installation and the different phases of the whole project.

Conversion Options

9. What type of conversation do you think you will need?
   - Our boiler can be converted. That would probably be the only thing we would convert. My wife doesn't want gas appliances.

10. How much do you believe it is going to cost you to convert? Do you believe you will be able to afford it?
    - It would just be the cost of converting our boiler to natural gas. It's fairly new, so it seems that would be minimal.
    - We would also be willing to chip in for the line, too. That hasn't happened yet, right?

11. Are you saving for home energy upgrades, or conversion to natural gas right now? If there was a savings program, would you participate?
    - No.

12. Which of your home appliances would you expect to convert to natural gas?
    - See above.

13. What would be the easiest way for you to convert your home to natural gas? See below.

14. How would you prefer to pay for conversion?
    - For us it would probably be cash. But, the average person would not be able to afford this. The idea of doing it as part of a bill is great, especially if it was a low interest rate. Seven or eight percent, like you would normally get with a credit card or normal loan, would be too high. Somewhere in the two to four percent range would be about right. A 10-year loan would be good, too, and seems like it would be manageable.
    - We might also entertain a loan if the interest was really good. We'd keep an open mind.

15. Are there other incentives that we haven't covered that would increase the likelihood you would convert? N/A

16. What would the ideal incentive program look like? What aspects of an incentive program are the most important to you? N/A

17. Given the information I have just shared and our discussion, does that change your decision to convert/not convert? N/A

18. Have you participated in any energy-related programs?
    - We have a 5-star rated home. We don't qualify because of that rating. We have the new boiler, and also have double pane windows and great insulation. I don't think there's anything else we could do to improve our energy efficiency, aside from getting natural gas, of course.

    a. If yes: See above.

- What was that experience like?
- Were there specific things you liked/disliked about that/those program(s)?

b. If no, is there a specific reason why you haven't participated? See above.

Other

- In five years, I'm retiring from the Troopers, so we'll probably sell our place. I'm also retired Air Force, so we'll have those two retirements. It would also be good to have the conversion done on the house before then to increase the resell value of our place.
- Our home is a bi-level and about 2,064 square feet.
- A lot of people are still doubting this will ever happen. They've been waiting 20 to 30 years. For some, the high cost of energy is a driving factor for retiring out of state instead of staying in Alaska. We're going to Vegas. The cost of living is one factor, but we also are tired of the hard winters.

IGU Conversion Research
North Pole Homeowner:
Occupation: She and her husband own a construction/painting business
Date: August 21, 2014

General Knowledge + Impressions

1. In your opinion, what is needed to address the local energy crisis?
   a. What are some potential solutions for meeting energy demands and/or lowering the cost of energy?
      - Natural gas sounds great. Even the cost of wood has gone up. So anything that will bring the costs down would be a relief.

2. What do you know about current efforts to bring natural gas to North Pole and surrounding areas?
   a. What do you know about the entities that are working to bring natural gas to North Pole? What is your impression of those entities?
      - I have not heard anything about this project or IGU. My husband might now, he's involved in construction, we have a construction business, and he keeps on top of these things more than I do.
      - What I do know is that they have been doing more of this kind of work in town (Fairbanks), and that we're eventually going to get gas out here.
      - I don't have any real impression of IGU or the groups that are working on this.

Your House + How You Use Energy

3. What is your primary heating system?
      - Our primary is a wood stove. We just got a second one for the addition we build over ten years ago. We usually use it when it gets below freezing, between the beginning of September through the end of March.

   a. Does your home primary system provide heat only, or does it also provide hot water for your home?
      - Heat only. We have an electric water heater.
      - Our electric costs historically:
        - 2013-2014: $3,294.71
        - 2012-2013: $3,500.00
        - 2011-2012: $3,299.13
        - 2010-2011: $3,122.10
        - 2009-2010: $2,841.12

   b. What is your secondary heating system?
      - Furnace.

4. What is the brand, model and year of your home heating system?
      - We just got a second Blaze King for the addition. We have two now.

5. What is your primary fuel heating source?
      - Wood.

   a. How much do your pay for your primary fuel source a year?
      - 2013-2014: $1,350 (this was for 6 cords of wood, at about $225/cord). It's split and not dry. We're trying to get enough so that we can get that new woodstove going in the garage so that we can heat the addition. Maintenance wise, I usually have to load it up three times a day in the colder winter months – once tin
      - 2012-2013: $1,160
      - 2011-2012: ????
      - 2010-2011: $1,022
      - 2009-2010: ????

   b. What is your secondary fuel heating source?
      - We have two systems that are powered by fuel oil. We have an oil fired furnace in the main part of our house that is forced air. It's a Beckett-Honeywell, AF15 Series. Our house is about 1,600 square feet. The house is over 17 years old. We replaced the furnace in the house 7 or 8 years ago.
      - We also have an addition that with an arctic entry way, office, recreation room, and the garage. That's about 800 square feet. It has a Becket-Honeywell, R8184, G1286 that is radiant heat. That furnace has been in there since we built the addition in 2001.

   c. How much do your pay for your secondary system a year?

- 2013-2014: $3,238.02
- 2012-2013: $4,770.36
- 2011-2012: $2,896.89
- 2010-2011: $2,649.78
- 2009-2010: $1,157.30

6. How much do you typically pay for heating per month in the summer, in the winter, and on average?
   - It varies, but it's been right around $400/month. $300 for fuel oil and $100 for wood. Wood is still our primary source; it's just less expensive and we get more heat out of it.

7. Who and what influences your home heating decisions?
   - We just try to reduce our costs, but then also stay warm. The warmth you get from the wood stove is superior to what you get from a furnace.

   a. If natural gas were available today, would you be likely to convert to natural gas?
      - Yes, but we would definitely want to understand cost first. But, we really want to do this. Force air that we get in the house right now is just nasty, and the wood debris is also a pain, and dirty.

   b. If yes, why and how quickly? See above and below.

   c. If no, why? For you, what would be the biggest obstacles to converting?
      - The biggest obstacle would definitely be money and having to do anything in a lump sum.

8. What kind of information do you need/would be helpful for you to know before making that decision?
   - Need information on what it will entail to set up and get ready for the conversion – what make and model. Everyone's situation is so different.

Conversion Options

9. What type of conversation do you think you will need?
   - I know that the furnace in the house is not convertible.

10. How much do you believe it is going to cost you to convert? Do you believe you will be able to afford it?
    - I really don't know.

11. Are you saving for home energy upgrades, or conversion to natural gas right now? If there was a savings program, would you participate?
    - Definitely not.

12. Which of your home appliances would you expect to convert to natural gas?
    - We would probably need to figure out a new system. If we went to natural gas, could we get one unit that would heat both the house and the addition, so all 2,400 square feet? We would also want to get a new dryer and water heater. I would probably not get a gas stove. I just got a new stove last year. Not sure if it is convertible, and if not, we would wait until that lived its life to get a new one. Basically, we would do whatever we could.

13. What would be the easiest way for you to convert your home to natural gas? See below.

14. How would you prefer to pay for conversion?
    - It would definitely depend on the timing and if we had the cash available. We would probably do some combination of cash, loans and maybe credit cards. We would also have our friends help us that have these skills. My husband knows a lot of people in the construction/engineering business that could help us install the line and the new system. That would definitely help us lower the costs.

15. Are there other incentives that we haven't covered that would increase the likelihood you would convert? N/A

16. What would the ideal incentive program look like? What aspects of an incentive program are the most important to you? N/A

17. Given the information I have just shared and our discussion, does that change your decision to convert/not convert? N/A

18. Have you participated in any energy-related programs?

- No.

a. If no, is there a specific reason why you haven't participated? No specific reason.

Other

- We live at 2557 Micah Avenue.

IGU Conversion Research
North Pole Homeowner:
Occupation: (female) Alaska Railroad Worker (18 years)
Date: August 21, 2014

General Knowledge + Impressions

1. In your opinion, what is needed to address the local energy crisis?
   a. What are some potential solutions for meeting energy demands and/or lowering the cost of energy?
      - Natural gas is a good start. We also need to get more refineries in this state. We already have the fuel, and easy access to the gas. The fuel is just so expensive. It doesn't make any sense, especially given that it's coming from up north. Why should any of it be so expensive?
      - I think having both, fuel and natural gas, will bring the costs down.
      - I was on the Chamber Transportation Committee, so I have heard a lot about how the Railroad might contribute to transporting LNG.

2. What do you know about current efforts to bring natural gas to North Pole and surrounding areas?
   a. What do you know about the entities that are working to bring natural gas to North Pole? What is your impression of those entities?
      - I know that they're in the process of building a plant on the Slope. IGU is leading the North Pole project. FNG is leading the Fairbanks project.
      - They're going to truck the liquefied gas down from the Slope.
      - I don't have any real impressions of IGU. David seems very nice, and it seems like they're moving forward. They've been very transparent.
      - That positive or low profile image of IGU might change, depending on how the project goes forward.

Your House + How You Use Energy

3. What is your primary heating system?
      - We have a boiler and hot water baseboard.
      - We also have electric forced air.

   a. Does your home primary system provide heat only, or does it also provide hot water for your home?
      - Electric water heater.

   b. What is your secondary heating system?
      - We have a fireplace, but we don't use it as a heating source. For the fireplace, we occasionally use the compressed logs that come from Superior Hardwoods. They're more expensive, but they're cleaner. They're made of pulp and newspaper. I don't like having all of that wood debris in my house, so those are nice. They're minimal ash. They're also something like $325 a pallet, which isn't bad.
      - We kick on the forced air in the mornings as a supplemental, but it doesn't really impact our bill.

4. What is the brand, model and year of your home heating system?
      - Lennox COB31. There is no year on it. It was in the house when we bought it in 1997. It can't be the original boiler. The house was built in 1973. The original was a furnace with forced air, I believe.

5. What is your primary fuel heating source?
      - Fuel oil.

   a. How much do your pay for your primary fuel source a year?
      - We are paying about $400 a month, or using about 100 gallons per month. But, I only get fuel oil as a I need it. I'm not on the auto-refill system.

   b. What is your secondary fuel heating source?
      - N/A

   c. How much do your pay for your secondary system a year?
      - N/A

6. How much do you typically pay for heating per month in the summer, in the winter, and on average? See above.

7. Who and what influences your home heating decisions?
    - We went with AK Petroleum because I get a discount as an Alaska Railroad employee.

    a. If natural gas were available today, would you be likely to convert to natural gas?
        - No, I wouldn't convert. I have no money to do it.

    b. If yes, why and how quickly? See above and below.

    c. If no, why? For you, what would be the biggest obstacles to converting?
        - I think the largest drivers are cost. At the end of the month, we do not have a lot left over to do a conversion.

8. What kind of information do you need/would be helpful for you to know before making that decision?
    - I am curious about what additional costs we might incur within the City of North Pole limits. Will there not also be some kind of tax (three percent)?

Conversion Options

9. What type of conversation do you think you will need?
    - Probably everything. What we have is dated, including our water heater. It's old.

10. How much do you believe it is going to cost you to convert? Do you believe you will be able to afford it?
    - I would say somewhere between $8,000 - $11,000. That would include around $7,000 - $10,000 for a new boiler, $300 for a new stove, and then $100 for a new dryer.

11. Are you saving for home energy upgrades, or conversion to natural gas right now? If there was a savings program, would you participate?
    - No, and I won't start saving now. I really don't have the confidence that this project is going to happen. I just don't know where it's going to land.

12. Which of your home appliances would you expect to convert to natural gas?
    - See above.

13. What would be the easiest way for you to convert your home to natural gas? See below.

14. How would you prefer to pay for conversion?
    - If I were to choose, I would say the low interest bill pay option. The rebate option doesn't make sense to me. That one seems like everyone that could take advantage of it would have already done that.

15. Are there other incentives that we haven't covered that would increase the likelihood you would convert? N/A

16. What would the ideal incentive program look like? What aspects of an incentive program are the most important to you? N/A

17. Given the information I have just shared and our discussion, does that change your decision to convert/not convert?

    a. If yes, why and how quickly?
        - Actually, yes, I would convert, especially if I could use the low interest bill pay option. But, I still feel like there are so many unknowns for IGU, including how many people in North Pole will actually make the conversion. So many people are in this wait and see mode. They're also not really in a position to want to invest that much in their homes. They're military or more transient populations. Also, I do think that having natural gas will create competition and bring the cost of fuel down.
        - Actually, if I were to buy a new house, I would want to buy one that had natural gas. Right now, I just can't afford to save anything to invest in converting the one I have. It's only 1,000 square feet. I can't imagine having to heat more than that. I don't want that.
        - The other thing I just thought of is if you wrap the loan into your utility bill, you may not even notice a difference in your monthly, yearly budget, until you pay that loan off, and then it would be great. I think people would do that – everyone buys everything on credit anyway.
        - Most people will convert if they can pay over time.

18. Have you participated in any energy-related programs?
    - No.

a. If no, is there a specific reason why you haven't participated? No specific reason.

IGU Conversion Research North
Pole Homeowner:
Occupation: (male) Retired
Date: August 21, 2014

General Knowledge + Impressions

1. In your opinion, what is needed to address the local energy crisis?
   a. What are some potential solutions for meeting energy demands and/or lowering the cost of energy?
      - I definitely see natural gas as a potential solution, but I'm still not expecting anything to happen for a few years. I told my wife, we still may not see anything happen in our lifetime.
      - I am excited about it. I've only had to deal with fuel prices these last couple of years. We used to be all woodstove, but it's getting hard for me to cut wood like that anymore.
      - I worked for MUS for 25 years, so it's exciting to see this kind of development happening in North Pole.
      - It's just foolish not to get gas over oil. It lasts longer, it's cleaner, there is less maintenance. We also know there is so much of it. Heck, Alberta Canada is floating on a whole bunch of it. There's more if it out there than what you hear.
      - I know some families right now that just tough it out and go without heat all winter because of the cost.

2. What do you know about current efforts to bring natural gas to North Pole and surrounding areas?
   a. What do you know about the entities that are working to bring natural gas to North Pole? What is your impression of those entities?
      - I saw the ad in the newspaper yesterday for the upcoming community meeting at the hotel. Other than that, I really haven't heard a thing about IGU.
      - I did read something, too, about the infrastructure, the piping, happening in 2015. That's exciting.
      - I think our house is a ways out on the timeline though. We live right on Badger Road, across from Nordale. So, we're about five miles from the center of town here (referring to Leaf and Bean area).

Your House + How You Use Energy

3. What is your primary heating system?
      - Woodstove.

   a. Does your home primary system provide heat only, or does it also provide hot water for your home?
      - Heat only.

   b. What is your secondary heating system?
      - None at the moment, but we I did buy a Slant/Fin Intrepid oil boiler in 2006. I bought it when wood was inexpensive as a potential backup. It has hot water baseboard.
      - I know for sure you can change the burner out to make it natural gas convertible.
      - It only costs me $2,200.
      - I'm working on getting it fired up now. I put copper wiring in it and I'm working with a good boiler installer I know from Eielson. He's helping me with the installation.

4. What is the brand, model and year of your home heating system?
      - Woodstove

5. What is your primary fuel heating source?
      - Wood. I love doing it. Being in the woods. It's how I grew up. But, with my health issues, I just can't do it anymore. I can't go out in the woods and put that much stress on my body.
      - I also know that fuel oil isn't getting any cheaper, so I don't want that to be my primary fuel oil. A church that's right down the road from us switched from fuel oil to propane. They cut their energy bill by a thousand a month.

   a. How much do your pay for your primary fuel source a year?
      - It's about $350/$400 a cord these days, for split logs. It's also usually only about 50% dried.
      - How well, efficiently it burns depends on the quality of the firewood.
      - We usually go through six cords a wood a winter.
      - These days, I also cheat and use those compressed logs from Woodway. They are eight pound logs and they have a lot of energy. They're about $5 or $6 a log. It's like burning two regular logs at once. They're so hot. You can get 240 logs, or a pallet, for right around $600, but that lasts all winter.

b. What is your secondary fuel heating source?
   - The last two seasons we have done a combined woodstove and boiler. We've fired it up a couple of times, for two or three hours a piece, but it still seems to be having issues. I'm still working on it.

c. How much do your pay for your secondary system a year?
   - We haven't really kept track, since we're not using the boiler all that much.

6. How much do you typically pay for heating per month in the summer, in the winter, and on average? See above.

7. Who and what influences your home heating decisions?
   - Cost is one factor, but cutting wood has also always been a part of my life. It's what I do. It's what I've done. I've always enjoyed doing the wood cutting. I grew up in Montana as a farm boy.

a. If natural gas were available today, would you be likely to convert to natural gas?
   - Yes, but that would depend on the timing, costs, assistance to cover costs.

b. If yes, why and how quickly? See above and below.

c. If no, why? For you, what would be the biggest obstacles to converting? See above.
   - Cost could be a big obstacle for us.

8. What kind of information do you need/would be helpful for you to know before making that decision?
   - We want to know if there's anything we can do to get ready today. What type of construction can we do to get ready, no matter what phase we're in.

Conversion Options

9. What type of conversation do you think you will need?
   - Maybe minimal with my boiler.

10. How much do you believe it is going to cost you to convert? Do you believe you will be able to afford it?
    - I was thinking less than $1,000 because we have a newer boiler and would just need to do the conversion with the right part for that. And, for the installation, now would be the time when there's some competition.
    - I think the cost, and how much you would save in the end, would be influenced by how well your house was built. I built my house.

11. Are you saving for home energy upgrades, or conversion to natural gas right now? If there was a savings program, would you participate?
    - No. (See below)

12. Which of your home appliances would you expect to convert to natural gas?
    - We would probably do that other stuff last. The boiler would be the priority. Get that in working order, see how that impacts the cost of energy. And, we really couldn't afford to do anything else.

13. What would be the easiest way for you to convert your home to natural gas? See below.

14. How would you prefer to pay for conversion?
    - We would want to pay cash, but we just can't afford it. When I asked my wife about it, I was surprised to learn just how little we had in savings. The bill payment is the only option that would really work for us.
    - Seems to me that we really have no choice but to do something like this. We can't go on paying theses prices.

15. Are there other incentives that we haven't covered that would increase the likelihood you would convert? N/A

16. What would the ideal incentive program look like? What aspects of an incentive program are the most important to you? N/A

17. Given the information I have just shared and our discussion, does that change your decision to convert/not convert?

a. If yes, why and how quickly?

- Yes – it would depend on cost and what we need to do to get ready.

b. If no, why? N/A

18. Have you participated in any energy-related programs?
    - We considered the wood change-out program, but I wasn't all that impressed with what they were offering me for my woodstove, only $900, so we passed. My woodstove was only 10 years old. It just didn't seem right.

a. If yes: See above.
    - What was that experience like?
    - Were there specific things you liked/disliked about that/those program(s)?

b. If no, is there a specific reason why you haven't participated? See above.

Additional Detail on Demographic Information

- We've been in the same house since 1977.
- It's 3,000 square feet, not including the garage.
- The boiler is in the garage, and when it's running, it heats the garage.
- We would still want to hold onto our woodstove, and maybe even still use that as the primary.
- It's a multi-level house that is difficult to heat with woodstoves. We have a fan that is made to distribute the heat to other parts of the house. Our house stays at right around 60-62 in the cold winter months.
- The wood heat, though, when you're around that, it just penetrates you.

IGU Conversion Research
North Pole Homeowner:
Occupation: (male) Retired Air Force; Manager for Walmart
Date: August 21, 2014

General Knowledge + Impressions

1. In your opinion, what is needed to address the local energy crisis?
   a. What are some potential solutions for meeting energy demands and/or lowering the cost of energy?
      - Natural gas is the solution, of course.
      - I'm come from the Lower 48, so it just seems strange that Alaska is still without this option.
      - Down there, my largest bill for natural gas was $216 for a month, and then $190 for electricity. Here, I'm paying about $8,000 a year on fuel oil alone. But, then again, I do have a 1,000 gallon tank and I like to keep it full.

2. What do you know about current efforts to bring natural gas to North Pole and surrounding areas?
   a. What do you know about the entities that are working to bring natural gas to North Pole? What is your impression of those entities?
      - The one thing I would say to those guys is "get it here faster".
      - Folks see the numbers flash up in terms of the savings they can have, that is important. But it's also important for them to understand how the costs to convert will actually be recouped pretty quickly by what you save by converting.
      - Also, folks might want to know how this will help improve the air quality around here. This would be a good thing for the community. I would think the community, and maybe even individual residents could get some additional federal funding, or incentives, by taking measures to improve air quality.
      - 40 years is too long for any community to wait to get natural gas.
      - I know there have been setbacks in licensing and a lot of debate about how to transport it.
      - I think people are forgetting to ask the question of "who is going to benefit'?
      - There has just been too much government involvement.
      - To me, it doesn't matter if it IGU or someone else. We just need it to happen now. There needs to be some serious competition with fuel oil.
      - IGU should also be transparent and clear about how things are changing with the project, including the cost, savings, and timelines.
      - Let's quick talking and get things done before this area loses anymore residents. Haven't we lost like 7,000-8,000 people in the last three or four years?
      - I do wonder if the fuel oil guys are going to surface and start complaining about the loss of business they'll experience as a result of natural gas coming to town.

Your House + How You Use Energy

3. What is your primary heating system?
      - Boiler, with radiant floor heating.

   a. Does your home primary system provide heat only, or does it also provide hot water for your home?
      - Hot water, too.

   b. What is your secondary heating system?
      - Pellet stove.

4. What is the brand, model and year of your home heating system?
      - Our boiler is over 10 years old. Not sure what brand it is.

5. What is your primary fuel heating source?
      - Fuel oil.

   a. How much do your pay for your primary fuel source a year?
      - Actually, I said $8,000 a year, but I think it's less than that, maybe closer to $6,500 a year after we did a bunch of upgrades.

   b. What is your secondary fuel heating source?
      - Wood pellets. Actually, the pellet stove was in the house when we bought it, but we did do the change-out program and got a more efficient wood stove.

   c. How much do your pay for your secondary system a year?

- We use about a bag a day during the winter. We also keep the floors down around 63/64. Even with natural gas, that would never end. We would keep up the pellet stove. That would just help us keep the costs down in general.

6. How much do you typically pay for heating per month in the summer, in the winter, and on average?
   - See above.

7. Who and what influences your home heating decisions?
   - Price is the biggest driver, and efficiency. I want whatever I have to be efficient.

   a. If natural gas were available today, would you be likely to convert to natural gas?
      - If it were here today, I'd do it.

   b. If yes, why and how quickly? See above and below.

   c. If no, why? For you, what would be the biggest obstacles to converting? See above.
      - I think the biggest obstacle for anyone will be price. I am a manager for Walmart. Almost half (48 percent) of my staff are military. These folks cannot afford the cost of living here. They probably couldn't afford the cost to convert either. Plus, many of them are renting. It's really tough.
      - Having two companies, like IGU and FNG, competing to offer natural gas is fine. That helps bring the costs down.
      - Re: how we made the decision to go with one fuel supply company over another, we chose Crowley because they were the first ones we came across. It was easy.

8. What kind of information do you need/would be helpful for you to know before making that decision?
   - I am not sure. I just think we need to be able to help out the folks that can't do this on their own. It's to all of our benefit.
   - Everyone will want to know the cost, and I would be curious, too, what the potential resell value would be on my property if I convert to natural gas. Would it increase?
   - My family and I are more than likely leaving within the next few years. That is the nature of my work as a Walmart manager.
   - I think the biggest thing is education. Change is hard for people. You have to be able to illustrate the benefits to them, and quickly, especially the older generation. With the younger generation, they just won't be able to afford any of this. They're struggling.

Conversion Options

9. What type of conversation do you think you will need?
   - Boiler fire unit or gun switch, and then maybe switching propane appliances to natural gas.

10. How much do you believe it is going to cost you to convert? Do you believe you will be able to afford it?
    - I'm guessing somewhere between $4,000 - $10,000.

11. Are you saving for home energy upgrades, or conversion to natural gas right now? If there was a savings program, would you participate?
    - No

12. Which of your home appliances would you expect to convert to natural gas?
    - We have a propane stove and dryer, so that seems like it would be an easy change over.
    - I think our boiler is convertible. We have it cleaned every other year.
    - But you know, depending on the cost, we might just go ahead and convert the whole system.
    - Whatever we have now that is propane, fuel oil, it would be worth it to do the changeover.
    - The crazy thing is that half of our electric bill is gas. We gotta do something about that. These poor people.

13. What would be the easiest way for you to convert your home to natural gas? See below.

14. How would you prefer to pay for conversion?
    - I would pay cash, for sure, but I like the idea of some type of low interest loan, like around three percent. But even that low rate might hook me. Why take it out of my savings if I can get a decent loan?
    - Of course, the more money you put down, the lower the interest, too.

15. Are there other incentives that we haven't covered that would increase the likelihood you would convert? N/A

16. What would the ideal incentive program look like? What aspects of an incentive program are the most important to you? N/A

17. Given the information I have just shared and our discussion, does that change your decision to convert/not convert? N/A

18. Have you participated in any energy-related programs?
    - Yes. We did the woodstove change-out and upgraded our pellet stove. It was great. Easily accessible, little paperwork. Very efficient.

    a. If yes: See above.
        - What was that experience like?
        - Were there specific things you liked/disliked about that/those program(s)?

IGU Conversion Research
North Pole Homeowner:
Occupation: (male) Air Force (but retiring in a couple of years, will do similar job as civilian)
Date: August 21, 2014

General Knowledge + Impressions

1. In your opinion, what is needed to address the local energy crisis?
   a. What are some potential solutions for meeting energy demands and/or lowering the cost of energy?
      - All I know is the FNSB should have nothing to do with it.
      - This should not be a public utility.
      - But, they definitely need some kind of solution.
      - What they're doing out at Chena Hot Springs with geo-thermal is a good example of the creativity, different, alternative energies that people should be looking at.

2. What do you know about current efforts to bring natural gas to North Pole and surrounding areas?
   a. What do you know about the entities that are working to bring natural gas to North Pole? What is your impression of those entities?
      - I have a pretty good impression of them. I'm signed up for their newsletter and I get their emails.
      - I've got a pretty favorable impression of them.
      - I was very happy to see them doing the community meeting thing. That's where people will have a chance to ask questions.

Your House + How You Use Energy

3. What is your primary heating system?
      - Boiler.

   a. Does your home primary system provide heat only, or does it also provide hot water for your home?
      - Hot water, too.

   b. What is your secondary heating system?
      - None.

4. What is the brand, model and year of your home heating system?
      - Not sure on this.

5. What is your primary fuel heating source?
      - Fuel oil.

   a. How much do your pay for your primary fuel source a year?
      - We're paying about $800 every two or three months. So, about $3,000 -$4,000 a year.
      - My wife likes the house hot, so it's a little bit of a struggle that way.
      - We usually ask them (the fuel supplier) to top it off every time they come to the house.

   b. What is your secondary fuel heating source?
      - We have lived here for four years and we have seriously been considering getting a woodstove. I am still researching that. The one that I really want, that would be high end, and super energy efficient is about $12,000. But then you are contending with the Borough and politicians that want to ban burning wood altogether.

   c. How much do your pay for your secondary system a year?
      - N/A

6. How much do you typically pay for heating per month in the summer, in the winter, and on average?
      - See above.

7. Who and what influences your home heating decisions?
      - It's a cost thing. We chose Polar Fuel because they offer a military discount.

   a. If natural gas were available today, would you be likely to convert to natural gas?
      - No. We will not be early adopters. We want to wait and see how things go with the first group of people that convert. How will that go?

- I do like the idea. I'm just cautious. Without the pipeline, I'm not sure how things will go. Asking state government to be responsible for the whole project seems like wishful thinking.
- I drove up the haul rode once. There was a little ice. I watched as tractor trailers were driving in front of me, rocking back and forth. It just wasn't being done safely.
- The whole operation of getting natural gas down from the Slope via the haul road seems like a losing proposition.
- I am just not confident in the government's ability to get out of the way and let people do this thing.
- I would like to see IGU do this without any red tape or government interference.

b. If yes, why and how quickly? See above and below.

c. If no, why? For you, what would be the biggest obstacles to converting? See above.
   - See above.

8. What kind of information do you need/would be helpful for you to know before making that decision?
   - I've always been a big fan of doing a lot of meetings and keeping people informed of current developments.
   - There are a lot of unknowns. Shoring up these unknowns and mitigating people's doubts could work wonders.
   - I also think other people, like me, are wondering about the haul road, the supply, and the future of the pipeline. How does all of this stuff work together?
   - I'm also curious about how beholden IGU is to the Borough, how that relationship works. People don't like the Borough forcing things on them. This could work to their disadvantage.
   - Also, where would the easement go? What side of my property would it go on? Thinking it would probably go along the paved roads?

Conversion Options

9. What type of conversation do you think you will need?
   - I did look at Sears and asked for prices on a new gas unit.
   - I might even be able to upgrade what I have. I'm not sure.
   - I'm also wondering where the repair technicians will come from. Actually, that's a problem that could be fixed pretty quickly. We could fill that void and actually create jobs.
   - We could have vocational programs that focus on just that skill. Heck, they could make an obscene amount of money.
   - When I went to Sears, they were giving a sizeable discount for all natural gas appliances.
   - In the long run, I think it would be cheaper, and a better investment to do LNG versus a new wood stove.
   - Our house is about 75 feet from the road, so not sure how much that would cost to run the line.

10. How much do you believe it is going to cost you to convert? Do you believe you will be able to afford it?
    - I'm thinking it would be up around $12,000.

11. Are you saving for home energy upgrades, or conversion to natural gas right now? If there was a savings program, would you participate?
    - No

12. Which of your home appliances would you expect to convert to natural gas? See above.

13. What would be the easiest way for you to convert your home to natural gas? See below.

14. How would you prefer to pay for conversion?
    - I don't believe in borrowing money, but the low interest bill pay option does seem appealing. That would actually be tolerable.

15. Are there other incentives that we haven't covered that would increase the likelihood you would convert? N/A

16. What would the ideal incentive program look like? What aspects of an incentive program are the most important to you? N/A

17. Given the information I have just shared and our discussion, does that change your decision to convert/not convert? N/A

18. Have /you participated in any energy-related programs?

- No. I don't want to do anything that could value to my home. I don't want the Borough to see improvements and tax me more.

a. If no, is there a specific reason why you haven't participated? See above.

IGU Conversion Research North Pole
Homeowner: male
Occupation: Government
August 22, 2014

General Knowledge + Impressions

1. In your opinion, what is needed to address the local energy crisis?
   a. What are some potential solutions for meeting energy demands and/or lowering the cost of energy? (we did not get to this question – was ready to talk about more detailed topics)

2. What do you know about current efforts to bring natural gas to North Pole and surrounding areas?
   a. What do you know about the entities that are working to bring natural gas to North Pole? What is your impression of those entities?
      - I think interest is definitely growing, but I think a lot of people are still in that space where they've been hearing this for years and think – "it will never get to me".
      - FNG's work, seeing some real tangible results in Fairbanks is helping a lot.
      - Word-of-mouth will be your most valuable asset, and then just getting people hooked up.

Your House + How You Use Energy

3. What is your primary heating system?
   - 80,000 BTU oil fired boiler.

   a. Does your home primary system provide heat only, or does it also provide hot water for your home?
      - Hot water, too.

   b. What is your secondary heating system?
      - Wood boiler.

4. What is the brand, model and year of your home heating system?
   - Burnham V73. It's 87 percent efficient. It's definitely at an age where I want to consider replacing it.
   - We've been in the house since 1984.
   - We live off of Kendall Street.
   - Even though the System 2000 is really popular, I don't like them. They're too complicated.

5. What is your primary fuel heating source?
   - Fuel oil, but we're transitioning to making our wood boiler the primary. I would actually really like to have a wood pellet boiler. We are looking at an Econoburn 150, that is a 150,000 BTU boiler. That's a little too big for the house though.
   - Our garage is the warmest part of the house.

   a. How much do your pay for your primary fuel source a year?
      - We're using about 1,200 gallons a year, so right around $4,800.

   b. What is your secondary fuel heating source?
      - We have the wood boiler that we're trying to make our primary.
      - To me, the idea of having a wood stove and burning heat is frankly archaic. It's either too hot or too cold. It can be too much.

   c. How much do your pay for your secondary system a year?
      - We're paying about $1,200 – $2,000 a year for that.
      - Last year, for example, we bought six cords of wood from Northland Wood. That was $1,600. They also ran out of wood last year. They actually had a bigger issue they year before because they had a chainsaw fire at Skinny Dick's and got backlogged by five to six weeks.
      - Sometimes, we get pellet logs. I got two tons recently for $600. That's like 3.5 to four cords. Those logs burn hotter. They were so popular last year that you had to stand in long lines to get them. They're easier than firewood. They're more efficient.
      - People also use pellets for firewood that they get from the transfer stations. It's pretty much abandoned wood.

6. How much do you typically pay for heating per month in the summer, in the winter, and on average?
   - See above.

7. Who and what influences your home heating decisions?

- I do my own research and look for the most energy efficient and low cost options available. That has meant a real hodgepodge of systems in my home.

a. If natural gas were available today, would you be likely to convert to natural gas?
   - I would love to have gas. The minute it gets close, I will be getting a new hot water heater.

b. If yes, why and how quickly? See above and below.

c. If no, why? For you, what would be the biggest obstacles to converting? See above.

8. What kind of information do you need/would be helpful for you to know before making that decision?
   - I think people really want to learn and do these things themselves. They want to do self-installation, so there should be tools for helping people do that.
   - It seems there are flaws with FNG's conversion process. There is less benefit in gas burners in oil burners than we may have thought.
   - IGU really needs to give people good information about boiler types. People don't have to have 96 percent efficient boilers. They need something that is efficient, and that's easy to install, easy to repair. For this reason, I'm partial to the Buderas, Burnham or Will McClain gas boilers (over the System 2000).
   - Frontier Plumbing and HASCO guys are the best. Also K2 on Aurora. Need to do some certification, distribution and installation packages – working with these guys. How great would it be to have these professionals do a whole walk through process with homeowners? So many people want to do it themselves anyway – why not teach them how to do it right?
   - It would also be nice to teach people about simple add-ons they could do, at low cost, to increase their energy efficiency. A good example is the RenaSmart heater I put in my wife's bedroom. It was very easy to install.

Conversion Options

9. What type of conversation do you think you will need?
   - I would probably need to do a big overhaul to my whole system, and also do my water heater, stove, dryer. My appliances are pretty much at a replacement phase, but still very efficient.

10. How much do you believe it is going to cost you to convert? Do you believe you will be able to afford it?
   - I think it could vary quite a bit, depending on what type of boiler I get. It wouldn't have to be the best, so maybe we could stay below the $10,000 line for everything, including appliances.

11. Are you saving for home energy upgrades, or conversion to natural gas right now? If there was a savings program, would you participate?
   - No.

12. Which of your home appliances would you expect to convert to natural gas?
   - See above.

13. What would be the easiest way for you to convert your home to natural gas? See below.

14. How would you prefer to pay for conversion?
   - I would want to know with the bank loan, would the homeowner be required to work with a certified installer. That is often the case when you take out loans.
   - I would pay cash, but I would also want to do it myself.
   - For most, I think the bill pay option would be the most favorable option, especially for the population of North Pole.
   - I would be comfortable paying $1,500 now just to be signed up and ready to go. Cash equity. Even though I'm Phase 3, I would still want to pay now. I think this is the approach IGU needs to take.
   - If people knew/understood them signing up now would make things move faster, I think you would have folks lining up to may a deposit. $50 is too cheap; it would need to be a larger investment – at least $500.
   - Actually, the sign-up fee could be multi-tiered, depending on income, sort of a sliding scale. And then, maybe tie it into their tax bill.
   - IGU should send a letter to potential customers with this type of offer. It could almost look like an invoice. "Pay this much and get your gas connected faster". Then, make an offer to tie into a bill that people are already used to paying, like a property tax bill. This might be better than the utility bill pay, as it would not be a "new" really large bill that included cost of converting and the gas cost. I think something like this is the thing to really get people engaged and talking to their neighbors.

15. Are there other incentives that we haven't covered that would increase the likelihood you would convert? N/A

16. What would the ideal incentive program look like? What aspects of an incentive program are the most important to you? N/A

17. Given the information I have just shared and our discussion, does that change your decision to convert/not convert? N/A

18. Have you participated in any energy-related programs? No.

    a. If no, is there a specific reason why you haven't participated? No reason.

Attachment G: Interviewee Home Heating Systems

Participant	Primary Heating System	Fuel source	Notes re: fuel source	Hot water system integrated with home heating?	Brand + Model	Year	Notes re: Home	Secondary system	Secondary system: fuel type	Notes re: secondary fuel	Recent upgrades/improvements	Conversion notes	Cost	Cost Notes	Seasonal Cost
1	Mostly fuel oil, some wood	Fuel oil		integrated	Burnham	2003	We bought a new build house that was about 98 percent complete in 2005. The boiler was a couple of years old. Our home is rated as a 5-star home. Right now, we have some strange vents that need to be replaced.	none	none				$ 4,090	$4,090. We also pay for diesel fuel on our electric bill every month. Half of our electric bill is for diesel fuel that helps to generate the electricity. Our bill is normally about $100. Half of that ($50) is for the diesel fuel.	$340/month average
2	Wood pellet stove	Wood pellet		Heat only, hot water heater is heated by secondary system (boiler)			Wood pellet stove purchased at the Home Show	Boiler (System 2000, purchased 2010)	Fuel oil	Fuel oil heats downstairs and the hot water heater	My house was originally designed as fuel oil (boiler) primary and woodstove secondary,		$ 3,000	When I first moved up here, people told me I would be paying $6,000/year. Other friends were paying $1,000/month. After changing out our woodstove to an	There's really no variation.
3	Furnace with forced air	Fuel oil	Although last year, we used to the wood stove more than the furnace.	Heat only; hot water heater is propane run; It has a pilot light, like our heating system. They're both "on demand" systems. We cut down on costs by a couple hundred bucks by doing that alone.	Lennox	2012	It's very high efficiency. Just before I bought it, the people that owned the house put in a brand new Altro furnace, but they didn't get a maintenance contract with it.	Wood stove	Wood				$ 2,400	About $2,400/year, but I did cut that number down a little by using more wood. I usually get my tank filled twice in a year. It's about a 300 gallon tank.	It definitely varies between seasons. I end up running the furnace longer in the winter/spring months, but even then, I can keep the furnace down around 50
4	Boiler	Fuel oil	Used more wood than fuel oil last year	integrated	Buderus G115WS/5	2012		none	none	last year I used more wood than heating oil. I have my own supply of wood. I've got a second piece of property that I harvest wood from. Got about 5-10 years of trees left on that property.		I called our boiler guy. It can be converted to natural gas. It would take a $1,700 fire unit. Out of pocket, this same new boiler with natural gas would cost around $20,000.	$4000-$5000	About $4,000 - $5,000/year. We get our fuel tank topped off right around 4 to 5 times a year. We have a 500 gallon tank.	

Participant	Primary Heating System	Fuel source	Notes re: fuel source	Hot water system integrated with home heating?	Brand + Model	Year	Notes re: Home	Secondary system	Secondary system: fuel type	Notes re: secondary fuel	Recent upgrades/improvements	Conversion notes	Cost	Cost Notes	Seasonal Cost
5	Wood stove	Wood	Secondary used to be woodstove, now wood stove is our primary heating system.	integrated	(secondary - new boiler, unsure of make + model)	new boiler in 2009	We have a blow heater in the garage. We also have a propane stove that could easily be switched to natural gas.	Boiler	Fuel oil	We bought a new boiler, but we've been using primarily wood. When they (the fuel company) came to refuel, they thought they made a mistake. They only had to put in 90 gallons.	We used the FNSB woodstove change-out program to buy a new stove. Most of that was covered. It was $3,000. What we didn't realize was that reimbursement that we got for the stove was taxable income. That was a little alarming when we did our taxes.		$ 2,100	We are paying about $1,200 a year for fuel oil (second source) now. It's highest in the winter months. We just bought some wood. Five cords of birch was $900. It was logs. We have to split it. That should last us through the winter. The summer before, we spent the summer cutting wood ourselves.	We usually pay a little more in the winter months for fuel oil. We're using more to supplement the wood.
6	Boiler with radiant floor heat	Fuel oil	Hoping to transition pellet stove from secondary to primary source this winter	integrated		2006	We have a zoned radiant heating system and a heated garage. We can manipulate it to one way or the other. .. we're still dealing with a fairly expensive electric bill, too.	Pellet stove	Wood pellets				$ 3,600	We have a 5-star energy rated home, but we are still paying $3,600 a year, or right around $300/month. We also have a propane stove. We also try to keep the costs down by keeping the temperature down on the radiant heat, to like 55 degrees. So, with the radiant heat and the pellet stove, the house sits around 67 degrees. We're using right around a bag a day. That works out to about $160/month. We paid $5,000 out-of-pocket for the pellet stove. That was for the stove and labor to install it. We went with the pellets because we don't want to waste the time chopping logs. We just paid for a pallet of pellets – that was $1,000. We're hoping that gets us through the winter. It better get us through the winter.	

Participant	Primary Heating System	Fuel source	Notes re: fuel source	Hot water system integrated with home heating?	Brand + Model	Year	Notes re: Home	Secondary system	Secondary system: fuel type	Notes re: secondary fuel	Recent upgrades/improvements	Conversion notes	Cost	Cost Notes	Seasonal Cost
7	Wood stove	Wood		No; has an electric water heater	Blaze King		Our electric is expensive. That costs us about $150/month.	Burnham high efficiency boiler (2007)	Oil	We had a Weil-McClain before, but the Burnham was rated better. Last year, we only used 130 gallons of fuel. The winter before, we used 150 gallons.	We also have put in new windows, doors, and additional insulation in the attic. We also have double wall construction.	I also have a shop that's 40x44 that we heat. It's about 150 feet away from the house. I've got another Burnham out there. I would look at converting our house to natural gas and then putting the Blaze King woodstove out in the shop. But I don't know – maybe there is also a cost effective way to get natural gas to the shop, too.	1000?	We use about 5-6 cords a year. This last year, we purchased it for the first time. In the past, we would harvest our own at a place off of Chena Hot Springs Road. It was about $180/cord and was pole length. We would have to cut and split it. That would take me about 2.5 days to do that. secondary, about $500-$600/year.	
8	Furnace with forced air	Fuel oil		integrated		2009	We also have forced air in the garage and my husband just put a Toyostove in there.	Wood stove (Quadrafire)	Wood				$ 2,000	Primary is $1,200 per year. Secondary: it varies, but is around four to five cords a year. We pay about $200/cord. So, around $800-$1,000.	Now, we're averaging about 300 gallons a year. So, it's only costing us around $1,200. Our electricity is still super high. It's in the high $300's in the winter. We also got a new energy efficient washer and dryer to bring the electric costs down. We also have

Attachment G: Interviewee Home Heating Systems

Participant	Primary Heating System	Fuel source	Notes re: fuel source	Hot water system integrated with home heating?	Brand + Model	Year	Notes re: Home	Secondary system	Secondary system: fuel type	Notes re: secondary fuel	Recent upgrades/improvements	Conversion notes	Cost	Cost Notes	Seasonal Cost
1	Mostly fuel oil, some wood	Fuel oil		integrated	Burnham	2003	We bought a new build house that was about 98 percent complete in 2005. The boiler was a couple of years old. Our home is rated as a 5-star home. Right now, we have some strange vents that need to be replaced.	none	none				$ 4,090	$4,090. We also pay for diesel fuel on our electric bill every month. Half of our electric bill is for diesel fuel that helps to generate the electricity. Our bill is normally about $100. Half of that ($50) is for the diesel fuel.	$340/month average
2	Wood pellet stove	Wood pellet		Heat only, hot water heater is heated by secondary system (boiler)			Wood pellet stove purchased at the Home Show	Boiler (System 2000, purchased 2010)	Fuel oil	Fuel oil heats downstairs and the hot water heater	My house was originally designed as fuel oil (boiler) primary and woodstove secondary,		$ 3,000	When I first moved up here, people told me I would be paying $6,000/year. Other friends were paying $1,000/month. After changing out our woodstove to an	There's really no variation.
3	Furnace with forced air	Fuel oil	Although last year, we used to the wood stove more than the furnace.	Heat only; hot water heater is propane run; It has a pilot light, like our heating system. They're both "on demand" systems. We cut down on costs by a couple hundred bucks by doing that alone.	Lennox	2012	It's very high efficiency. Just before I bought it, the people that owned the house put in a brand new Altro furnace, but they didn't get a maintenance contract with it.	Wood stove	Wood				$ 2,400	About $2,400/year, but I did cut that number down a little by using more wood. I usually get my tank filled twice in a year. It's about a 300 gallon tank.	It definitely varies between seasons. I end up running the furnace longer in the winter/spring months, but even then, I can keep the furnace down around 50
4	Boiler	Fuel oil	Used more wood than fuel oil last year	integrated	Buderus G115WS/5	2012		none	none	last year I used more wood than heating oil. I have my own supply of wood. I've got a second piece of property that I harvest wood from. Got about 5-10 years of trees left on that property.		I called our boiler guy. It can be converted to natural gas. It would take a $1,700 fire unit. Out of pocket, this same new boiler with natural gas would cost around $20,000.	$4000-$5000	About $4,000 - $5,000/year. We get our fuel tank topped off right around 4 to 5 times a year. We have a 500 gallon tank.	

Participant	Primary Heating System	Fuel source	Notes re: fuel source	Hot water system integrated with home heating?	Brand + Model	Year	Notes re: Home	Secondary system	Secondary system: fuel type	Notes re: secondary fuel	Recent upgrades/improvements	Conversion notes	Cost	Cost Notes	Seasonal Cost
5	Wood stove	Wood	Secondary used to be woodstove, now wood stove is our primary heating system.	integrated	(secondary - new boiler, unsure of make + model)	new boiler in 2009	We have a blow heater in the garage. We also have a propane stove that could easily be switched to natural gas.	Boiler	Fuel oil	We bought a new boiler, but we've been using primarily wood. When they (the fuel company) came to refuel, they thought they made a mistake. They only had to put in 90 gallons.	We used the FNSB woodstove change-out program to buy a new stove. Most of that was covered. It was $3,000. What we didn't realize was that reimbursement that we got for the stove was taxable income. That was a little alarming when we did our taxes.		$ 2,100	We are paying about $1,200 a year for fuel oil (second source) now. It's highest in the winter months. We just bought some wood. Five cords of birch was $900. It was logs. We have to split it. That should last us through the winter. The summer before, we spent the summer cutting wood ourselves.	We usually pay a little more in the winter months for fuel oil. We're using more to supplement the wood.
6	Boiler with radiant floor heat	Fuel oil	Hoping to transition pellet stove from secondary to primary source this winter	integrated		2006	We have a zoned radiant heating system and a heated garage. We can manipulate it to one way or the other. .. we're still dealing with a fairly expensive electric bill, too.	Pellet stove	Wood pellets				$ 3,600	We have a 5-star energy rated home, but we are still paying $3,600 a year, or right around $300/month. We also have a propane stove. We also try to keep the costs down by keeping the temperature down on the radiant heat, to like 55 degrees. So, with the radiant heat and the pellet stove, the house sits around 67 degrees. We're using right around a bag a day. That works out to about $160/month. We paid $5,000 out-of-pocket for the pellet stove. That was for the stove and labor to install it. We went with the pellets because we don't want to waste the time chopping logs. We just paid for a pallet of pellets – that was $1,000. We're hoping that gets us through the winter. It better get us through the winter.	

Participant	Primary Heating System	Fuel source	Notes re: fuel source	Hot water system integrated with home heating?	Brand + Model	Year	Notes re: Home	Secondary system	Secondary system: fuel type	Notes re: secondary fuel	Recent upgrades/improvements	Conversion notes	Cost	Cost Notes	Seasonal Cost
7	Wood stove	Wood		No; has an electric water heater	Blaze King		Our electric is expensive. That costs us about $150/month.	Burnham high efficiency boiler (2007)	Oil	We had a Weil-McClain before, but the Burnham was rated better. Last year, we only used 130 gallons of fuel. The winter before, we used 150 gallons.	We also have put in new windows, doors, and additional insulation in the attic. We also have double wall construction.	I also have a shop that's 40x44 that we heat. It's about 150 feet away from the house. I've got another Burnham out there. I would look at converting our house to natural gas and then putting the Blaze King woodstove out in the shop. But I don't know – maybe there is also a cost effective way to get natural gas to the shop, too.	1000?	We use about 5-6 cords a year. This last year, we purchased it for the first time. In the past, we would harvest our own at a place off of Chena Hot Springs Road. It was about $180/cord and was pole length. We would have to cut and split it. That would take me about 2.5 days to do that. secondary, about $500-$600/year.	
8	Furnace with forced air	Fuel oil		integrated		2009	We also have forced air in the garage and my husband just put a Toyostove in there.	Wood stove (Quadrafire)	Wood				$ 2,000	Primary is $1,200 per year. Secondary: it varies, but is around four to five cords a year. We pay about $200/cord. So, around $800-$1,000.	Now, we're averaging about 300 gallons a year. So, it's only costing us around $1,200. Our electricity is still super high. It's in the high $300's in the winter. We also got a new energy efficient washer and dryer to bring the electric costs down. We also have

Participant	Primary Heating System	Fuel source	Notes re: fuel source	Hot water system integrated with home heating?	Brand + Model	Year	Notes re: Home	Secondary system	Secondary system: fuel type	Notes re: secondary fuel	Recent upgrades/improvements	Conversion notes	Cost	Cost Notes	Seasonal Cost
15	Boiler	Fuel oil	Fuel oil is primary, but we're transitioning to making our wood boiler the primary.		Burnham V73 (87% efficient)	"It's definitely at an age where I want to consider replacing it."	Our garage is the warmest part of the house.	Wood stove	Wood		I would actually really like to have a wood pellet boiler. We are looking at an Econoburn 150, that is a 150,000 BTU boiler. That's a little too big for the house though.	Even though the System 2000 is really popular, I don't like them. They're too complicated.	$1200-$2000	☐ We're paying about $1,200 – $2,000 a year for that. ☐ Last year, for example, we bought six cords of wood from Northland Wood. That was $1,600. They also ran out of wood last year. They actually had a bigger issue they year before because they had a chainsaw fire at Skinny Dick's and got backlogged by five to six weeks. ☐ Sometimes, we get pellet logs. I got two tons recently for $600. That's like 3.5 to four cords. Those logs burn hotter. They were so popular last year that you had to stand in long lines to get them. They're easier than firewood. They're more efficient. ☐ People also use pellets for firewood that they get from the transfer stations. It's pretty much abandoned wood.	

Participant	Primary Heating System	Fuel source	Notes re: fuel source	Hot water system integrated with home heating?	Brand + Model	Year	Notes re: Home	Secondary system	Secondary system: fuel type	Notes re: secondary fuel	Recent upgrades/improvements	Conversion notes	Cost	Cost Notes	Seasonal Cost
9	Boiler with baseboard + radiant heat	Fuel oil	Boiler with hot water baseboard in the upper level and radiant heat in the lower level.	integrated	System 2000	2012	also have a heated garage		none				$4000-$6000	A lot. We pay $600 - $700 every time they fill up. They fill up every 4-7 weeks. It's 4 weeks when we're dealing with extreme winter temperatures. So, we're paying between $4,000-$6,000/year. We've got a 300 gallon tank. We actually even paid $900 for a fill up at the high end.	
10	Wood stove	Wood		No; has an electric water heater	Blaze King (2)		We just got a second wood stove for the addition we build over ten years ago. We usually use it when it gets below freezing, between the beginning of September through the end of March.	Furnace (2)	Fuel oil	We have two systems that are powered by fuel oil. We have an oil fired furnace in the main part of our house that is forced air. It's a Beckett-Honeywell, AF15 Series. Our house is about 1,600 square feet. The house is over 17 years old. We replaced the furnace in the house 7 or 8 years ago. o P10 - We also have an addition that with an arctic entry way, office, recreation room, and the garage. That's about 800 square feet. It has a Becket-Honeywell, R8184, G1286 that is radiant heat. That furnace has been in there since we built the			$ 4,600	2013-2014: $1,350 (this was for 6 cords of wood, at about $225/cord). It's split and not dry. We're trying to get enough so that we can get that new woodstove going in the garage so that we can heat the addition. Maintenance wise, I usually have to load it up three times a day in the colder winter months o 2012-2013: $1,160 o 2010-2011: $1,022 o Secondary, P10 – ☐ 2013-2014: $3,238.02 ☐ 2012-2013: $4,770.36 ☐ 2011-2012: $2,896.89 ☐ 2010-2011: $2,649.78 ☐ 2009-2010: $1,157.30 Electric: 2013-2014: $3,294.71 2012-2013: $3,500.00 2011-2012: $3,299.13	It varies, but it's been right around $400/month. $300 for fuel oil and $100 for wood. Wood is still our primary source; it's just less expensive and we get more heat out of it.
11	Boiler with hot water baseboard	Fuel oil		No; has an electric water heater	Lennox COB31	in home since purchase in 1997	We have a fireplace, but we don't use it as a heating source. For the fireplace, we occasionally use the compressed logs that come from Superior Hardwoods. They're more expensive, but they're cleaner. They're made of pulp and newspaper. They're also something like $325 a pallet, which isn't bad.	Electric forced air	electric	We kick on the forced air in the mornings as a supplemental, but it doesn't really impact our bill.			$ 4,800	We are paying about $400 a month, or using about 100 gallons per month. But, I only get fuel oil as a I need it. I'm not on the auto-refill system.	

Participant	Primary Heating System	Fuel source	Notes re: fuel source	Hot water system integrated with home heating?	Brand + Model	Year	Notes re: Home	Secondary system	Secondary system: fuel type	Notes re: secondary fuel	Recent upgrades/improvements	Conversion notes	Cost	Cost Notes	Seasonal Cost
12	Wood stove	wood	Wood. I love doing it. Being in the woods. It's how I grew up. But, with my health issues, I just can't do it anymore. I can't go out in the woods and put that much stress on my body.	No				Boiler available but not fully installed	Fuel oil	The last two seasons we have done a combined woodstove and boiler. We've fired it up a couple of times, for two or three hours a piece, but it still seems to be having issues.	I did buy a Slant/Fin Intrepid oil boiler in 2006 ($2,200). I bought it when wood was inexpensive as a potential backup. It has hot water baseboard. I know that fuel oil isn't getting any cheaper, so I don't want that to be my primary fuel oil. A church that's right down the road from us switched from fuel oil to propane. They cut their energy bill by a thousand a month.	I know for sure you can change the burner out to make it natural gas convertible. I'm working on getting it fired up now. I put copper wiring in it and I'm working with a good boiler installer I know from Eielson. He's helping me with the installation.	$ 2,400	It's about $350/$400 a cord these days, for split logs. It's also usually only about 50% dried. P12 - How well, efficiently it burns depends on the quality of the firewood. We usually go through six cords a wood a winter. These days, I also cheat and use those compressed logs from Woodway. They are eight pound logs and they have a lot of energy. They're about $5 or $6 a log. It's like burning two regular logs at once. They're so hot. You can get 240 logs, or a pallet, for right around $600, but that lasts all winter. We haven't really kept track of our fuel oil use, since we're not using the boiler all that much.	
13	Boiler with radiant floor heat	Fuel oil		integrated	unknown	10+ years		Pellet stove	Wood pellets	Actually, the pellet stove was in the house when we bought it, but we did do the change-out program and got a more efficient wood stove.			$ 6,500	Primary – I think it's close to $6,500 a year after we did a bunch of upgrades. Secondary: We use about a bag a day during the winter. We also keep the floors down around 63/64. Even with natural gas, that would never end. We would keep up the pellet stove. That would just help us keep the costs down in general.	
14	Boiler	Fuel oil		integrated	unknown			none		We have lived here for four years and we have seriously been considering getting a woodstove. I am still researching that. The one that I really want, that would be high end, and super energy efficient is about $12,000. But then you are contending with the Borough and politicians that want to ban burning wood			$3000-$4000	We're paying about $800 every two or three months. So, about $3,000 -$4,000 a year. My wife likes the house hot, so it's a little bit of a struggle that way. We usually ask them (the fuel supplier) to top it off every time they come to the house.	

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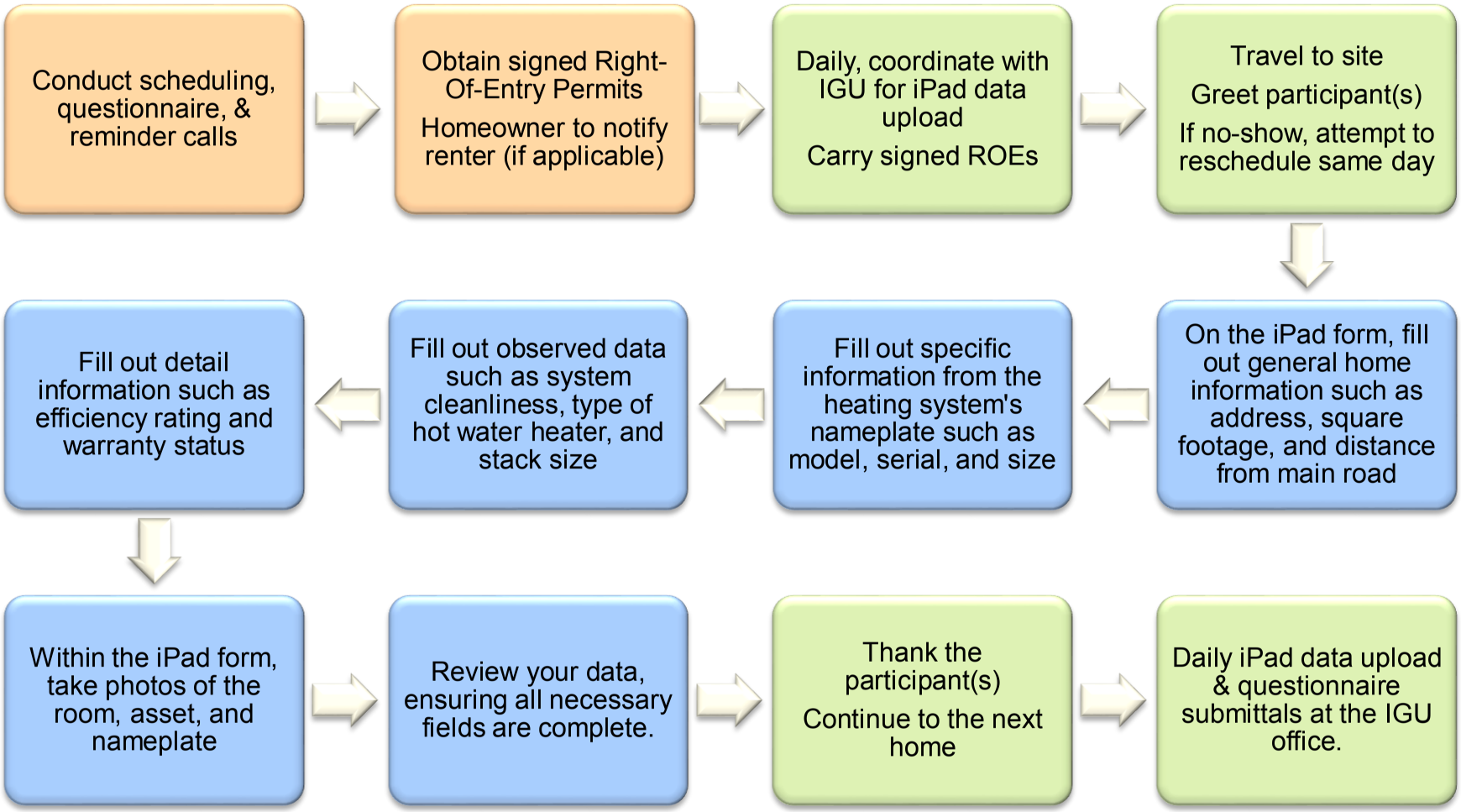
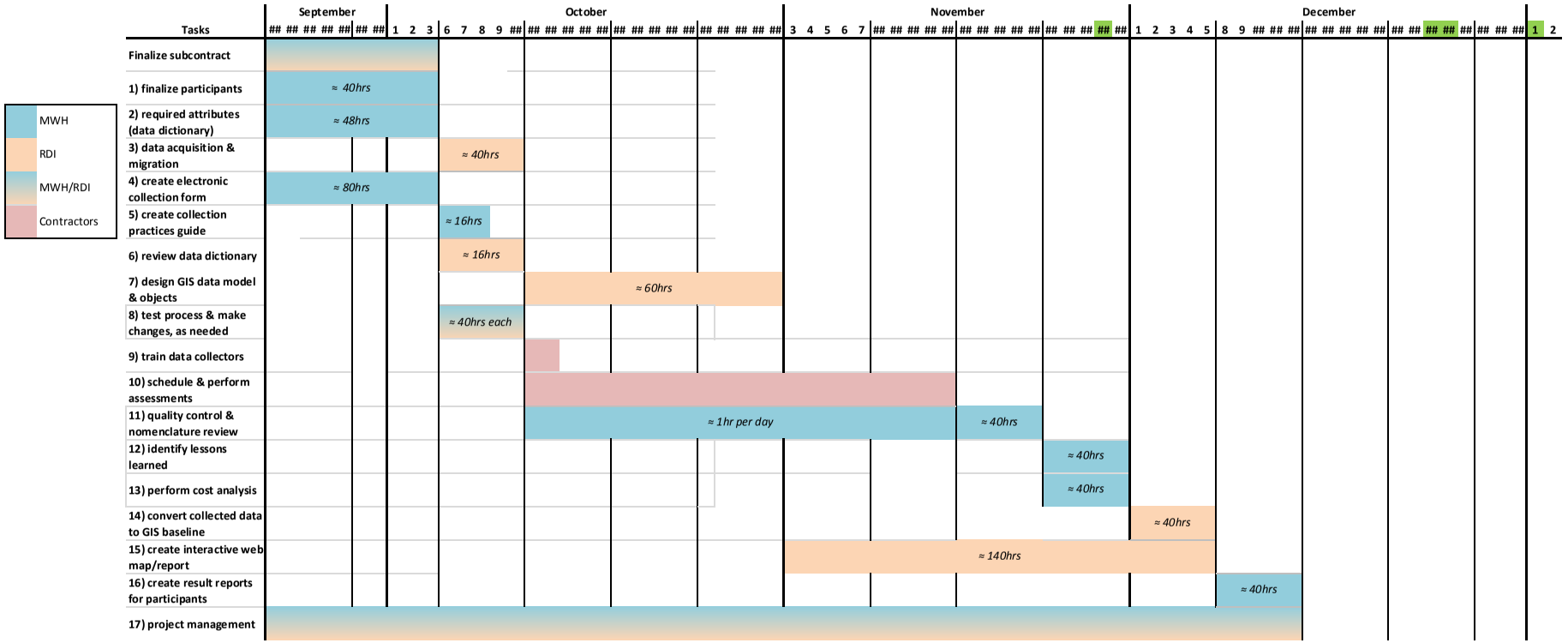
15	Boiler	Fuel oil	Fuel oil is primary, but we're transitioning to making our wood boiler the primary.		Burnham V73 (87% efficient)	"It's definitely at an age where I want to consider replacing it."	Our garage is the warmest part of the house.	Wood stove	Wood		I would actually really like to have a wood pellet boiler. We are looking at an Econoburn 150, that is a 150,000 BTU boiler. That's a little too big for the house though.	Even though the System 2000 is really popular, I don't like them. They're too complicated.	$1200-$2000	☐ We're paying about $1,200 – $2,000 a year for that. ☐ Last year, for example, we bought six cords of wood from Northland Wood. That was $1,600. They also ran out of wood last year. They actually had a bigger issue they year before because they had a chainsaw fire at Skinny Dick's and got backlogged by five to six weeks. ☐ Sometimes, we get pellet logs. I got two tons recently for $600. That's like 3.5 to four cords. Those logs burn hotter. They were so popular last year that you had to stand in long lines to get them. They're easier than firewood. They're more efficient. ☐ People also use pellets for firewood that they get from the transfer stations. It's pretty much abandoned wood.	

APPENDIX C

Pilot Study Elements

Pilot Process Flow Chart




MWH
RDI
MWH/RDI
Contractors
Tasks
September
October
November
December
Finalize subcontract
1) finalize participants
≈ 40hrs
2) required attributes (data dictionary)
≈ 48hrs
3) data acquisition & migration
≈ 40hrs
4) create electronic collection form
≈ 80hrs
5) create collection practices guide
≈ 16hrs
6) review data dictionary
≈ 16hrs
7) design GIS data model & objects
≈ 60hrs
8) test process & make changes, as needed
≈ 40hrs each
9) train data collectors
10) schedule & perform assessments
11) quality control & nomenclature review
≈ 1hr per day
≈ 40hrs
12) identify lessons learned
≈ 40hrs
13) perform cost analysis
≈ 40hrs
14) convert collected data to GIS baseline
≈ 40hrs
15) create interactive web map/report
≈ 140hrs
16) create result reports for participants
≈ 40hrs
17) project management

RETURN TO:
Alaska Integrated Services
619 11th Avenue Ste 101
Fairbanks, AK 99701

Interior Gas Utility
Natural Gas Conversion Inspection

RIGHT OF ENTRY

THIS AGREEMENT made this _____ day of _____, 2014, by and between, _____, hereinafter called PERMITTER, whose address is, _____, and **Alaska Integrated Services**, hereinafter called the PERMITTEE, whose address is 619 11th Avenue Ste 101, Fairbanks, AK 99701.

WITNESSETH

The PERMITTER does hereby grant unto PERMITTEE, its agents, contractors, and employees, the right, permission and authority to perform reasonable field inspection activities necessary to **inspect existing home utility layout and appliances and prepare a report regarding potential conversion to natural gas** within, oron, the real property described as:

Property Address: _____

It is specifically understood that this permit does not create for PERMITTEE any interest in or title to the above described property.

It is understood and agreed by the parties hereto that upon the completion of the field inspection activities, all interest and obligations contained within this permit shall terminate and cease, and that all permanent structures presently existing within the permit area which may be removed or damaged will be replaced or repaired in as good a condition as they were immediately before the property was entered upon by PERMITTEE.

It is further understood and agreed by the parties hereto that any items that might require disassembly for access to equipment identification during field activities will be reassembled upon completion of the project and the premises will be restored as nearly as possible to their original condition by the PERMITTEE.

PERMITTEE agrees to notify the PERMITTER when the field inspection activities are completed. The PERMITTEE understands and agrees that the investigation, work, and obligations identified herein shall be completed no later than October 31, 2014.

PERMITTEE agrees to keep insurance coverage in full force and effect during the field activities for all agents, contractors, or employees to include: comprehensive general liability, comprehensive automobile liability, and workers' compensation insurance in a customary form and with underwriters holding and maintaining at least an A rating throughout the term of the Permit. Said insurance shall be issued by a company(s) qualified to issue such insurance and authorized to do business in the State of Alaska.

Approved:

By: _____
(Homeowner Permitter Signature)

_____
(Homeowner Permitter Name)

Acknowledged:

By: _____
(Permittee Signature)

Alaska Integrated Services
(Permittee Name)

Pilot Study Data Dictionary

***** = required field

***Assessor** (dropdown list) - the name of the person collecting the information

***Inventory Date** (MM/DD/YYYYY HH:MM:SS) - auto populated with date that the data was collected
***Address** (dropdown list) - address number and street name of the home being assessed
City (text) - city of the home being assessed - for the pilot this will be filled in after data collection is complete as all entries will be in North Pole
State (text) - state of the home being assessed - this will be filled in after data collection is complete as all entries will be in Alaska
Zip Code (number) - zip code of the home being assessed - for the pilot this will be filled in after data collection is complete as all entries will be 99705
***Home GPS Location** (number) - latitude and longitude of the home. Location should be collected from the front entrance to the home.
Home Square Footage (number) - total square feet of heated living space in the home

***Distance From the Main Street** (dropdown list) - distance the home sits away from the main street. Measured in feet

- Less than 100FT
- 101-200FT
- 201-300FT
- 301-400FT
- 401-500FT
- OVER 500FT

***Room Type** (dropdown list) - the room in which the heating system is located

- GARAGE
- BASEMENT
- CRAWL SPACE
- CLOSET
- OTHER (TYPE IN COMMENTS FIELD)

***Room Location** (dropdown list) - the cardinal direction, from the center of the house, of the room containing the heating system

- CENTRAL
- NORTH
- NORTHWEST
- NORTHEAST
- SOUTH
- SOUTHWEST
- SOUTHEAST
- EAST
- WEST

***Is there a crawl space available?** (dropdown list) - Is there a crawl space in the home that could be used for piping if needed? If more details are needed, use the comment field.

- YES
- NO
- OTHER (TYPE IN COMMENTS FIELD)

***How far is the system from an exterior wall?** (number) - Estimated distance the system is from an exterior wall (if attached to exterior wall, type 0). Measured in feet
Elevation Above Floor (number) - Distance the system sits above the floor. Measured in feet
Footprint (number) - enter the estimated size of the space available for the heating system. Measured in square feet.
Access Concerns (text) - List concerns/observations about access for particular installation sizes

***Manufacturer** (dropdown list) - manufacturer of the home's heating system

- BURNHAM BOILERS
- BUDERUS
- LOCHINVAR
- ENERGY KINETICS
- VIESSMAN
- TRIANGLE TUBE
- WEIL-MCLAIN
- OTHER (TYPE IN COMMENTS FIELD)

Make (text) - Unit's name as listed on the unit. Such as System 2000, MPC, GV90+, Endura, Reliance, etc.
Model Number (text) - model number exactly as listed on the unit's nameplate
Serial Number (text) - serial number exactly as listed on the unit's nameplate
Size (number) - input size exactly as listed on the unit's nameplate. Do not convert the units. Enter numbers as decimals, 0.5 instead of ½.
Unit of Measure (dropdown list) - Enter the size unit of measure as listed on the unit's nameplate.

- BTU
- MBTU
- MBH

Install Year (number) - year in which the system was installed or, if install year is unavailable, the year of manufacture. Must be listed as a 4 digit year.
Year Source (dropdown list) - information about how the install year was determined

- HOMEOWNER'S ESTIMATED INSTALL YEAR
- INSTALL YEAR AS LISTED ON MANUAL/INSTALL PAPERWORK
- YEAR OF MANUFACTURE FROM NAMEPLATE
- OTHER (TYPE IN COMMENTS FIELD)

System Cleanliness (dropdown list) - on a scale of 1-5 with 5 being the most dirty, how clean is the unit - a factor for burner switches

- 1-VERY CLEAN
- 2-FAIRLY CLEAN
- 3-AVERAGE
- 4-SLIGHTLY DIRTY
- 5-VERY DIRTY

***Code Issues** (text) - input text regarding code violations or other code related information - assess based on clearance, combustion air and protection (safety).
***Is the boiler used for hot water generation?** (dropdown list)

- YES
- NO
- OTHER (TYPE IN COMMENTS FIELD)

***What type of hot water heater?** (dropdown list)

- SIDE ARM
- STAND ALONE - ELECTRICAL
- STAND ALONE - FUEL OIL
- STAND ALONE - PROPANE
- INDIRECT
- OTHER (TYPE IN COMMENTS FIELD)

Is there a safety relief? (dropdown list)

- YES

NO
OTHER (TYPE IN COMMENTS FIELD)

Is the relief properly piped? (dropdown list) - If more details are needed, use the comment field.

YES
NO
N/A
OTHER (TYPE IN COMMENTS FIELD)

***Efficiency Rating Percentage** (number) - a percentage usually included in annual service report AFFUE (usually on the nameplate for newer models)

Warranty in effect? (dropdown list) - Is the heating system under warranty? If more details are needed, use the comment field.

YES
NO
OTHER (TYPE IN COMMENTS FIELD)

Other System Observations: (text)

Quick Stack Sketch: (drawing) - draw a quick sketch of the stack

***Stack Diameter - in inches:** (number) - enter the diameter of the stack. Measured in inches.

***Stack Material:** (dropdown list) - type of material the stack is made out of.

STEEL
COPPER
OTHER (TYPE IN COMMENTS FIELD)

***Stack Type** (dropdown list) - type of stack on the system

VENTING
CHARGE
DOUBLE WALL
OTHER (TYPE IN COMMENTS FIELD)

***Does the stack go straight out of the roof?** (dropdown list)

YES
NO
OTHER (TYPE IN COMMENTS FIELD)

Estimated total length of the stack: (number) - an estimated length of the stack, from boiler, thru roof, to end. Measured in feet.

Does the stack have a barometric damper? (dropdown list)

YES
NO
OTHER (TYPE IN COMMENTS FIELD)

Stack Cleanliness (dropdown list) - on a scale of 1-5 with 5 being the most dirty, how clean is the stack

1-VERY CLEAN
2-FAIRLY CLEAN
3-AVERAGE
4-SLIGHTLY DIRTY
5-VERY DIRTY

Other Stack Observations: (text)

Comments (text) - used to clarify information given in other fields or to list any additional information necessary
Room Photo - photo showing the entirety of the room containing the heating system. Include in the photo a whiteboard displaying the home address
Asset Photo - photo showing the heating system
Nameplate Photo - provides the means of double checking model, serial, etc.
Additional Photo - used for an additional photo if necessary

Notes:

We can add/delete from drop downs, add fields etc. as we go.
*If a new question is asked during assessment #10, the contractor will not go back to homes 1-9 to fill in this new question unless the information is so critical that it makes sense to go back.

October 15, 2014

IGU Pilot Study
Standard Data Collection Practices
and User Guide

Contact Homeowners

- Schedule appointments
  - a minimum of 3 homes should be completed each day
- Collect questionnaire information
- Submit updated questionnaire information in Excel format, weekly

Obtaining Right-Of-Entry Permits

- Obtain signed ROE forms from participants, prior to assessment
- Submit signed copies of the ROE to Marie Goff (marie.goff@mwhglobal.com) in PDF format, at least weekly
- Homeowner will notify renter, if applicable
- Assessor must have a signed copy of the ROE with them during the assessment

Daily

- Conduct reminder calls to the following day's participants
- Pick up the iPad from the IGU office at the start of each day
  - to save battery, in the settings menu, turn the device to airplane mode
- Return the iPad to the IGU office at the end of the day
- IGU will upload your records to the SharePoint
- IGU will charge the iPad overnight
- Once the data is on the SharePoint, it will be reviewed by IGU for completeness and accuracy.
  - Any questions will need to be clarified the following morning before the assessors leave for the day

Speaking with the Participant(s)

- Greeting and standard introduction
- If homeowner is a no-show, attempt to reschedule for the same day.
  - Documentation will be required to substantiate no-show payment.
- Thank the participant and standard closing
- Answer questions about the program, honestly, and relay any unanswered questions to IGU
- Carry IGU information cards

Getting Started with the iPad

- Hold the iPad in landscape position with the home button on the left
- Turn the iPad screen on by pressing the home button
- Next, on the screen, slide to unlock. This will display the passcode screen.
- The **passcode for all iPads is 1234**. Type this and the iPad will open.
- Tap on the AutoForm™ app. This will take you to the app's home screen.

- Choose the Pilot Study form from the left side list - this will be the only option
    - click on the word Pilot Study; do not hit the sync or i buttons
- Click add from the top menu to start a new record

Entering Data

- When entering data, fill in fields from the top to the bottom and then move from the left tab to the right tab to guarantee that fields are not left blank inadvertently.
- Dropdown Lists - many fields have lists of values for you to choose from. If the value you are looking for is not in the list add the information into the comments field.
- Restricted Values - many fields restrict the entered values to numbers or text only. If you try to enter an invalid value, the iPad will not input the characters.
- GPS Values - stand at the entrance (front door) of the home to take the GPS location

    - The left button will input the GPS coordinates for your location
    - The right button will show you a map of the location
- Double Check - After entering detailed data such as model and serial number, always double check what you typed. It is very easy to transpose digits or type the wrong value.
    - Also, make sure to collect detailed data such as model and serial number exactly as it is printed on the nameplate. Do not add/remove dashes, spaces, etc.

Taking Pictures

- The form contains an open field that allows you to take up to six photos. At a minimum take the following photos:
    - Room Photo - On a small whiteboard, write the address of the home being assessed. Prop up the board in the room, making sure it is readable in the room photo. Stand back as much as possible to get most of the room in the photo.
    - Asset Photo - Whenever possible an asset photo should clearly show the full asset, preferable at an angle so size can be inferred.
    - Nameplate Photo - the nameplate photo should clearly show the model and serial number. Take an additional photo if the model and serial numbers are too far apart to be visible in one photo.
- Additional Photos - examples of additional photos include highlighting a code violation or unique situation.
    - If more than 6 photos are required, exit out of the AutoForm™ app. Take additional photos on the iPad, saving to the gallery. Before starting to take additional photos, take a photo of the whiteboard containing the home address. This will indicate that all photos following the whiteboard photo are for the same home. At the end of the day, IGU will manually move these photos to SharePoint.

Moving on to a New Record

- Make Sure to Review! - Always double check your data prior to leaving the home
    - Are there any typos?
    - Did you leave any fields blank that shouldn't be?
- Your current record is saved automatically as you type.
- To start a new record, click on Add in the top menu.

Syncing

- Hit the back button to return to the home screen, if not already there.
- If the sync button is red, there is new data on the iPad that has not been downloaded to SharePoint yet.
- Hit the sync button. A status icon will let you know that the data is syncing and downloading.
- You will receive a 'Data Sync Successful' message once the sync is complete.
- After clicking OK, you should see that the sync button has turned back to gray meaning all data has been downloaded to SharePoint.

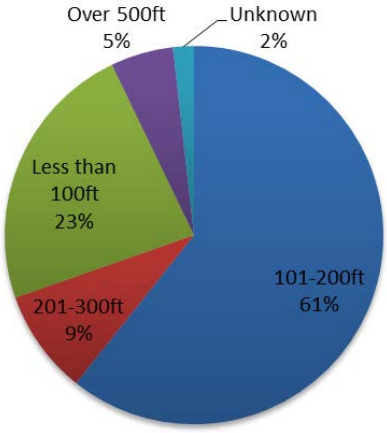
Updating the Form

- Always make sure that all data has been synced prior to updating the form.
- Hit the back button to return to the home screen, if not already there.
- On the left side menu, choose libraries.
- Choose Pilot Study from the left menu.
- Then choose Pilot Study under the word local.
- You will receive a warning letting you know that the form is active and continuing to download will delete anything unsynced; click continue.
- The screen will dim and show the working wheel icon.
- Once the screen brightens again, the form has been updated.
- Hit the back button to return to the home screen.

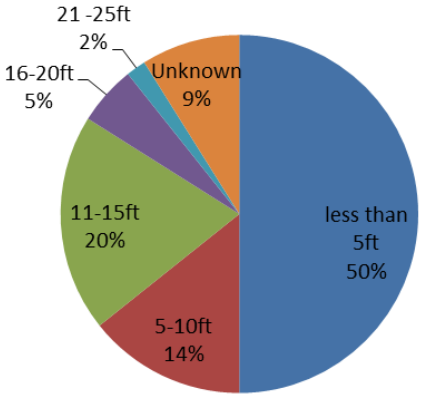
Pilot Project Data Findings

A total of 56 systems were assessed in 47 homes. The assessors felt that most of these systems were in better condition than the average system in FNSB. Below are details about the homes and systems assessed:

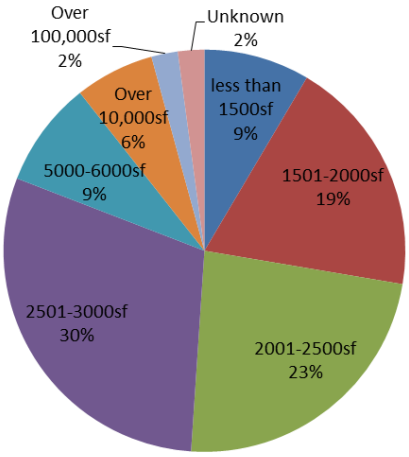
Distance Home Sits From Main Street



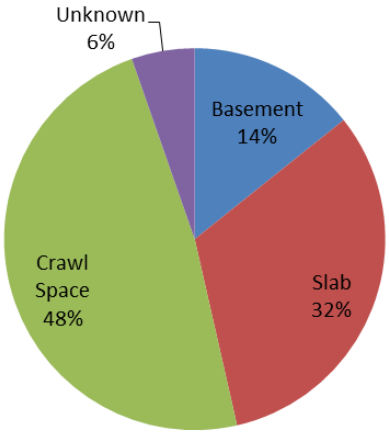
Distance System Sits From Exterior Wall



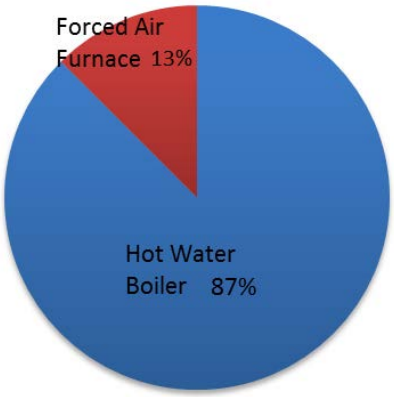
Home Square Footage



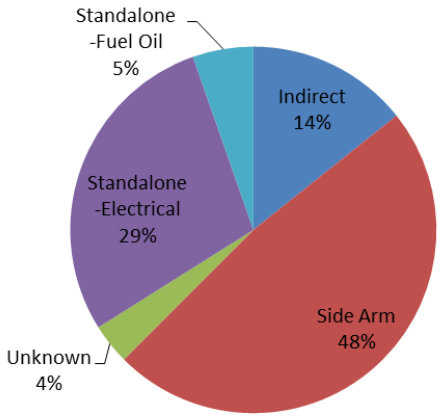
System Accessible Through



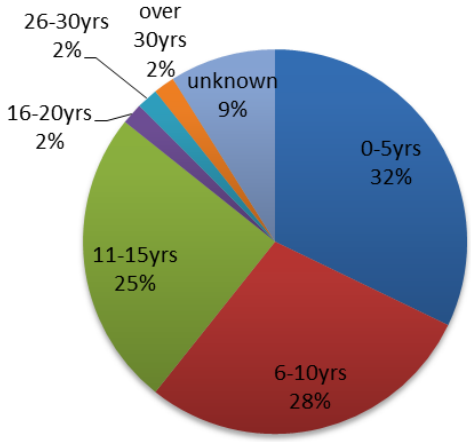
Type of System



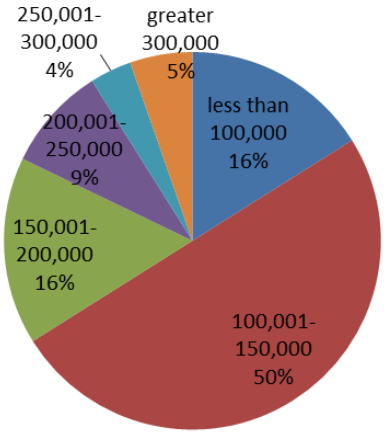
Type of Hot Water Heater



System Age

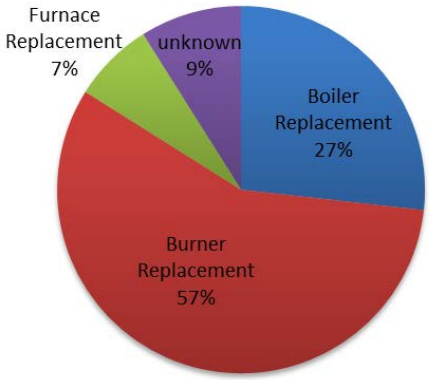


System Size (BTU)



*note: 21-25yrs 0%

Recommended Conversion Option



*using Cardno estimates.

March 23, 2015

Dear <<Homeowner>>,

On behalf of IGU, I would like to thank you for your participation in the home assessment pilot program, and for your patience in providing these results. As you may know, the Interior Energy Project has refocused efforts to consider alternative gas supply sources, such as from South Central Alaska, and a supply source is still being evaluated. IGU remains on track to advance the installation of pipe in Phase I and design work in Phase II this summer - clearing in Phase I has already begun in some areas - and conversions work to determine funding assistance and logistics continue.

Below you will find the study results for your home from the pilot assessment. We were able to evaluate 47 commercial, multi-unit and single family homes in the Phase I and II area and gained valuable information that will help many residents benefit from low cost natural gas as soon as possible. The results are intended to provide a custom estimate of the cost of bringing natural gas to your home. One component evaluated but not listed in the estimate are possible heating chimney or stack costs.

Current system at <<Address>>

Manufacturer: **WEIL-MCLAIN**
Make: **Gold 3**
Hot Water Generation? **NO**
Type of Hot Water Heater: **STANDALONE-ELECTRICAL**

Recommendation:

- Based on the information collected and known at this time, a **Burner Replacement** is recommended.
- This option is estimated to cost around **$3500-4000**.
- This estimate includes:

Standard meter and hookup fee ($50)+ Cost of Service Line* 101-200ft	$1050
Cost of running pipe from meter to system	$942
Boiler Recommendation: Burner Replacement	$1660
Water Heater Costs	$0
Stack Costs	N/A
City of North Pole Permit Fee	Does not live in city limits

* Cost of service lines will be determined per foot at the time of installment, and are evaluated based on 100ft. increments from the main road.

These costs are an estimate based on a preliminary inspection of your heating unit, and available data from the *IEP Natural Gas Conversion Analysis*, available on the IGU website. The intent of this pilot assessment is to gather additional information to better quantify the overall cost of converting to natural gas based on actual conditions. This estimate is not a guarantee of the cost of a conversion. Consult a licensed contractor for more information regarding replacement necessity.

Your participation in this process is invaluable – thank you. Please contact me if you have any questions; I look forward to working with you again soon.

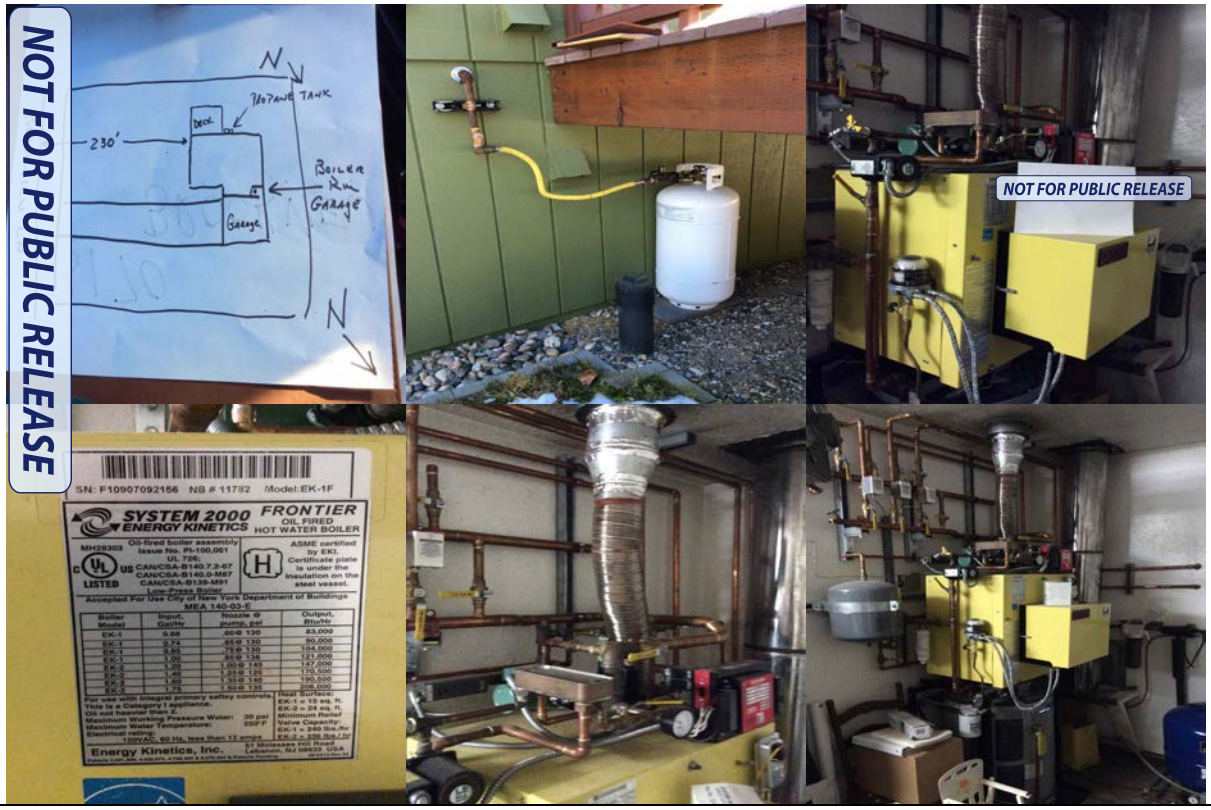
Sincerely,

Mindy L. O'Neall, Community Affairs Manager

PS: Your experience is important to us! Please take a short survey at www.interiorgas.com/pilotsurvey.
(You'll have to type this in your browser.) Thank you!

Interior Gas Utility: Conversions Pilot Study

North Pole, Alaska 99705				
Estimated Home Size (in square feet)	2,600	**Manufacturer**	ENERGY KINETICS	
Distance from Street (in feet)	201-300ft	**Make**	System 2000	
Room Containing System	GARAGE	**Model Number**	EK-1F	
Room Location	WEST	**Serial Number**	F10907092156	
Is there a crawl space?	No	**Size**	90,000	BTU
How far is the system from an exterior wall? (in feet)	7.6	**Installation Year**	2,009	
Distance System Sits Above Floor (in feet)	3.6	**How was the installation year determined?**	INSTALL YEAR LISTED ON MANUAL/INSTALL PAPERWORK	
Available Space for System (in square feet)	9	**Efficiency Rating (%)**	87	
Access Concerns/Observations	stairwell between boiler and outside wall			
How clean is the system?	1-VERY CLEAN	**How clean is the stack?**	1-VERY CLEAN	
Is the boiler used for hot water generation?	YES	**Diameter of Stack** (in inches)	6	
Type of Hot Water Heater	SIDE ARM	**Stack Type and Material**	DOUBLE WALL	STEEL
Is there a safety relief?	YES	**Does the stack go straight out of the roof?**	YES	
Is the relief properly piped?	YES	**Estimated Total Length of Stack** (in feet)	9	
Is there a warranty in effect?	NO	**Does the stack have a barometric damper**	YES	
Code Issues:	None	**Other Stack Observations**	5” stack 2’8” to ceiling. 6” double metal bestos 6” ceiling to outside cap.	
Other System Observations	Steel			
Additional Comments		**AIS Assessor**		
Will convert to gas dryer, stove top and oven. Home has existing propane tank with 3/4” steel piping into house.		**Assessment Date**	10/16/2014	
		Assessor’s opinion: burner replacement or full system	Burner Replacement	
		Assessor’s opinion of the ease on conversion	Unable to find column Ease of Installation	

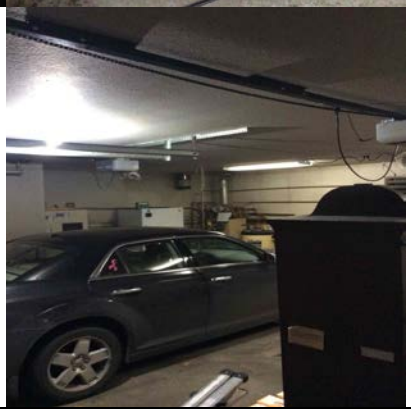

NOT FOR PUBLIC RELEASE
N
230'
Boiler Rm
Garage
N
NOT FOR PUBLIC RELEASE
SN: F10907092156 NB # 11782 Model:EK-1F
SYSTEM 2000
ENERGY KINETICS
FRONTIER
OIL FIRED
HOT WATER BOILER
Energy Kinetics, Inc.

Interior Gas Utility: Conversions Pilot Study

North Pole, Alaska 99705				
Estimated Home Size (in square feet)	2,600	**Manufacturer**	WEIL-MCLAIN	
Distance from Street (in feet)	101-200ft	**Make**	Gold Oil	
Room Containing System	GARAGE	**Model Number**	P-WGO-4	
Room Location	NORTHEAST	**Serial Number**	CP5363760	
Is there a crawl space?	No	**Size**	145,000	BTU
How far is the system from an exterior wall? (in feet)	1	**Installation Year**	2,004	
Distance System Sits Above Floor (in feet)	1.5	**How was the installation year determined?**		
Available Space for System (in square feet)	30	**Efficiency Rating (%)**	85	
Access Concerns/Observations				
How clean is the system?	3-AVERAGE	**How clean is the stack?**	3-AVERAGE	
Is the boiler used for hot water generation?	YES	**Diameter of Stack** (in inches)	6	
Type of Hot Water Heater	SIDE ARM	**Stack Type and Material**	VENTING	
Is there a safety relief?	YES	**Does the stack go straight out of the roof?**		
Is the relief properly piped?	NO	**Estimated Total Length of Stack** (in feet)		
Is there a warranty in effect?	NO	**Does the stack have a barometric damper**	YES	
Code Issues:		**Other Stack Observations**		
Other System Observations				
Additional Comments		**AIS Assessor**		
Home owner also has a pellet stove as a secondary heat source. Meter would go on northeast wall		**Assessment Date**	10/16/2014	
		Assessor's opinion: burner replacement or full system	Burner Replacement	
		Assessor's opinion of the ease on conversion	Unable to find column Ease of Installation	


WEIL-McLAIN
CERTIFIED BY
MAWP, Water PSI 50
Maximum Water Temp. F 250
Min. Relief Valve Cap. LB/HR or MBH 145
CP5363760


Beckett



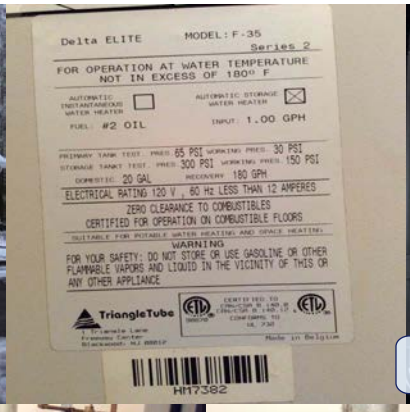
Estimated Home Size (in square feet)	5,000	**Manufacturer**	WEIL-MCLAIN	
Distance from Street (in feet)	101-200ft	**Make**	Gold series 3	
Room Containing System	OTHER (TYPE IN COMMENTS FIELD)	**Model Number**	P-WTGO-5	
Room Location	CENTRAL	**Serial Number**	CP4894552	
Is there a crawl space?	Yes	**Size**	175,000	BTU
How far is the system from an exterior wall? (in feet)	25	**Installation Year**	2,008	
Distance System Sits Above Floor (in feet)	1.6	**How was the installation year determined?**	HOMEOWNER'S ESTIMATED INSTALL YEAR	
Available Space for System (in square feet)	24	**Efficiency Rating (%)**	83	
Access Concerns/Observations	Boiler is located in center of building.			

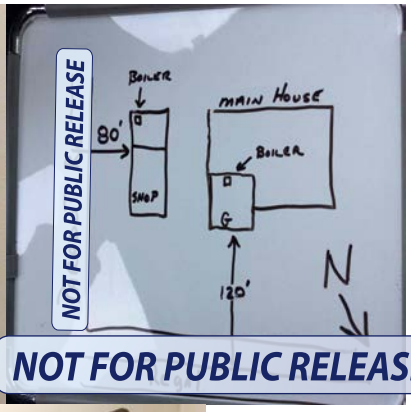
How clean is the system?	5-VERY DIRTY	**How clean is the stack?**	5-VERY DIRTY	
Is the boiler used for hot water generation?	YES	**Diameter of Stack** (in inches)	7	
Type of Hot Water Heater	SIDE ARM	**Stack Type and Material**	VENTING	STEEL
Is there a safety relief?	YES	**Does the stack go straight out of the roof?**	YES	
Is the relief properly piped?	YES	**Estimated Total Length of Stack** (in feet)	12	
Is there a warranty in effect?	NO	**Does the stack have a barometric damper**	YES	
Code Issues:		**Other Stack Observations**	7" stack off boiler single wall 22 gauge straight up 7' to roof increases to 8" double wall metal bestos 4' to cap	
Other System Observations	Boiler very dirty fom stack not properly clauked and sealed on roof.			

Additional Comments	**AIS Assessor**	
Wants piping for future appliances.	**Assessment Date**	10/20/2014
	Assessor's opinion: burner replacement or full system	Full Boiler Replacement
	Assessor's opinion of the ease on conversion	Unable to find column Ease of Installation


NOT FOR PUBLIC RELEASE
NOT FOR PUBLIC RELEASE
Boiler
80'
Gas Pumps
OLD RICHARDSON
MOOSE CREEK
NOT FOR PUBLIC RELEASE

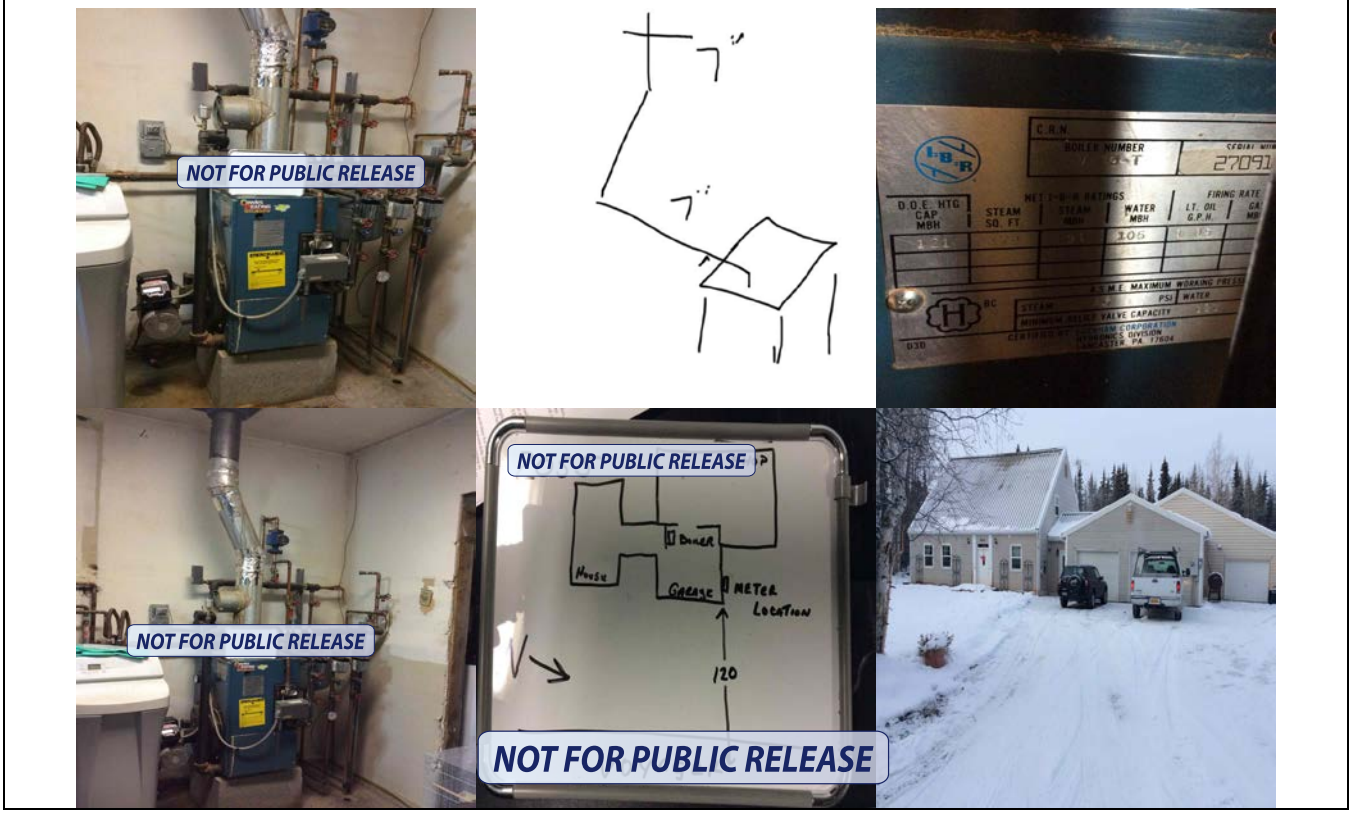
North Pole, Alaska 99705				
Estimated Home Size (in square feet)	800	**Manufacturer**	TRIANGLE TUBE	
Distance from Street (in feet)	Less than 100ft	**Make**	Delta ELITE	
Room Containing System	CLOSET	**Model Number**	F-35 series 2	
Room Location	EAST	**Serial Number**	HM7382	
Is there a crawl space?	No	**Size**	125,000	BTU
How far is the system from an exterior wall? (in feet)	2	**Installation Year**	2,008	
Distance System Sits Above Floor (in feet)	1.6	**How was the installation year determined?**	HOMEOWNERS ESTIMATED INSTALL YEAR	
Available Space for System (in square feet)	9	**Efficiency Rating (%)**	84	
Access Concerns/Observations				
How clean is the system?	2-FAIRLY CLEAN	**How clean is the stack?**	3-AVERAGE	
Is the boiler used for hot water generation?	YES	**Diameter of Stack** (in inches)	5	
Type of Hot Water Heater	SIDE ARM	**Stack Type and Material**	VENTING	STEEL
Is there a safety relief?	YES	**Does the stack go straight out of the roof?**	YES	
Is the relief properly piped?	YES	**Estimated Total Length of Stack** (in feet)	10	
Is there a warranty in effect?	NO	**Does the stack have a barometric damper**	NO	
Code Issues:	None	**Other Stack Observations**	5” out of boiler 6” single wall to ceiling 6” double wall ceiling thru roof to cap	
Other System Observations				
Additional Comments		**AIS Assessor**		
Assessment is for detached shop. another system for main house		**Assessment Date**	10/26/2014	
		Assessor’s opinion: burner replacement or full system	Burner Replacement	
		Assessor’s opinion of the ease on conversion	Unable to find column Ease of Installation	


Delta ELITE
MODEL: F-35
Series 2
FOR OPERATION AT WATER TEMPERATURE NOT IN EXCESS OF 180° F
FUEL: #2 OIL
INPUT: 1.00 GPH
ELECTRICAL RATING 120 V., 60 Hz LESS THAN 12 AMPERES
ZERO CLEARANCE TO COMBUSTIBLES
CERTIFIED FOR OPERATION ON COMBUSTIBLE FLOORS
WARNING
FOR YOUR SAFETY: DO NOT STORE OR USE GASOLINE OR OTHER FLAMMABLE VAPORS AND LIQUID IN THE VICINITY OF THIS OR ANY OTHER APPLIANCE
TriangleTube
HM17382


NOT FOR PUBLIC RELEASE
BOILER
MAIN HOUSE
80'
SHOP
BOILER
120'
N
NOT FOR PUBLIC RELEASE


NOT FOR PUBLIC RELEASE

North Pole, Alaska 99705				
Estimated Home Size (in square feet)	3,000	**Manufacturer**	BURNHAM BOILERS	
Distance from Street (in feet)	Less than 100ft	**Make**	V Series	
Room Containing System	GARAGE	**Model Number**	V-73-T	
Room Location	CENTRAL	**Serial Number**	27091413	
Is there a crawl space?	Yes	**Size**	105	MBH
How far is the system from an exterior wall? (in feet)	15	**Installation Year**	2,007	
Distance System Sits Above Floor (in feet)	1.6	**How was the installation year determined?**	HOMEOWNERS ESTIMATED INSTALL YEAR	
Available Space for System (in square feet)	10	**Efficiency Rating (%)**	82	
Access Concerns/Observations				
How clean is the system?	3-AVERAGE	**How clean is the stack?**	3-AVERAGE	
Is the boiler used for hot water generation?	YES	**Diameter of Stack** (in inches)	6	
Type of Hot Water Heater	SIDE ARM	**Stack Type and Material**	VENTING	STEEL
Is there a safety relief?	YES	**Does the stack go straight out of the roof?**	YES	
Is the relief properly piped?	YES	**Estimated Total Length of Stack** (in feet)	10	
Is there a warranty in effect?	NO	**Does the stack have a barometric damper**	YES	
Code Issues:	None	**Other Stack Observations**	6” boiler to ceiling 6” double wall metal bestos ceiling thru roof to cap	
Other System Observations				
Additional Comments		**AIS Assessor**		
Customer concerns about gas line coming down their street. Engineer at meeting told them feasibilty study they would not come down this street. 12 families and several lots ready to build in future.		**Assessment Date**	10/26/2014	
		Assessor’s opinion: burner replacement or full system	Burner Replacement	
		Assessor’s opinion of the ease on conversion	Unable to find column Ease of Installation	


NOT FOR PUBLIC RELEASE
NOT FOR PUBLIC RELEASE
NOT FOR PUBLIC RELEASE
NOT FOR PUBLIC RELEASE
House
Garage
Boiler
Meter Location
120

APPENDIX D

IGU Conversion Research Focus Group Summary

IGU Conversion Research Focus Group Summary
Saturday, December 6, 2014; North Pole Fire Station
Facilitated by Shelly Wade, Agnew::Beck Consulting

Participants (in alpha order by first name)

removed to protect participant's identity

Methodology

A. Purpose, Where + When

The focus group was conducted with North Pole homeowners and was held at the North Pole Fire Department on Saturday, December 6th, from 1:00 p.m. to 3:00 p.m. The purpose of the focus group was to gather North Pole homeowner feedback on the results of a draft report commissioned by IGU. The report, conducted by Conservation Services Group (November 2014), proposes a potential design for the IGU gas conversion program. Specifically, IGU hoped to learn from focus group participants:

- Comments, questions, concerns about overall program and individual components and financial options.
- What they like (will work) or not like (will not work) about the program, individual components.
- What they like best/least about the program/components.
- What would improve the program to better meet customer expectations; what would make for the "most ideal" customer service experience.
- Which/what financial options would best meet customer needs and increase ability/timing of conversion.

B. Recruitment

The project team recruited focus participants using a contact list for North Pole homeowners who had previously participated in the IGU pilot program. See Attachment A for a copy of the recruitment script.

To encourage participation, focus group participants each received a $50 Visa gift card as a thank you. As follow-up, all participants received an email confirming the date and location of the focus group, and a copy of the CGS full report and executive summary. See Attachment B for a copy of the follow-up email.

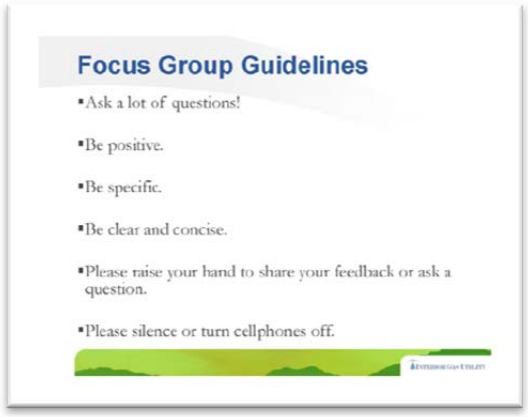
Participants

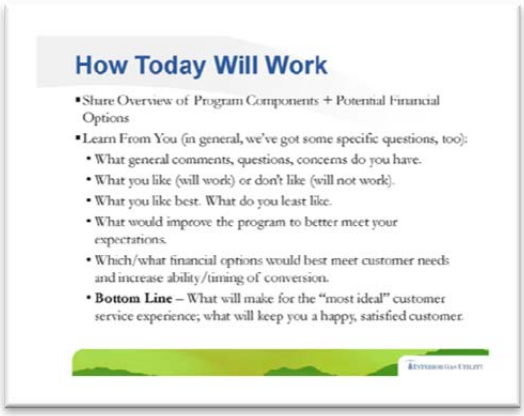
A total of 11 participants representing nine households participated in this process. During participant recruitment, the project team asked participants to share

- All participating households live in single family residences in the 99705 zip code.
- Participants' ages range from Participants' ages range from 30 to 60+. Five participants are 60 or over (45 percent), three are between the ages 50-59 (27 percent), one is between the ages of 40-49 (9 percent), and two are between the ages of 30-39 (19 percent).
- Participants come from a variety of income levels. Of the seven households that were willing to share their household income, five were over $100,000 (approximately 56 percent), and two were between $50,000 to $100,000 (approximately 2 percent).
- Six of the 11 participants (55 percent) are male, five (45 percent) are female and two households participated as a couple (22 percent).

C. Meeting Process

After a brief round of introductions and establishment of focus group guidelines the facilitator shared a brief overview of the meeting agenda, followed by a more detailed overview of the Interior Energy Project (IEP) and the Interior Gas Utility by IGU Community Affairs Manager, Mindy L. O'Neall. The detailed overview included presentation and discussion of IGU's conversion guiding principles and the IGU customer conversion projection, out through 2027.





During Ms. O'Neall's overview of the IEP and IGU, and throughout the remainder of the focus group, the facilitator guided participants through a process that included introductory overviews of each program component, followed by detailed question and answer sessions, and solicitation

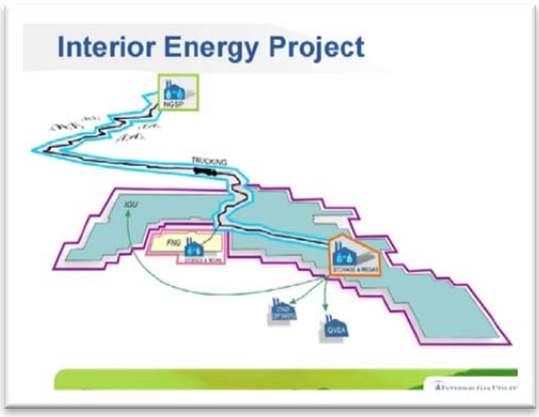
of focus group recommendations for program improvements. Key program components included:

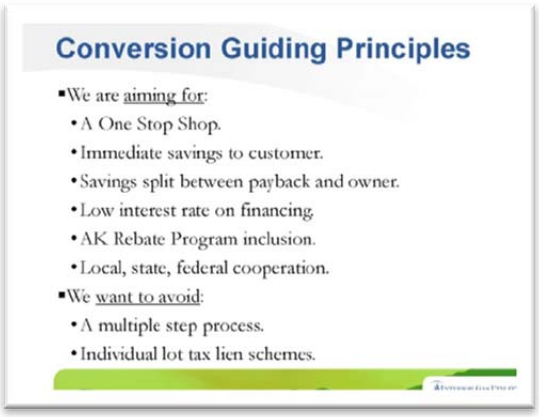
- Communications and marketing.
- Site evaluation, work plan and scheduling conversion.
- Construction design.
- IGU gas technicians.
- Customer contact center and account management.
- Financing options.

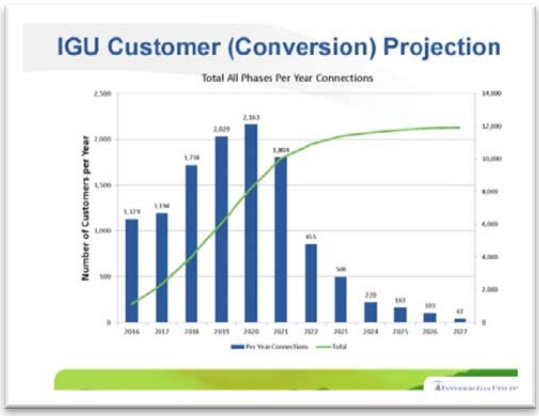
Base information for each component was displayed as a PowerPoint slide and further explained by Ms. O'Neill. This structure allowed participants the opportunity to directly ask questions and make comments to Ms. O'Neill. The tone of the focus group was highly interactive as the facilitator ensured all focus group participants were prompted and given the opportunity to ask questions and provide feedback. This somewhat informal structure created an atmosphere where participants were open and frank about what worked or did not work in the proposed program, and how IGU could best meet their customer needs and expectations. At the end of the session, Ms. O' Neill distributed her business cards and comments cards with her individual and IGU contact information. Summary slides and a summary of discussion by agenda topic are presented below.

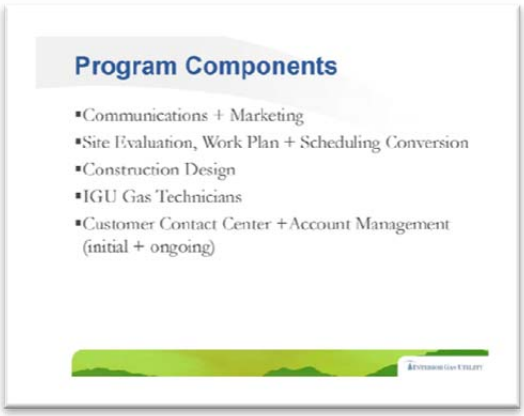
Presentation Slides + Summary of Discussion by Agenda Topic

A. Project Overview

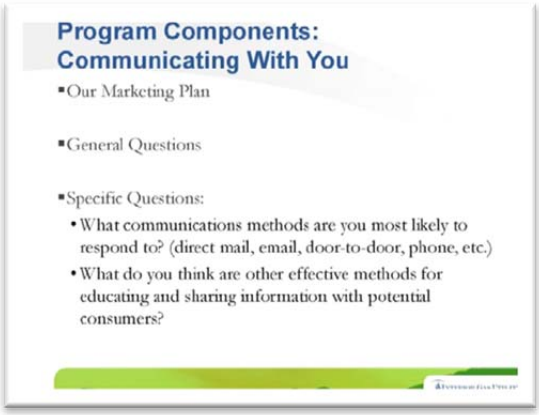








B. Communications and Marketing



General Awareness

- One participant asked a local plumber about IGU; they didn't know who they were.

Postal mailings

- Participants recommend IGU use GVEA paper billing process, inserting information about IGU, the conversion process. Another participant disagrees; says IGU cross-marketing themselves with a private utility is polarizing. GVEA might be a bad idea, given GVEA's reputation. People might automatically associate IGU with GVEA's poor customer service.
- Several participants suggest IGU work with a variety of local businesses to do joint marketing. For example, adds or inserts mailings by the North Pole Senior Center or Ruralite (GVEA publication). Collaborative mailings through the water utility is another potential option.

Use of Local Champions

- Participants would like to see IGU use local community champions – specifically, any current or former mayors, city council members, or Brian White (from North Pole, was "King"). This would help IGU build and establish community trust.

Phone

- One participant says he is not interested in receiving calls or robocalls from IGU and would not answer the phone unless he recognized the number caller identification.

Use of Logo/Branding

- Participant suggested that IGU get a vehicle with their logo on it. Several suggested that while IGU contractors were out surveying, having logos or magnetic stickers on their trucks was a missed marketing opportunity because the community could not identify them.

Participating In/Supporting Community Events

- Several participants suggest it is important for IGU to continue to develop their community presence by supporting local activities, including sporting events. This would create the sense that IGU is willing to invest in the community by investing in and supporting local programs and activities.
- Another participant suggests IGU participate in the road commission's quarterly meetings to gain further exposure.

Newspaper/Radio Ads

- One participant says IGU should take advantage of traditional newspaper and radio advertising if they want to compete on the same level as Flint Hills and GVEA.
- Participants indicate they would like to see more positive media coverage of IGU in the local newspaper and radio.

Flyers

- One person suggests IGU place fliers on the bulletin board in the entryway at the local Safeway, or advertise on shopping carts.

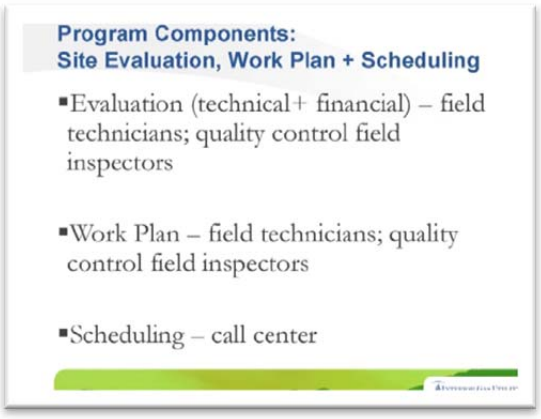
Electronic

- One person suggests IGU create a phone application that could engage customers on outages, bill pay, and weather advisories.
- Participants say email is one of the best ways for IGU to communicate with potential/existing customers.
- Another participant suggests IGU do Facebook advertising.
- The Eielson "For Sale" Facebook group would be a good place to advertise.

Incentives

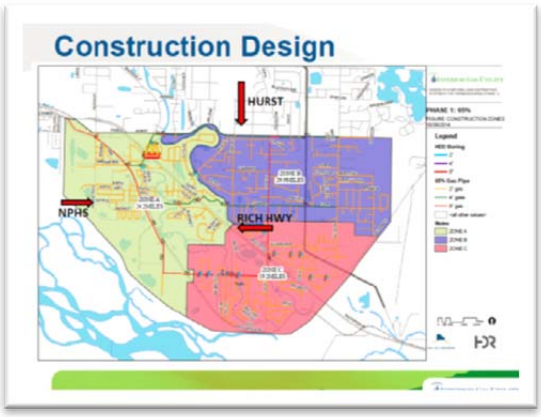
- Another participant suggests a promotion that would waive the initial home evaluation fee if homeowners sign up by a certain date.

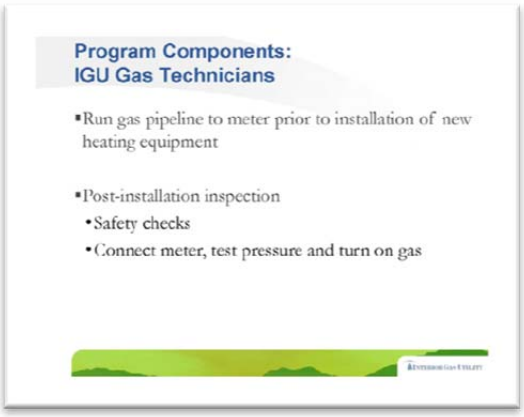
C. Site Evaluation, Work Plan, Scheduling



- When asked about having two consultants come to their home – one to assess their home and system (field technician) and one to discuss financing (account manager) – participants note the difficulty of addressing both of these topics in only one appointment/visit. Without a detailed cost estimate, it would be difficult to discuss financing options.
- Overall, participants prefer two appointments, one to address the physical assessment (field technician), and one to have the financing discussion (account manager). Offering a separate financial consultation, especially for customers that have the ability to pay out of pocket, or do not need assistance with developing and identifying their financing options.
- Additionally, the idea of having two people in their home at the same time makes people uncomfortable (potential privacy and safety concerns). Customers would prefer to accompany the field technician that is walking around assessing their home and system. Additionally, when there are two homeowners (e.g., married couple), both people would like to be able to talk through the financial options, since finances are often a couples/partners decision.
- One participant would like to have the field technician and account manager act as "educators", as not all potential customers will understand the physical and/or financial limitations, opportunities, and options of converting.
- Several participants are concerned with getting a cost to convert quote from a field technician and then later getting an increased/more expensive quote from the installation contractor. They wonder how IGU will mitigate any discrepancies between the estimate and actual installation costs. They have frustration with having experienced this with other contractors in the past.
- Another participant asked how IGU will be able to provide homeowners that are interested in doing self- installation with regulatory and safety information. They would like to see IGU take responsibility on quality control.

D. Construction/Design



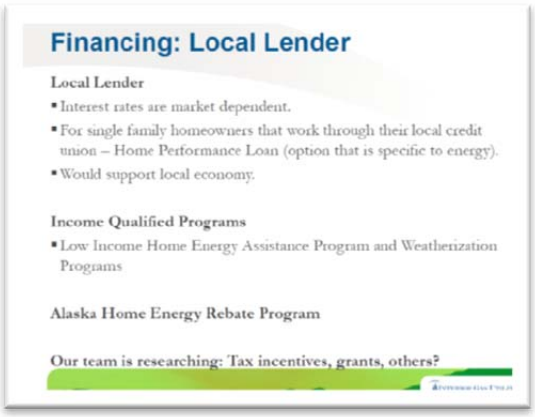


- Participants had many questions related to how IGU will ensure quality control. They would like IGU to implement a plan for regularly inspecting contractor conversion plans, and the actual converted systems. They suggest a mechanism for ensuring IGU is not liable for any faulty installations; this could potentially be mitigated through IGU's process for identifying contractors.
- Participants are amenable to paying for an initial home assessment as part of the overall conversion process, if the technician is able to provide them with an honest, itemized bill. The itemized list, that would include the cost of the assessment, would give customers a means for identifying how much each component of the conversion cost. It would also be helpful to have a prioritized list so that customers can better understand the sequencing and cost of each item; this will help customers assess whether or not they have the financial means, or need financing options to complete the conversion.
- Several participants wondered if they were required to use IGU-approved contractors or if they were allowed to use a provider they preferred.
- Participants are amenable to paying for a quality assurance inspection. This will ensure the installation and actual operation of their new system is operating efficiently and safely.
- Participants have questions about how a consumer actually chooses a brand and boiler. They indicated that they might want to use a high efficiency one and would like to see that as an available option.

E. Customer Contact Center

- Participants would like the customer contact center to be centrally located (in North Pole); this is important both practically and for IGU's image in the community. Having a physical presence is important.
- A timely ("quick") response to customer needs is a high priority for participants.
- Participants prefer the option to talk with someone in person, with after work hours available for customers that work regular 8:00 – 5:00 jobs.
- When calling the center, participants prefer the option to talk with a customer representative, and do not want to have to go through an extensive call tree to reach the person they need to talk to – an extensive list of menu options is not helpful.
- Several participants would like multiple payment options for payment, including online bill pay, pay by phone, and automatic debit/bank account deductions.
- Participants want to know if the call center will be the place to call if there are emergencies and power outages.
- Of the group, only one person is interested in using an "online chat" feature to interact with IGU.
- Participants want to know if residents that live within the municipality will have to pay the City's sales tax on gas.

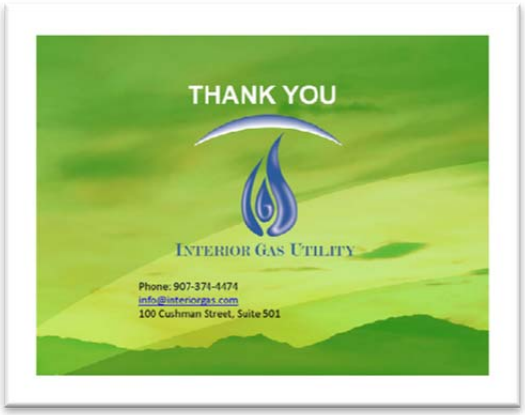
F. Financing



- One participant is interested in a home equity loan to finance the conversion. Others say they are willing and prefer to pay cash. The majority of the group does not like the word "loan" but all say the best option is whatever gets them the lowest interest rate. One participant says she would be happiest if IGU were able to spread out the actual payments in their bills, similar to when you purchase a cell phone.
- Participants recommend IGU work with the local public assistance offices to educate people about income qualified financial assistance.
- Participants question how an outstanding utility/bill pay loan will be transferred with the sale of a house. This is a topic participants would like more education on. They also question how this will work when buying or selling a house.
- One participant says they will convert because it will increase the resale value of their house in the years to come.
- Another participant says he lives on a block with several other low-income homeowners and he does not anticipate them ever converting because of finances. He also believes these are the people who will not be able to take advantage of natural gas because of their incomes.
- Several participants suggest IGU educate homeowners on how they can phase out their conversion, including main components (boilers, furnaces) and appliances. Specifically, participants would like information on how to lessen the financial impact of converting.
- One participant would like to know if there is state or federal money available to support the conversions process. Considering air quality is a public health issue, is there a possibility EPA would fund part of the conversion process; they could do something similar to the wood stove changeout program funded by FNSB and the State.

G. Confirmation of Communications Preferences + Next Steps

- As a closing exercise, the project team asked participants to share any final thoughts regarding preferred communications preferences. The results of that discussion have been incorporated into the communications summary above (item "B").
- The meeting ended with an overview by Ms. O'Neall of next steps.



ATTACHMENT A – IGU, December 2014, Focus Group Recruitment Script

INTRODUCTION

- Hi. My name is Aileen.

- I'm calling on behalf of the Interior Gas Utility, or IGU.

A. **IF <u>NEW TO THE PROJECT</u>:**

- We got your contact information from the IGU Pilot Program, and we are calling to see if you may be interested in participating in a focus group.

- We are meeting with other participants of the pilot program to discuss the natural gas conversions process. Specifically, we are interested in learning:

    - Do you have questions about the conversions process?
    - Would you pay to convert your home to natural gas?
    - What are the other factors impacting your decision to convert or not to convert?

- We are hosting a small focus group with other individuals in the program – would you be interested?.
- The focus group should last about two hours and we will give you a $50 visa gift card as a thank you for your time. Is this something that you are interested in?

B. **IF "NO" –** Thank you for your time. Would you be interested in receiving future updates on the IGU project?

(If yes on receiving info, confirm email and/or collect mailing address – depends what info we have for that individual)

C. **IF "YES"**

- We will be hosting the focus group on Saturday, December 6th in the conference room at the North Pole Public Library from 1-3:00PM. Does that time work for you?

D. **IF "CONFIRMED":**

I have a couple of quick additional background questions. These questions are confidential and will help us learn more about who is participating. **(record responses)**

- What is your full name?

- What is your gender? **(this should be apparent, but…)**

- Which of the following best describes your age range? I have five choices for you:

    - 20-29
    - 30-39
    - 40-49
    - 50-59

        - 60+

    - Which of the following income ranges best describes your household income? I have three choices for you:

        - Under $50,000
        - $50,000 - $100,000
        - Over $100,000

E. **IF "CONFIRMED":**

- I'd like to send an email confirmation before we meet, as well as a confidential draft of a report that outlines the conversions process from the beginning to the end. With the report – we would like you to look at it in advance, and bring any questions or thoughts you might have concerning the conversions process. We ask that you don't share this confidential report to anyone else at this time.

- What is a good email for me to reach you? **(record e-mail)**

- Do you have any final questions for me?

- We look forward to meeting with you next week. Thank you for your time!

Shelly Wade

From: Shelly Wade
Sent: Monday, December 15, 2014 6:49 PM
To: Shelly Wade
Subject: RE: Interior Gas Utility focus group information

From: Aileen Cole [mailto:aileenc@strategies360.com]
Sent: Saturday, November 29, 2014 4:38 PM
To: Aileen Cole
Subject: Interior Gas Utility focus group information

Greetings - and thank you again for your interest in participating in our Interior Gas Utility public focus group. The focus group will be held on Saturday, December 6th at the North Pole Fire Station, located at 110 Lewis St in North Pole, from 1:00pm to 3:00pm in the conference room. We will be serving light refreshments, and to thank you for your participation, we will be giving each household who participates a $50 visa gift card.

The focus group will be made up of 8-10 participants from our Pilot Program as well as two moderators, and we are interested in hearing from you about the following:

- What questions you have about the conversion process.
- Would you pay to convert your home to natural gas? What factors might impact your decision to pay or not pay?
- And finally, what factors might impact your decision to convert or not convert? Is there anything that would increase the likelihood of you converting?

IGU has put together a preliminary *confidential* report and executive summary that outlines the conversion process from beginning to end, and would like you to briefly review it in advance of the focus group. Please come with any questions or concerns you might have (if you don't have a chance to look it over we would still like you to attend, as we will also be reviewing it at the focus group).

For any reason if you are unable to attend, please let me know as soon as possible. Thank you again for your participation feel free to reach out if you have any questions.

Thank you,

Aileen Cole
Interior Gas Utility
907-750-0470
aileenc@strategies360.com

APPENDIX E

Gas Conversion Program Design: Executive Summary

Gas Conversion Program Design: Executive Summary

Interior Gas Utility

SUBMITTED TO:

Mindy O'Neall
Interior Gas Utility
P.O. Box 70200
Fairbanks, Alaska 99707

SUBMITTED BY:

Kimberly Simpson
Regional Vice President, West
Conservation Services Group
Portland Office
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Portland, OR 97204

Headquarters
50 Washington Street, Suite 3000
Westborough, MA 01581

January 20, 2015

Executive Summary

Conservation Services Group (CSG) welcomes the opportunity to provide Interior Gas Utility with program design solutions to help them achieve its goal of converting 17,050 Fairbanks North Star Borough (FNSB) residents over to natural gas. The success of this project is critical if the FNSB is to meet EPA air quality standards, and the benefits are clear; replacing wood and oil heating systems with natural gas will reduce air emissions by approximately 32 percent in the FNSB area. The result will be improved air quality and lower heating bills for thousands of residential and commercial customers.

This Executive Summary provides a high level overview of the program design proposal CSG has developed for IGU, incorporating review and input from IGU's Conversions Committee. Our goal is to design a program that will allow IGU to achieve its annual conversion goals, while ensuring the FNSB community receives the best possible customer service.

CSG Overview

CSG is a market leader in energy efficiency program delivery and design and backs its performance with three decades of innovation and a staff of almost 800 people nationwide, committed to the mission of delivering comprehensive programs to help people use energy wisely.

We invite the FNSB community to visit our website at www.csgrp.com to learn more about the company and the services we provide.

CSG provides leading-edge expertise in program design, building science, field operations management, training, customer service, marketing, software solutions for tracking program results, and public policy. Like IGU and the FNSB community, CSG is focused on lowering energy costs and improving the quality of life for homeowners and residents. Given our common goals, CSG believes we can work closely to meet these objectives in the FNSB area both from an economic and environmental relief standpoint.

Program Elements

Marketing: The implementer's marketing team will need to be qualified and prepared to work with Strategies 360, IGU's current marketing partner, to develop targeted visibility, and educational and awareness campaigns, as well as cooperative marketing campaigns—in collaboration with contractors—that target customers in each construction phase. These marketing efforts should coincide with the pipeline build-out schedule to drive awareness and action in each community.

Customer Contact Center: Customer intake will be critical to handle incoming customer inquiries, perform basic eligibility screening, schedule home assessments and inspections, and provide customer and contractor education about the Program. The implementer should be able to provide solid contact center infrastructure with experienced contact center representatives who are well trained in the program specifics, and will also serve as a resource for contractors who have program questions. Customer Contact Center services will also be required to schedule home assessments. Lastly, the Customer Contact Center will be responsible for scheduling Quality Assurance (QA) inspections following the completion of a certain percentage of conversions.

Account Management: Account management staff will serve as the primary contact for trade allies and will: recruit multifamily and commercial property participants; coordinate contractor and community

engagement efforts; assist with contractor trainings; and provide additional tools and support for residential income qualified participants. Account management is a recommended best practice that ensures a focus on information sharing and relationship building to enhance program success.

Technical Field Representatives: The implementer should provide a team of trained and experienced Technical Field Representatives (TFRs) to perform home assessments and provide excellent customer service to participating homeowners. These technicians will serve as the primary point of contact for customers and will be responsible for making the customer conversions, determining the equipment replacement specifications and helping customers find the right financing tool(s) that work for them.

Contractors: The implementer should plan to leverage existing relationship the MWH/IGU team has established with the contractor community, to develop a robust network of heating conversion contractors. These contractors should meet minimum health and safety standards, as detailed in a Contractor Participation Agreement, to participate in the program. Contractors will be responsible for verifying project scopes as determined by TFRs, confirming installation schedules as assigned by contact center representatives and performing the heating system installations.

Quality Control Field Inspectors: The implementer should provide Field Inspectors who will inspect the first 6 jobs of each contractor crew and one out of every five jobs thereafter. The rate of inspections can be scaled up or down per crew/contractor over time depending on the quality of work performed. In the event an inspection detects health and safety concerns, IGU will be notified immediately. If the inspector finds that a job does not meet program standards, the contractor may be required to return to the site to perform remedial work.

IGU Gas Technicians: IGU's Gas Technicians will play two roles:

- Run gas to the customer's meter prior to the installation of new heating equipment; and
- Perform a post installation inspection to ensure there are no safety concerns, connect the meter, and turn on the gas.

The positions described above offer a high level overview of each stakeholder's respective role in this program. We have also provided a Work Flow exhibit, attached, which provides a visual representation of how this program will operate when launched.

Local Hiring

It is important that this program be led **By Alaskans, For Alaskans**, and supported by proven best practices, program processes, and implementer experience. We recommend the local Alaska staff be responsible for the majority of program delivery functions, including:

- Overseeing marketing and outreach;
- Managing customer intake and scheduling;
- Providing technical assistance to contractors and owners during the site verification visit to ensure correct technical scoping of the work;
- Answering questions and working with contractors during the installation of gas heating measures; and
- Providing quality assurance field verifications.

Customer Financing

Once prospective customers have decided that they would like to proceed to converting their home or business to natural gas, the primary barrier to meeting conversion production will be financial. There are many options that IGU should consider to help overcome this financial burden. The implementation team should be responsible for helping participating customers understand what options are available to them and making the right community connections to support conversions according to the production schedule. Depending on which market sector is being targeted, the financing options available vary, as described below.

Single Family Residential: Local Lending

For the single family homeowner, working through a local credit union is a great option to support the local economy while also bringing lower interest financing.

Single Family Residences: Income Qualified Customers

Unsecured loans to cover the cost of conversion may not be available to households with high debt to income ratios or lower FICO scores. However, these households often make too high an income to benefit from grants or weatherization dollars. This market segment will need to be addressed by the IGU conversion program to meet conversion goals.

There are multiple potential strategies for helping these families caught in the middle to benefit from the conversion program. These could include: on-bill financing with IGU providing a loan loss reserve to cover any defaults; rebates or incentives to bring down the cost of service; and partnering with other NGO's or governmental agencies to provide services or grants that are not income restricted. The implementer should be prepared to work with the IGU team to bring any solutions to FNSB that will support and drive program participation in this market segment.

Single Family and Multifamily Residences: Permanent Fund Dividend

Alaskan residents are annual recipients of the Permanent Fund Dividend (PFD) in October. In 2014, this amount was $1,884 per person. For conversions in 2016 and beyond, the program can work with families to save or allocate their PFD towards paying for their conversion project. If this strategy is employed, this would be integrated into a community messaging campaign helping families understand how they could use all or part of their PFD, working with their local banks or community providers, to pay for their home or small business conversion.

Single Family Residences: Alaska Home Energy Rebate Program

There is a Home Energy Rebate program currently available. The implementer should work to establish relationships with the raters already working within that program. In some cases, a family going through an energy upgrade through that program would be able to fold in their conversion project. Through this program, there are available rebates and access to a loan buy down product or 2nd mortgage for energy conservation.

Commercial and Multifamily Property Owners: Business Loans

Early conversations with Wells Fargo have indicated an interest in working with local businesses and property owners to provide financing for commercial and multifamily property conversions. The implementer should support IGU in fleshing out this offer as a tool for participating contractors.

Commercial and Multifamily Property Owners: Access to PACE Financing

The Alaska Energy Authority is currently working to advance legislation in an attempt to make PACE financing available to commercial customers in Alaska. Presuming this effort is successful in the next two years, commercial property owners looking to finance their conversion efforts could access these funds

in the future. This effort should be monitored by the implementer and leveraged with property owners when it becomes available.

All Property Owners: Tax Incentives for Rental Property Owners

The implementer should be able to work with State and Federal agencies to ensure that interested prospective customers are aware of all tax incentives that might be available to them.

All Property Owners: Access to Grants

Multiple stakeholders are currently working with IGU to find opportunities for grants, including those available through the EPA, in support of the conversion effort. The implementer should be prepared to support the advancement of these solutions for prospective customers, in order to maximize participation across income levels.

Conclusion

CSG looks forward to stakeholder feedback and input from the community as this project moves forward. We are confident that with the right program design and implementation team, the FNSB area will benefit from lower fuel costs, air emission reductions and associated health improvements, as well as significant environmental benefits.

We are excited to be considered a part of this project to lower energy costs for thousands of Alaskans, while simultaneously improving air quality for both current and future generations.

Sincerely,

Kimberly Simpson

Regional Vice President, West

Conservation Services Group

IGU Customer Participation Workflow

Customer Solicitation, Eligibility Screening & Enrollment | Evaluation, Work Scope Development | Scheduling, Contracting, Conversions | Quality Assurance | Program & Financial Administration, Reporting

DRAFT 1/20/15
CSG CONFIDENTIAL

MARKETING *Strategies360 & Implementer*
- Consumer Marketing

CONTACT CENTER *Implementer*
- Program & Financing Overview, Eligibility Screening, Schedule Customer Site Evaluation
- CONTACTS CC
- YES
- Schedule Customers & Contractors for Conversions / "block scheduling"
- CC Provides ongoing Customer Support, Collects Customer Feedback (+/-), Manages Complaints, Dispute Resolution Services
- Perform Post-Installation Customer Satisfaction Surveys

CUSTOMER
- Receives marketing
- * Review Work Scope & Financing Options; Proceed Y/N?
- NO
- Customer End *future customer engagement*
- Sign completion documents
- Provide Feedback to Program on Customer Experience

CONTRACTOR
- Submit qualifications & participation docs to Implementer
- Conversion Scheduled
- Complete Conversion, Equipment Installation
- Contractor Remediation ASAP
- Submit Job Completion Documents

FIELD SERVICES *Implementer*
- Verify Contractor Credentials, Enroll + Train Participating Contractors
- Perform Site Evaluation, Develop Work Scope & Discuss Financing Options with Customer
- Implementer Coordinate Installation Schedule With Contractors & IGU
- Gas Line to Home is installed
- ONSITE QC - SAME DAY
- Complete QC Field Inspection, review completion docs & equipment installed
- FAIL
- Re-inspection (Remain OnSite)
- PASS

IGU
- Run Gas Line To Home
- Post-Installation Inspection, Hook up Meter
- PASS
- Turn on Gas to Home

FINANCING $
- Contact Center discuss financing options w/ Customer
- Contractor discuss financing options w/ Customer
- Customer chooses financing option
- Customer financing approved
- *funds allocated upon job completion*
- Customer financing / funds allocated

ADMIN, REPORTING *Implementer*
- Submit Customer Financing application for approval
- QC Final Admin Review Job Completion Docs & Financing Forms
- Record Job Completion Data
- **Reporting**

* **customer review of work scope & financing options, decision to proceed may take 1-30 days**

QC Administrative Review will be performed on 100% of applications and jobs submitted for processing