



Alaska Heat Smart

Market Assessment - Demand for Heat Pumps

Juneau has seen significant growth in demand for heat pumps over the past decade, driven by climate concerns, a desire for reduced heating expenses, increased heating oil costs, and the advent of diverse financial assistance programs. Juneau has a history of shifts in heating systems in response to the relative prices of oil and electricity – adoption of heat pumps seems to be following this pattern.

Alaska Heat Smart was developed to contribute to acceleration of heat pump adoption in Juneau through a broad community stakeholder process beginning in 2018. It received CBJ funding and began trial operations in December 2019. Alaska Heat Smart has seen a high rate of conversion by early adopters, with most of them paying directly out of pocket. Continuing opportunities for accelerating heat pump adoption include the utilization of new federal incentives as well as favorable loan programs.

[American Community Survey data](#) might provide the most straightforward base of information to assess heating system prevalence in Juneau. 2021 data indicate that of 12,922 occupied Juneau housing units, 63% were heated primarily by fossil fuels, and 32% were heated primarily by electricity. A complicating factor in any accounting of home heating is that heating system redundancy is common in Juneau homes. The presence of two or three systems is the norm and is challenging to account for. Alaska Heat Smart (AHS) estimates 2000 installed and operating air source heat pumps as of July 2023, reflecting an increasing rate of adoption over the past several years. Many of those 2000 homes have retained their legacy heating systems yet their reliance on these systems is likely greatly reduced. Likewise, many will have retired their legacy systems. The presence of 2000 heat pumps in Juneau housing units, roughly 15%, suggests that there is great opportunity for a large number of future heat pump additions to both single family homes and multi-family housing.

Technical Assistance - Process and Need

AHS data indicate that the average Juneau home that installed a single head air source heat pump in late 2022 through mid 2023 will save between \$1,300 and \$1,700 annually. (Savings is directly proportional to heating fuel costs.) Annual saving in excess of \$2,000 is not uncommon. Annual savings is directly related to current heating oil prices. AHS' home heat pump assessment program has seen annual applicant growth of over 50% annually since 2020.

AHS first line of assistance and education to homeowners is via an informative web presence. Dozens of calls and emails are fielded monthly, many resulting in applications for our home heat pump



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assessment. For those who need a deeper understanding of their home, its utility economics, its efficiency issues, and ways in which a heat pump may integrate with existing home heating systems, the AHS home assessment process will:

Generate, provide, and explain a detailed report on the amount of heating energy that a specific home needs.

- Help homeowners determine if their home has any existing issues that should be dealt with prior to adding a heat pump. These could include electrical panel needs, electrical service needs, or varied energy efficiency concerns.
- Help homeowner efforts to obtain bids from local contractors by providing detailed options about what heat pump systems will work best with existing heating infrastructure.
- Help identify potential home energy improvements, including options for domestic hot water production, heating of lesser used spaces, and heat pump heating of a home's primary living spaces.
- Help to identify available potential financing options, from direct assistance programs, to incentives, to traditional loans, to tax credits.
- Provide analysis of received contractor quotes and a post heat pump install follow up analysis.
- While AHS provides information on cost savings and on the availability of incentives and loans, we believe that there is an opportunity to increase marketing of loan programs and opportunities, with more focus on energy savings and cash flow.

The AHS home assessment process typically involves a 1-2 hour site survey and 1-2 hours of report write up. The average assessment requires 3.5 hours. AHS currently offers this service to homeowners free of charge. Financial pressure has prompted a more careful look at the economics of the assessment process and refinement of the process is ongoing. Currently being discussed are fee-based options, sliding scales, virtual and remote assessment processes, and charges for non-residential assessment work. With that said, we are wary of a fee-based process and the potential it may have to exclude or 'scare away' homeowners who may need this service more than others.

Homeowner Savings Realized

AHS has assessed nearly 800 Juneau homes. We have nearly completed an analysis of roughly two-thirds of 2022 Juneau assessed homes and of 165 assessments analyzed, AHS has learned that for 2022:

- Average annual oil space heating cost: \$3,048
- Average annual electric resistance heating cost: \$2,10



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- Projected annual average savings from oil heat to heat pump: \$1,802
- Projected annual average savings from resistance to heat pump: \$1,226
- 83% / 17%: ratio of assessed oil homes to assessed resistance homes
- Carbon output: pre-heat pump - 15,240 lbs
- Carbon output: post-heat pump - 1,484 lbs
- The average cost of installing a single head heat pump, with \$1,500 of electrical connectivity work, is \$7,500.
- The average cost of installing a multi head heat pump, with \$1,500 of electrical connectivity work, is \$12,500.
- Some systems, such as 3 or 4 head systems, can run up to \$15K or more.
- Ducted heat pump systems average between \$12K and \$15K.

Heat Pump Loan Program

In 2021 AHS worked with True North FCU to develop a heat pump loan program, offering 5-year terms at interest rates of 4% - 6%. These traditional financing options are available for homeowners holding an AHS home heat pump assessment. Maximum loan principal offered is \$12,500. Uptake of these loans has increased in 2023 in tandem with an increase in marketing efforts by the credit unions. We see the new federal tax credits and incentives for lower-income homeowners as driving new demand for installations as well as for heat pump loans.

AHS Numbers

- **Financial Assistance trends over time**
 - 2021 Applicant median home value: \$540,900
 - 2022 Applicant median home value: \$483,150
 - 2023 Applicant median home value: \$458,900
- **Assessments performed - close to 800 since early 2020**
 - 258 applications for home assessments in 2023 to date
- **Assistance count**
 - JCOF 41 heat pumps financed and installed
 - Clean Heat Incentive Program (CHIP)
 - \$525,000 (congressionally designated grant and private foundation)
 - Income qualified



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- 53 applications in progress
- 26 incentives paid
- 51 applications failed
- 130 total applicants

- Healthy Homes Program (HH)
 - \$1.9 million competitive grant (HUD)
 - Income qualified
 - 14 applications in progress
 - 31 applications approved
 - 21 applications failed
 - 66 total applicants

- TNFCU loan count - as of Aug 31, 2023
 - 27 approved
 - 6 pending