# Data Management Plan

**Last updated:**

2/16/2021

**Project name**

Incentivizing Cold-Climate Efficiency in Juneau (ICE-Juneau)

**Lead institution**

Cold Climate Housing Research Center (CCHRC)

**Data description**

The ICE-Juneau project will collect multiple types of data, including:

- Energy data consisting of electricity and fuel oil bills for single family houses and residential units;
- Energy audit data including an energy score, building characteristics, and predicted annual energy use;
- Survey data including aggregated answers to questions on demographics, residence type, heating systems and financing;
- Interview data including answers to questions on buildings, heating systems, and financing;
- Focus group data including group answers and comments to questions on energy efficiency retrofits including heat pumps;
- Outreach data including website hits, attendance of public events, and social media likes;
- Cost data including cost of individual retrofits and program implementation.

**Complementary data**

The ICE-Juneau project will use, supplement, and integrate with the existing Alaska Retrofit Information Systems (ARIS) database, a database of energy audit information from energy audits of buildings in the State of Alaska. Further, data from this project will complement program implementation data of similar energy efficiency retrofit programs in the United States.

**Data generation**

This project will generate data through research activities and will not purchase or re-use third-party data.

**Data format**

The ICE-Juneau project will use standard data formats for collection, storage, analysis, and sharing of data for ease of use, ability to transfer to commonly used analysis software programs, and long-term usability.

- Numerical, cost, outreach, and interview data will be stored in a spreadsheet program chart in a commercial software such as Microsoft Excel or Google Sheets.
- Energy rating data is expected to be stored in an AkWarm file (.hm2 file) which is the most common energy rating software used in Alaska with the final energy rating and annual energy use predictions stored in a spreadsheet program chart in a commercial software such as Microsoft Excel for use by those outside of Alaska. AkWarm is freely available for download here: http://www.analysisnorth.com/AkWarm/AkWarm2download.html
- Survey data will be collected in the Google Forms or Survey Monkey Survey Software and periodically downloaded as .csv files, Google Sheets, or Microsoft Excel files.

**Metadata**

The ICE-Juneau project will include metadata in the same file as the actual data.

- For spreadsheet files, each column will be titled with a descriptive indicator of the data in the column with units included if applicable. One sheet in the file will include information on the data collection and analysis methodology.
- For text files, data descriptors and collection and analysis methodology will be included in the introduction or an appendix.

**Data sharing**

With the exception of private identifiers such as names, addresses, or identifying characteristics, ICE-Juneau will make all data publically available.

- ICE-Juneau will set-up and maintain a project website. Aggregated and anonymized data will be made available on this website throughout the project, typically after analysis and review and contained in a report or publication.
- Before sharing raw data, researchers will remove private identifiers from data and replace them with generic identifiers made from a number and letter combination. CCHRC also stores project data on CCHRC's Research Data System website (though this project is expected not to be shared here due to the household level of data): http://www.cchrc.org/research-data-system
- Individuals can email or call the project manager at CCHRC to request anonymized raw data. In some cases data may have to be aggregated to be anonymous (such as in the case

of only a few respondents to a question).The project manager has access to operational outreach funding that will accommodate requests that are within a reasonable cost and time frame (typically 4 hours of employee time and less than $50 in material cost). Individuals will need to explain how they will protect the data and what it will be used for.

- ICE-Juneau staff realize data from this pilot project will be valuable to Juneau stakeholders looking to set-up a long-term energy efficiency retrofit program as well as representatives from other communities with similar goals. Staff will take measures to share data with the ease of use for these end-users in mind.

## Data preservation

ICE-Juneau staff will preserve all raw project data for a minimum of 10 years, at which time technology advances and inflation will decrease the data's value for present-day analysis projects. Aggregated data, analysis, and the results will be preserved indefinitely on the internal file-sharing system of CCHRC-NREL. Reports will also be stored on a project-specific website. It is likely that this website will outlast the 3-year project timeframe for a minimum of 10 years, during the operation of the subsequent planned energy efficiency retrofit program in Juneau. The website will be maintained by Alaska Heat Smart programmatic staff. A separate project website is maintained on the CCHRC website and will also contain project reports.

CCHRC project website: [http://cchrc.org/incentivizing-cold-climate-efficiency-in-juneau/](http://cchrc.org/incentivizing-cold-climate-efficiency-in-juneau/)

Alaska Heat Smart website:  [https://akheatsmart.org/](https://akheatsmart.org/)

## Responsibilities

The project manager will be responsible for ensuring data management practices are followed. The P.I. will ultimately be responsible for ensuring that the project manager is thorough and final data archives are completed.

The project manager will be responsible for facilitating data sharing between research staff. She will establish and maintain a secure file-sharing platform. She will be responsible for password-protection of the data and will change the password on a quarterly basis, granting access to team members actively uploading data or working on analysis only after they have completed IRB training to ensure proper handling and security for information such as names and addresses. As analysis is completed, data will be archived in a secure folder on an internal server at CCHRC and the aggregated results will be made available to the rest of the project team and others via the project website.

Research staff will be responsible for data collection, as overseen by the project manager. They will be responsible for data storage, analysis, and preservation, as overseen by the project manager.

**Budget**

The data collection, analysis and storage of ICE-Juneau data will occur using existing institutional resources covered through the operating budgets of partner organizations. These resources include file-sharing systems, hard drive storage space, collection and analysis software, and web-server. ICE-Juneau funding will be used for research staff time for the collection, analysis, and storage activities.

**Data volume**

This project will generate between 2 and 5 gigabytes (GB) of data. The majority of this will be stored in the Alaska Retrofit Information System operated by the State of Alaska; the remainder will not result in additional costs to the institutions responsible for storing the data.

**Confidentiality**

The project manager will be responsible for maintaining the confidentiality of project participants, under the oversight of the P.I. All participating households in the project will sign an agreement that will include information that this is a federally-funded non-private, aggregated data will be made public. Research staff working on data management will be required to have current Institutional Review Board (IRB) training certificates so that they follow best practices for removing private identifiers. Data will be anonymized before shared with identifying information replaced with generic identifiers made from a number and letter combination. Raw data will identifying information will be stored in a Google Drive folder with access granted only as necessary and to IRB-certified staff members.