The Challenges of Food-Energy-Water Data Collection in Remote Islanded Microgrids: Lessons Learned and Recommendations Moving Forward (GC31H-1365)

A. Research Questions:

1) What are the direct and indirect linkages and feedbacks between renewable energy generation and the local drivers of food, energy, and water (FEW) security in Arctic and Subarctic communities?

2) To what extent can combinations of renewable energy generation and FEW-related infrastructure energy loads be optimized to enhance FEW security in Arctic and Subarctic communities?

B. Data Needed:

- Food, Energy, Water Usage, Reliability, Needs
- Current quantity, quality, reliability of food
- Current energy usage; seasonal variations, diurnal variations
- Current heat usage; quantity and type
- Current water usage
- Percentage of homes with piped water

C. Data Challenges:

- Poor availability of data
- High turnover in power/water plant operators
- Privately owned utilities reluctant to share data, when available
- Flat usage fees for water (no metering)
- Heat loads difficult to know when not all sources of heat are metered (e.g., wood heat)
- Food data is very diverse and difficult to collect systematically.

D. Data Solutions:

- Be patient and build relationships to obtain qualitative and survey data.
- Engage key community members from all important groups (e.g., Native elders, community leaders, utility operators)
- Use proxy data when data is available from a similar community.
- Gain trust and establish rapport with community members will allow you to install your own metering systems.
- Report results back to the community. The project should be a two-way exchange.
- Include room in your budget to pay people who provide time and data.