

# Needs Identification and Problem Statement

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## **Abstract**

*This document identifies the needs and limitations for the project based on the clients requirement. The document summarizes the main points of the client meeting and interprets the points into prioritized need statements. In addition, the document contains user benchmarking and identifies any question not covered in the client meeting. The main purpose is to summarize the client's needs in a concise and organised manor.*

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## Summary of Client Meeting

The greenhouses will be going to two indigenous non-profit organizations. The greenhouses will be a source of food for the meal programs that the organizations run (intended for the 6000 Inuit living in Ottawa) and provides training in plantation to the upcoming generation of Inuit kids that are part of the program. The greenhouse project is planned for 5 separate locations: the main locations are a home garden, the Madahoki farm, an old school for young kids, and two separate institutions that specialize in hosting teenage indigenous students. Due to the nature of these locations, the greenhouses will have to feature varying designs and considerations that suit these intended locations.

In all the aforementioned locations, the client is looking to grow essential plants such as herbs, basil, tomatoes, squashes, beets, garlic, and onions. The intent varies based on the locations; the home garden and farm harvest will be used mainly for the preparation of fresh Inuit and indigenous meals, while the other locations focus on training kids in planting and preparing their own meals from their produce. Due to cultural beliefs, it is important to the community that everything grows naturally. As a result, they refrain from the use of commercial fertilizer or any artificial enhancer (there is no problem however with grow lights). In terms of working labor in the locations, the home garden will be run by the client themselves, the farm will have around 3 to 12 volunteers at any given time while the other locations will be solely run by the students. Thus, staff and volunteers have little time to spare so a low maintenance greenhouse is desirable. While the organization has experience with growing crops, they have no previous experience in using a greenhouse, making ease-of-use an essential aspect of the project.

When it comes to infrastructure and foundations, the home garden and the farm are the most well suited to include automation features and pumps. The other locations, however, and mainly the old school where the indoor grow wall is to be installed, suffer from limited access to a reliable source of electricity. In addition, staff and Inuit have little experience working with electronics. Because of this the client was concerned that having to use and care for electronic devices could lead to problems down the road. Furthermore, the non-profit organization does not have the resources for fixing any electronic system failures or structural damage that may occur; therefore, more traditional means of planting are favored for these greenhouses. Most of the locations feature a lot of sun and are intended for seasonal growth (May to October); the old school, on the other hand, is expected to run year-round and requires artificial lighting as it is indoors. Rodent infestations (squirrels, mice...) have the potential for causing harm to the plants growing in the outdoor greenhouse locations.

The client sees opportunity for growth in the future and wants to have the capability of expanding the greenhouses in the future, mainly in the Madahoki farm. The client wants the life expectancy of these greenhouses to be maximized since they will most likely not have the funds to replace the greenhouse in the future. The client made note that the home greenhouse must be somewhat transportable due to personal renovations that will take place near the greenhouse in the upcoming years. Finally, the client expressed her interest in that at least one of the greenhouses features an igloo structure.

## Identified Need Statements

Below is a list of the needs identified from talking with the client ranked with importance values:

Needs	Importance
Be a reliable source of food.	5
The greenhouse automatically controls its temperature.	4
The hydroponics are capable of growing a large variety of food.	5
Capable of expanding (scalable)	2
Easy to transport to setup location.	3
Capable of preventing rodents from entering the greenhouse.	4
Not reliant on an external power source.	3
Able to withstand strong winds	3
Use natural means to grow food. (No fertilizer)	3
The greenhouse is shaped like an igloo.	1

## Problem Statement

A need exists for an indigenous organization to grow food during the growing season with a greenhouse that requires low maintenance, grows a variety of food, and does not rely on an external power source.

## User Benchmarking

Below is a table containing information on similar projects for two different First Nations communities.

Specifications	Users	<i>Potlotek First Nation</i>	<i>Kwadacha First Nation</i>
Provided a solution to food insecurity.		Yes	Yes
Year round		Yes	Yes

Method of Heating	Climate Battery	Biomass cogen facility and propane forced air heaters
Hydroponic System	No	Yes
Access to power	Yes	Yes (Diesel Generator)
Automatic temperature control	automatic ventilation system	Unkown
Watering method	irrigation system	Hydroponics, NFT system, and drip irrigation.
Plans for Expansion	Yes	No
Size	30 ft X 60 ft	3 greenhouses of dimensions 40 ft X 90 ft

## Information to be Clarified

After reviewing the client information, it was noticed that there were a few remaining questions.

- Need to know more information regarding access to water. We are not sure if the greenhouses will have access to running water or if it will have to be brought to the greenhouse by hand.
- Quality of water?
- Ask if they would be fine with using natural minerals to enhance the growing of plants.
- Clarify if electricity can be accessed at the home garden.

## Resources

Bechmarking Data was obtained from the following sites

Potlotek First Nation Greenhouse Project

<https://www.cbc.ca/news/canada/nova-scotia/potlotek-first-nation-community-garden-1.5844756>

<https://www.saltwire.com/atlantic-canada/news/community-greenhouse-project-brings-fresh-affordable-food-to-cape-breotns-potlotek-first-nation-100594166/>

Kwadacha First Nation Greenhouse Project

<https://www.hortidaily.com/article/6028105/greenhouses-provide-local-food-to-canada-s-most-remote-community/>

<https://kaskadenacouncil.com/did-you-know/kwadacha-nation-is-constructing-three-hydroponic-greenhouses-that-will-operate-throughout-the-year-and-will-produce-30-tons-of-organic-vegetables-annually/>