1.2 Customer Needs

Customer Needs were surmised after an initial meeting with the Team 34 project sponsor, Dr. Michael D. Devine. Throughout the meeting, team members were oriented with the Project Scope, and were able to ask questions as to the specifics of the project.

The initial set of questions aimed to gather information on the target demographic for the Portable Hydroelectric Generator. This was an important aspect of the project, as it would determine device size and output. The sponsor shared his thoughts that the project could either be utilized to power rural communities without access to electricity, or to supply campers/travelers with emergency power.

Questions were also asked regarding the commercialization of the product. This project, entrepreneurial in nature, would require the team to produce a product that could be replicated and marketed. Target customer demographics, portability, design simplicity, and cost would all play a role into the project's marketability.

Another series of questions aimed to develop a sense of what "portable" meant to the sponsor. The level of portability of the generator would play a huge factor in its size and power-transfer design. Larger devices to power communities would be portable in that they could be easily moved or adjusted. Smaller, camping devices would be portable in that they could be stored in a backpack.

Durability was also discussed by team with the sponsor. Operating time in various environments is an important factor in marketability and product operation.

The sponsor also requested that the team examine prior design team's' efforts to produce a similar product. He wished the team to learn from their mistakes (resulting in a non-functional product), and produce a prototype that could be tested in real-world conditions.

Below were the respective statements and interpreted customer needs from the meeting:

Customer Statement	Interpreted Need
I want a device that can harness the energy from running water to supply electricity from a small community to a person living in the woods.	Produce a portable hydroelectric generator that can give reliable, abundant power to people in areas where electricity isn't reliable.
Make product that can be commercialized, and can be later continued by a company or LLC.	Create an affordable prototype that is cot accessible to target demographics (i.e. Small communities, third-world countries…), easy to reproduce, and efficient enough that customers will desire it.
This should be a portable device that can adapted to different environments. It should also be able to operate for long periods of time.	Design a portable device that is versatile and durable enough to withstand prolonged use.
You should use the prior research from the senior design group a couple years ago to help make your prototype.	Make a functional prototype that builds off the work off the previous design.

Fig. 1. Customer statements and Interpreted needs.

Additionally, the team produced and distributed an online survey to Florida State University students. Using a rating scale, students were able to decide the importance of possible design considerations gathered from the sponsor meeting. Categories were as follows: efficiency, portability, cost, and reliability.

As a possible target demographic, these students provided valuable information, which largely coincide with the desired product outcomes provided by the sponsor. Students wanted an

easily maneuverable power system, which could be considered affordable to their demographic, and could produce on-demand power.

Team 34 will cater to the above customer needs in its design of a Portable Hydroelectric Generator.