

The purpose of this project is to make a feasibility study for a solar power plant that will provide renewable energy to the Hopi Tribe. The power plant will be located within Hopi territory and will theoretically and hypothetically provide electricity to the grid. The purpose of this project is to enhance NAU's relationship with the Hopi tribe, along with exposing NAU students to how solar power plants are designed and established. In this way students will get experience about the design, manufacturing and operation of a solar power plant.

This project will also benefit the Hopi Tribe's interest in renewable energy technologies, as this plant may bring awareness of utilizing different solar technologies. As NAU and the Hopi Tribe are the stakeholders and sponsors of this project, they hopefully will both benefit from the team's proposed power plant project.

The requirements for the team's hypothetical power plant are that it has to be solar powered, located on Hopi territory, and must produce at least 50 megawatts DC electricity and be financially feasible. This report will tackle the output rating of the power plant and will develop a design that will meet this criterion.

The project started by defining the customer requirements, and from the customer requirements engineering requirements have developed with their technical value. The functional model for the project has developed to see clearly what the target inputs and outputs of the system are.

Testing procedures have been developed for each engineering requirement to confirm if the project is meeting the requirements or not. The final design has been selected for the project, which was derived from the two designs that were proposed within the Preliminary Report. The design was selected using the Pugh chart and Decision matrix evaluation. The final design consists of single axis tracking, bifacial PV solar panels of 445 Watts, solar inverter of 2 MW capacity, as well as a racking and tracking system to take the most advantage of the bifacial PV modules. This design consists of 25 inverters with 112,100 solar panels. This paper concludes with an implementation plan that has been proposed to be referenced and used in the future.