Our Grand Challenge

Currently, the Texas population is 27.61 million and increases by 0.43 million per year, or 1200 per day. Many regions of Texas have insufficient water, so meeting the water needs of a growing population is a challenge. Our approach is to desalinate water, whether from the ocean or from saline aquifers.

Key challenges:
The key challenge is to gather data and select an electricity source. We will explore conventional electricity from the grid, but also carbon-neutral energy sources such as wind, solar, and nuclear. It is important to perform economic analysis on different scenarios including energy costs from renewable sources.

Project Goals

The project will focus on assessing water demand and its supply in various regions of Texas. We will employ Advanced Vapor-Compression Desalination (VCD), a technology that has been developed through AggiE Challenge for the past three years. In coastal regions, Advanced VCD will desalinate seawater directly. In inland regions, Advanced VCD will concentrate brine from an RO plant, which will increase water recovery and reduce disposal costs by a factor of 4.

Desired Engineering Majors

Aerospace Engineering (AERO), Electrical Engineering (ECEN), Computer Science (CSEN), Mechanical Engineering (MEEN).

Faculty Mentors

Dr. Mark Holtzapple,
Dr. Mahmoud El-Halwagi,
Dr. Pavel Tsvetkov