

PHY 405/505 - Energy & Sustainability
Fall 2021

Assigned: August 30

Due: December 10

Group project

There are two options for the group project. The class can split into multiple groups and work on both. The main idea is that this will be an ongoing research project that we will discuss throughout the semester, and a joint report will be submitted at the end. Each person should have a nearly equal contribution to the paper, which will be established by each person submitting his/her written contributions separately from the final report.

Project 1: Analysis of alternative heating scenarios for SUNY Cortland's Camp Huntington

Camp Huntington (CH), located in the Adirondacks, is one of two SUNY Cortland camps on Raquette Lake. CH is not accessible by road, and deliveries can only be made by barge or ice road (in the winter), which includes the heating oil for the furnaces used to heat the facilities for a substantial fraction of the year. SUNY Cortland wants to transition to greener forms of energy for its facilities and also mitigate the risk that comes with deliveries of large quantities of oil across a protected natural wetland area. To do so, it is considering alternatives to oil heating and possible options for replacing the existing heating infrastructure.

This project will examine CH as a microcosm for our larger domestic, industrial, and economic dependence on fossil fuels. In this project you will need to define the constraints (usage, physical, and regulatory), the goals, and the alternatives. Your report must present an analysis of the pros and cons of the options and conclude with a recommendation to the College.

Project 2: Analysis of the 2021 IPCC report on climate change

On August 9 the UN's Intergovernmental Panel on Climate Change (IPCC) released a new report. This report summarizes the findings of current research relating to climate change and the consequences for different courses of action. The report strongly argues for transitioning away from fossil fuels immediately, with stark warnings for the failure to do so.

This project will require you to read the IPCC report and comment on the major findings there. You will consider and assess its recommendations in terms of the materials we have studied in the course. Your final report should identify places where you agree and disagree with the findings. The final part of your report must outline a proposal/roadmap for responding to the situation described in the report and justify this path using facts and quantitative arguments.