

EP 418 Project Proposal and Team Charter

Project/Team Name: Team Solar

Team Members: Harry Lluo, Allyson Miller, Iman Nazim

Date: 10/5/2025

PROJECT PROPOSAL Choose a technology or solution and write a one-paragraph proposal describing your topic. This proposal should address the following questions:

1. Why is this technology or solution important for the sustainable production or consumption of energy?
2. How will you incorporate perspectives from multiple disciplines (e.g. social, economic, technical, environmental) into your final product?

Our group proposes to focus on perovskite tandem solar cells as a disruptive technology in the transition to renewable energy. Perovskite-based photovoltaics are emerging as a cost-effective and highly efficient alternative to conventional silicon solar cells, with tandem designs already surpassing 29% efficiency in lab demonstrations and theoretical limits reaching above 37%. This technology is especially compelling because solar PV is already the cheapest form of new electricity generation worldwide, yet efficiency improvements and lower manufacturing costs could accelerate adoption even further. Our analysis will focus on the comprehensive lifecycle spanning three key phases. In production, we will examine manufacturing costs, scalability potential, environmental impact of raw materials (particularly lead toxicity), and how efficiency gains motivate mass production. For implementation, we will assess economic viability across market segments (solar farms vs. residential), distribution strategies, and whether perovskite cells will replace existing silicon installations or define next-generation standards. Finally, we will address the end-of-life considerations by investigating material recycling pathways and circular economy opportunities.

Team Contract

Team Name: Team Solar

These are the terms of group conduct and cooperation that we agree on as a team.

Participation: We agree to....

Contribute equally to projects

Communication: We agree to...

Available through group chat.

Meetings: We agree to....

Meet every Monday night (7pm) before the deadline.

Conduct: We agree to...

Be responsible for projects and be respectful of others.

Conflict: We agree to...

Sit down and talk, address problems head on.

Deadlines: We agree to...

Try to complete Monday before the deadline.

Team Member's Name	Team Member's Signature
Harry Luo	<i>Harry Luo</i>
Allyson Miller	<i>Allyson Miller</i>
Ihsanul Iman Mohamad Nazim	<i>Iman</i>