

ENERGY AND RESOURCES GROUP 190/290

**MICROGRIDS &
DECENTRALIZED RENEWABLES
FOR ENERGY ACCESS**

Spring 2017

MONDAYS, 2-5PM

104 BARROWS HALL

INSTRUCTOR: JALEL SAGER & GUESTS

CCN: 24318 (ER 190), 32371 (ER 290)



This seminar course aims to build expertise in the analysis and design of rural electricity access solutions with an emphasis on serving poor populations in developing economies. We will explore the solutions from technical, social and economic perspectives via (i) extensive discussion of classic and recent literature in the area (ii) learning the physics and engineering behind off-grid energy solutions and working with engineering tools to design and analyze these systems and (iii) a semester-long sequence of projects in which we analyze microgrid case studies, proposing and defending our own solutions to difficult real-world challenges around low-carbon transitions.

By placing decentralized renewable energy—such as micro-, mini- and nano-grids—in social, energetic, and economic context, the course seeks to help students understand the evolution and structure of the global energy system. Special attention will be paid to its co-evolutionary relationship with wider systems of production, exchange, and social organization--and how this might both hinder and accelerate low-carbon transformations.

Ultimately, our objective is to explore answers to the following question: How can we adapt existing policies, business models, and state-of-the-art microgrid designs to improve their potential to improve development outcomes?

The course is intended to complement Energy and Society and Electric Power Systems (ER 100 & 254); students here will use the seminar format to dive deeper, build microgrid research topics, and simulate a project development process in small groups that builds on earlier research.

Image: New Sun Road