

**Michigan State University
College of Engineering; Dept. of Electrical and Computer Eng.
ECE 480 Capstone Design Course Project Charter**

Team 3: Electricity Generation from Hot Rails

Sponsoring Company/ Organization: Union-Pacific Railroad

Contact Information:

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Phone and Best Time of Day to Call: (prefers email for initial contact)

Background Information:

Advancement in electricity generation from thermal sources continues to be a focus area for various industries. Union-Pacific operates 32,000 miles of railroad track. Within each mile the two rails absorb energy from the sun, often resulting in temperatures exceeding ambient conditions by 30-60 degrees during warm months or in warm climate areas.

Business Case:

The business case will be a key outcome of the project.

Project Intellectual Property Considerations: None

Deliverables:

Business case study based upon data collected using the outcome of the project measurements/demonstration, conversion efficiency, and practicality.

Goals:

The goals of this project are to develop hardware and analysis to quantify the following:

- Measure and convert heat energy from rails to electricity with quantitative measures
- What potential opportunities exist to harvest the heat energy on a large scale and convert it to electrical power?
- Determine, based on measured data and available technology, any recommended practical methods for using the harvested energy for existing railway energy demands (for example, road crossing signals, right-of-way lights, etc.)

Project Team: (Completed once semester begins)

Name	Responsibility

Faculty Advisor: (Assigned by ECE Dept . based on project requirements)
