



**RUTGERS**

School of Engineering  
Department of Electrical and Computer Engineering

## **Capstone Project Proposal**

**Project Number:** Capstone Project

**Project Title:** Photovoltaic (PV) System Improvement and Thermal Electric Dissipation

**Project term:** Spring 2016

Student names (last and first name) and contact information (please start with the team point of contact):

1. Oscar Guillen
2. Christina Baaklini
3. James Henrique

Project Advisor name:

1. Jaeseok Jeon



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**Team number: 012**

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Our team consists of three ECE students focusing on electronic circuits as a part of our degree program. Our Capstone Design topic covers Photovoltaic systems in solar energy use and efficiency. This topic reflects our experiences, course work, and accumulated knowledge given that some of our major courses fall in the field of electronic circuits, circuit physical aspects, and design. Courses like Analog Electronics, Digital Electronics, Physical Electronics, and Electrical Energy Conversion are some of the course we use to implement our project goals.

A photovoltaic system is a power system designed to supply usable solar power through solar cells. The solar cells main function is to convert solar energy into usable electricity for a variety of applications from home to industrial use. The important components of the solar panel are the Photovoltaic Modules which are in charge of generating DC current by absorbing solar rays. We will use a DC/AC inverter to convert the DC current to AC electric current usable for electronics, and in a larger scale, to feed the electrical grid.

Our objective is to design a system that will lead solar technology into a new realm of solar energy expectations, which will be implemented in many real-life applications by improving Photovoltaic efficiency. We will use various electrical components in our design to secure charge load to a battery in our case which will reflect on the effects of our design on the electric grid.

In successfully completing this project, we will thoroughly research solar energy's pros and cons, and gain knowledge by consulting our professors and the faculty members. We will also have to refer to our electronic circuit books and materials in order to study the design of our system on a theoretical level making use of the laboratory equipment in order to implement this design on a practical level. At our project completion, we will deliver an electrical system designed and fully functioning at a higher level of efficiency which will demonstrate our specialized accomplishment, our knowledge in circuits design, and our overall understanding of various science topics.