Campus

CAL MARITIME

Living Lab Projects

Team

Lead Faculty: Ryan Storz, Assistant Professor
Staff Team Member: Isidro Farias, Director of Facilities Planning
Staff Team Member: Mike Sablich, Director of Facilities Operations

Project Name: Electrical Distribution & Monitoring

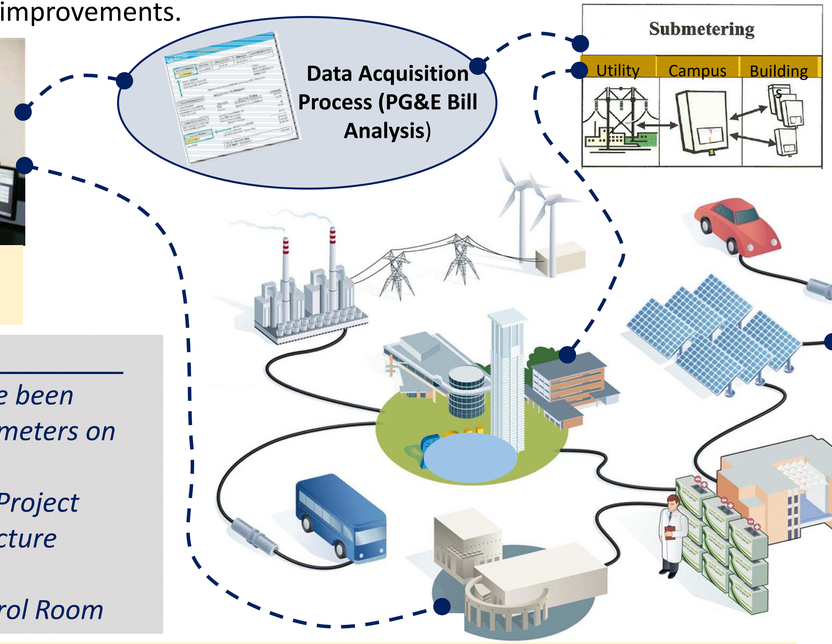
Name of Redesigned Course:

ET-490 Power Engineering / Engineering Watch Standing

Project Description:

There are some pre-existing electrical load monitoring sensors in use around the Cal Maritime campus. This project's aim would be to upgrade these systems around campus with new Energy Monitoring Products from E-Mon so that both the students and our Facilities Department can begin gathering energy usage data around campus. The electrical monitoring systems will all be digitally accessible with historical data trending capabilities. This data can then be used in the senior engineering technology capstone course: ET 490 - Power Engineering. With the ability to look at the campus' energy usage and energy bill, students and facilities alike, could strategize around where on campus can we make the biggest energy improvements.

Future Facilities Control Room (CALL Phase II)



Current Progress:

- *Facilities Operations have been installing E-Mon electric meters on Campus buildings*
- *Acquisition of necessary Project equipment & IT infrastructure development in progress*
- *Planning of Current Control Room*

Future Project Goals:

- *Development of a Centralized Facilities Control Room which was the Phase II component of this first CALL grant (similar to picture shown above).*
- *Continue working with Facilities Operations for installation of additional electric meters on campus buildings.*
- *Provide an opportunity for FET Juniors & Seniors to stand watch a the future Control Room since non-licensed track juniors & seniors cannot stand watch in the TS Golden Bear.*

Project Name: Solar Cell Testing Platform & Lab

Name of Redesigned Course:

ET-490L Engineering Technology Power Engineering Lab

Project Description:

The original project submission was for installation of a new solar installation on campus budgeted at about $100K. However, since funds were not available for this new installation we changed the project to focus our efforts on an existing solar system currently on campus. The current solar system serves an existing car charger. The focus of this project will be setup the solar charger system with appropriate instrumentation to be able to monitor the system performance and also connect the instrumentation to the data acquisition system funded as part of the first CALL grant.

Existing Solar Array on ET Building
10 Panel Solar Array (Trina Solar TSM-280PA14) @ 280W each

Connect Instrumentation to Data Acquisition Funded in First CALL Grant

- Outback GVFX3648 Charger/Inverter
- Midnite Classic 150 Battery Charge Controller
- 2 L16E-AC 48V battery strings (8x6V batteries per string)

Existing Battery Charger/Inverter System

Current Progress:

- *Students are working on understanding existing current solar charging system*
- *Acquisition of necessary Project equipment in progress*
- *Making necessary improvements to the system*

Future Project Goals:

- *If there are leftover funds, we would use this money to install a control system.*
- *This would allow us to install a second electric car charger, tie into the building electrical system to charge the batteries at night, and to possibly work with another inverter to add on more solar or a future wind turbine.*
- *The control system, coupled with the data acquisition system, would allow students to track energy savings and carbon displacement activities with this solar project.*