

Hartnell College



"This project is helping Hartnell College advance a number of our goals, including achieving improved sustainability at all three campuses and setting an example we hope will resonate across the state. With many of our students looking to pursue careers in the emerging green economy, this project also serves as an extraordinary learning opportunity to perform project-based research."

Willard Lewallen, Hartnell College President (2012 – 2019)

THE OPPORTUNITY

Founded in 1920, Hartnell College serves the higher education and workforce needs of the Salinas Valley. Its award-winning science, technology, engineering, and math (STEM) programs put area students on course to transfer to world-class universities and contribute to the bright future of the Salinas community. In 2007, Hartnell College established the Center for Sustainable Design and Construction to educate its students in the design and building of the sustainable urban landscapes of the future. Expanding on its commitment of a sustainable campus, Hartnell College partnered with ENGIE Services U.S. (ENGIE) to design and install a total of 2.6 megawatts of solar photovoltaic (PV) generating capacity at the Alisal and Main campuses. College leaders also worked with ENGIE to upgrade their lighting and HVAC systems, in addition to upgrading the energy management system (EMS) to make their facilities run as efficiently as possible while achieving optimal cost savings.

THE PARTNERSHIP

Leaders at Hartnell College and ENGIE have integrated the solar energy projects into Hartnell's existing career training programs and strong STEM curriculum, creating a unique educational partnership that engages students in sustainability and clean tech.

Program Highlights

- \$26.0MM in expected energy savings as a result of four phases of energy upgrades
- Reduced annual electric utility purchases by 93% at the Alisal Campus
- Expected 63% reduction of annual electric utility purchases at the Main Campus
- Integrated Alisal and Main Campus parking canopy solar energy projects into existing education and career training programs

Technical Scope

- **Alisal Campus**
 - 543 kW of solar photovoltaics (PV) on parking shade structures
- **Main Campus**
 - 2.04 MW of solar canopy, rooftop and ground-mount solar PV
 - LED lighting
 - HVAC retrofit

Technical Scope (continued)

- Wireless thermostat system
- Boiler upgrades
- Energy management system
- 500 kW / 1000 kWh energy storage capacity with smart software
- **King City Campus**
 - LED lighting

Educational Partnership

- **Career Exploration**
 - Hartnell students shadowed STEM experts and participated in career discussions from ENGIE professionals.
- **Hands-On Learning**
 - Using solar panels donated by ENGIE, Hartnell students created a Zero Net Energy (ZNE) pocket house.
- **Community Engagement**
 - With the support and guidance of ENGIE education experts, Hartnell students designed and managed a hands-on education exhibit for visiting Salinas students.
- **Student-led STEM Research**
 - Students designed STEM research projects focusing on campus lighting upgrades and wind data. Students had the opportunity to present their research at the 2014 Hartnell STEM Symposium.
- **Energy Engineering Internship**
 - ENGIE hired two Hartnell engineering students, Frank Osorio and Adela Zamora, as part of the STEM internship program, providing a real-world internship experience working in an engineering environment.

Construction of the solar canopies provided students with a real-world case study in sustainable design and construction, serving as a living laboratory for the College's engineering program. To attract students to the possibility of STEM careers, the ENGIE team has attended career days, led students in job shadowing, and hired engineering student interns from Hartnell. In addition, many Hartnell students participated in hands-on, experiential learning opportunities including organizing a physics/STEM exhibit for the Salinas community and leading STEM research projects, bringing the campus improvements to life and promoting energy consciousness among students.

To fund the program, the College took out a 0% California Energy Commission (CEC) loan, allowing for the installation of approximately \$3 million worth of solar power. This project helps to ensure a healthy financial future to the College by saving more than \$1 million in interest costs. Subsequently, ENGIE approached the Main Campus solar PV expansion financing with a solar Power Purchase Agreement (PPA). Hartnell will pay a fixed rate for the power produced by the parking-garage solar array over the long-term, allowing the College to save on both fluctuating energy costs and upfront project installation costs.

3 DIMENSIONS OF IMPACT

ENGIE is committed to building three dimensions of impact in every customer's future:



Supporting People – The project provides opportunities for students to learn about green technology through hands-on projects, internships and presentations.



Saving Money – Over the life of the project, Hartnell will achieve \$26 million in savings through renewable energy production and efficient energy management, made possible by a combination of a 0 percent CEC loan and a solar Power Purchase Agreement.



Protecting the Environment – In addition to a remarkable 93 percent reduction in yearly electrical energy use, the project also offsets 1,373 metric tons of CO₂, the equivalent to removing 294 cars from the road each year.



Two students, Carlo and Satomi, shadowing ENGIE's Operations and Maintenance Manager, Carrie Dixon.



ENGIE supplied the solar panels that enabled the creation of the student-designed Zero Net Energy pocket house.



Adela Zamora (left), ENGIE intern, in the field with the Hartnell project team.

ENGIE Intern Spotlight

"My internship at ENGIE was my first professional opportunity in the energy industry and it allowed me to gain insightful, hands-on experience with engineering teams across the company, tackling real-world problems and developing my skill set as an engineer. I have been able to return to ENGIE for another summer and am looking forward to my future with ENGIE and in the broader engineering field."

- Adela Zamora, Former Hartnell Student, Current ENGIE Engineering Intern and Cal Poly San Luis Obispo Electrical Engineering Student, Class of 2021