

Building Rube Goldberg machines, solar-powered cars and free standing structures not only teach the value of teamwork and applied math skills, but also provide an opportunity for the nation's brightest high school students to explore the world of energy sustainability and conservation.

Founded in 2009, the [USC Chevron Frontiers of Energy Resources Summer Camp](#) will allow 20 high school students and math and science teachers to study energy and renewable resources this summer. The camp was held at USC from July 5 to July 10.

“This camp is an excellent atmosphere for high school students to be introduced to energy and industry opportunities within this increasingly important field,” program manager Juli Legat said.

Only 20 out of 150 applicants, she said, were selected to participate in the program. Acceptance was primarily based on personal statements that emphasized the students' interest in energy and engineering and their passion to broaden their knowledge about the industry.

The camp introduced its participants to the college experience, as they lived in campus dorms, ate at the USC dining halls and attended lectures in the [USC Viterbi](#) classrooms. Chevron's funding enables all the students and teachers to attend the camp for free.

The camp included daily lectures from USC Viterbi professors and leaders in the energy industry, field trips to various Southern California beaches and challenges that split the students into teams. The challenges were “hands on activities” that included building solar-powered cars out of Lego-like pieces, Legat said.



Campers collaborate to construct a Rube Goldberg machine. Photo courtesy of Juli Legat.

“Our field trip to the oil rigs on the beaches this year was a great experience,” said Collin Armstrong, a junior at North View High School of Duluth, Georgia, who attended the camp. “It helped me personally connect to how energy is harvested from the ground and it made engineering more personal.”

Patricia Alaniz Roux, a USC student who has volunteered for the camp for three years, said “the challenges put a spotlight on energy and resources and makes the camp interactive, competitive and creative while forcing the students to adapt what they learned in the classroom to a real-life scenario.”

In the past, students were tasked with completing a challenge the night before the last day of camp. This year, the students received their challenge on the first day, allowing them more time to finish. Legat said that enabled them to produce a better, more polished project.

Miles Seguera, a senior at El Segundo High School, said the group projects were the best part of the camp, because they helped the members bond together while teaching them problem solving and collaborative skills.



Campers line up and race solar panel cars they built. Photo courtesy of Juli Legat.

This summer, students were asked to deliver a video presentation about conservation or a solution to current environmental and sustainable energy dilemmas.

Morgan Romero, a senior at American Heritage at Plantation, Florida, a suburb of Miami, delivered an animated presentation on energy security and said the overnight deadline helped her learn the importance of group work.

“I learned how to make important decisions in a very short period of time,” Romero said. “It was great to learn the importance of group dynamics

in a work setting before even going to college.”

Legat said the goal of this camp is to inspire these students to enter the energy field and become innovative in conservation methods.

“Inspiring the youth is always important,” Legat said. “It’s great that Chevron is getting a pipeline of young, talented individuals to grow in our population and to help us conserve energy by teaching them where energy comes from and how it’s used at a young age.”