Energy Education news

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SMUD

Community Education & Technology Center

smud.org/Education 916-732-6738

Teacher of the Year



Golda Mainville, teaches Kindergarten at Carol Elementary in Elk Grove Unified School District. She's been teaching for 20+ years, 16 of those years specifically as a Kindergarten teacher. She has spent the last 10+ years focusing on strategies to enhance the quality of education for her

students with autism spectrum disorder. She has been a leader in providing added support to her peers in implementing these strategies through classrooms of all grade levels. She is truly amazing, and her recognition has been well overdue!



Classroom visits

Did you know that SMUD provides customized classroom visits? SMUD staff or volunteers host a simple science activity or talk about workforce development. We also offer classroom materials.

ROOTED IN ACADEMICS

Oak Ridge located in Sacramento City Unified School District finished the school year with a big STEM (science, technology, engineering and math) bang! SMUD's Community Education & Technology department engaged with 30 sixth grade students teaching them about simple circuits by designing electric greeting cards. After this activity, students were introduced to series and parallel circuits using solar panels.

To view our current classroom topics, visit smud.org/Education or send a request to etcmail@smud.org.

Internship programs

Did you know that SMUD offers internship programs for high school and college students?

High school internship program

Every summer, SMUD offers a paid six-week internship opportunity for high school students. Our high school interns get a unique opportunity to gain professional work experience and learn valuable leadership skills that they can later apply to another job.

Interns also get the opportunity to network with other student interns and industry professionals as well as attend workshops to gain some personal and professional development skills. Eligibility rotates each year between the eight high school districts in our service area. In 2023, we'll recruit from the following school districts:

- Elk Grove Unified School District
- Folsom Cordova Unified School District
- Natomas Unified School District
- Twin Rivers Unified School District

The next application period for the high school internship program opens next spring and will be open to juniors and seniors.

Learn more at **smud.org/StudentJobs**.





Hello, I'm Josue Ortiz and I'm an intern at SMUD. My hobbies are working out, taking pictures on my phone and drawing. I also like to take walks around my neighborhood. These are just a few of my hobbies that I like to do. I speak



two languages: Spanish and English. I've lived in Sacramento nearly all my life.

I graduated from Luther Burbank High School last year. I currently attend Consumes River City College, where I'm working on my real estate associate degree. I want to pursue real estate, especially as a real estate broker, so I can help the Hispanic community with buying or selling homes. This summer I got an internship with SMUD. My internship was an amazing experience, everyone was so nice to work with. For example, I'm the type of person who asks a lot of questions, and my supervisor, Jennifer, is very nice and patient when I ask questions. Everybody at SMUD is welcoming and respectful. That is the most notable feature of SMUD, and if any student is interested in participating in the internship program, I wholeheartedly recommend it to anyone interested in gaining real-world job experience at SMUD.

College intern spotlight



I'm Justin and I'm currently a STEM student staff assistant with SMUD's Community Education & Technology Center. Want to know what's great about interning at SMUD? There's an abundance of opportunities to connect with others and get real-world experience, both internally and at external events that SMUD hosts. On our team, we focus on educating the public on how to utilize more sustainable sources of energy and getting the next generation interested in STEM. Our goal is to achieve zero carbon by 2030, and we need our customers and community to join the charge with us in pursuit of our ambitious goal. Interning at the nation's 6th largest public utility company has made me realize the impact one can make educating the next generation of engineers and scientists, I have learned that we are the change for the future. My favorite part of my SMUD internship is getting hands-on experience while teaching K-12 students how sustainable energy will play a pivotal role in our power mix in the present and for the future.



My name's Ali and I'm an intern with SMUD's Community Education & Technology Center. I'm currently a student at California State University Sacramento studying civil engineering and have been a Sacramento resident for most of my life. I love cooking, making art and playing video games. I heard about the internship program through a friend and decided to apply, which luckily led to me being able to join the team. I'm super excited to be interning at SMUD and am looking forward to giving back to the community and learning everything I can during my time here.



Science Bowl

The Science Bowl is a fast-paced academic competition put on by the Western Area Power Administration (WAPA) that tests students' knowledge in all areas of science and mathematics.

In the 2022 Regional Science Bowl, ten high schools vied for the prestigious top prize.

SMUD sponsors the Sacramento Science Bowl with volunteers and by providing prizes for the school science departments that place second through sixth.

This year, the competition was held virtually. Congratulations to our regional champion team, Mira Loma (Team 2).

Rank #2 – Mira Loma (Team 1) Rank #3 – Sacramento County Day School Rank #4 – Vista del Lago Rank #5 – Mira Loma (Team 3) Rank #6 – Folsom

The 32nd Sacramento Regional Science Bowl will take place in February 2023! Team registration began last month. Schools can enter more than one team to participate in this one-of-a-kind regional competition for the chance to represent Northern California at the National Science Bowl.

This is a great resume booster for students interested in applying for college. Interested in learning more about this event? Contact WAPA's Zia Islam at **islam@wapa.gov**.





2022 Sacramento Science Olympiad

SMUD was a sponsor of the 2022 Sacramento Science Olympiad, which brought students together from the Sacramento region to use math, scientific knowledge and quick thinking to solve problems. Students are required to respond to complex questions in areas ranging from plant life and bird calls, to designing cars powered by rubber bands and building towers which can hold measured weight. This year, the event was hybrid with the question and answer sessions held virtually and the building events held at Mira Loma High School. The winners of the 2022 competition were:

High Schools

1st – Mira Loma 2nd – Davis 3rd – Sheldon 4th – Laguna Creek 5th – Pacific Grove

Middle Schools

1st - Winston Churchill 2nd – Sutter 3rd – Golden Hills 4th – Arden 5th – Warren T. Eich



Exploring the World of Science

2022 California Solar Regatta

For the first time in three years, the California Solar Regatta returned

to Rancho Seco Recreational Area. High school and college students from all over California raced full-sized, solar-powered boats they designed and built themselves at

and built themselves at the competition held last May.

The spirit of competition and innovation could be felt on the water as more than 300 high school and college students from throughout California took part in the race. The event is designed to help inspire students to pursue educational and career paths in STEAM (science, technology, engineering, art and math) fields. In order to participate, students must utilize renewable energy and technological skills they have learned in school and apply them in a practical, hands-on way.

Ten high schools and 10 college teams competed in speed, slalom and endurance races and also presented a thorough view of the design and building process of their boats to an audience. Laguna Creek high school was the winner of the high school class Regatta Cup and San Francisco City College won the collegiate event.

If your school is interested in participating in the 2023 California Solar Regatta, which will be held on May 5 and 6, 2023, please visit **smud.org/SolarRegatta**.

> Applications are on the website in the welcome packet. The application window is open through October 30, 2022 or until all racing slots are filled.





2022 California Solar Regatta winners

High School

Artistic - Rancho Cordova Best Drive Train - Arcadia Best Video - Ceres Endurance - Laguna Creek Leading by Example - Arcadia Presentation - Grant Slalom - Laguna Creek Speed - Laguna Creek Sustainability - John F. Kennedy Technical - Merlo Academy

College

Artistic - San Francisco City College Best Drive Train - Cal Poly San Luis Obispo Best Video - San Francisco City College Endurance - San Francisco City College Leading by Example - Cal State University Chico Presentation - Cal Poly San Luis Obispo Slalom - Cal Poly San Luis Obispo Speed - San Joaquin Delta College Sustainability - Sonoma State University Technical - San Francisco City College





Coding challenge

Are you interested in space and coding? Would you like to build a prototype satellite? The Society of Women Engineers (SWE), Sections Boston, Cal Poly San Luis Obispo, UMass Lowell, Georgia Tech, Cornell and the MIT Beaver Works Summer Institute (BWSI) are excited to announce that they're looking for high school students interested in learning to build a 1U CubeSat to complete an ocean science research mission. Join us for this free SWE-BSWI Build a CubeSat Challenge! The SWE & BWSI challenge website **beaverworks.ll.mit.edu/ CMS/bw/SWE_BWSI_Challenge** is the best place to find out more information.

Teams of five students will build and program a CubeSat that will detect colored plastic in the ocean from space! The great part is mentors and hardware kits are provided to the teams at no cost.



Information about the teams and schedule:

- Teams should be no more than five high school students and one adult coach.
- There can be more than one team from a school entered into the challenge.
- Team coaches should fill out the team application link prior to December 31, 2022.
 mit-bwsi.formstack.com/forms/ swe_bwsi_challenge_student_team_ applications
- Teams will be notified in early January if they were accepted into the challenge.
- Teams that have been selected will take part in a self-paced online course from January 17 to May 28, 2023.
- Mentors will be available for help and we'll also host bi-weekly office hours.
- Teams that have been selected will receive their hardware kit in early February.
- On Saturday, May 28, 2023, SWE & BWSI will host the virtual final competition. Teams will be required to submit videos before the final event and also make final presentations during the final event.

For more information, please contact the SWE-BWSI Build a CubeSat Challenge team at **swe-bwsi@mit.edu** or visit **beaverworks.ll.mit. edu/CMS/bw/SWE_BWSI_Challenge**





SPLASH is a hidden gem of outdoor education, allowing students to explore the local ecosystem with plants and animals that are native to Sacramento. Located in Mather, SPLASH is a nonprofit organization that's dedicated to helping local children understand and value their natural world through outdoor exploration.

SPLASH offers a comprehensive fourth and fifth grade program, Life in the Watershed, which includes a hands-on tour of vernal pools. SPLASH also leads public tours, classroom presentations and a series of classes that attract the lifelong learners of our community. One of the coolest things about SPLASH is that students get to uncover an entire world that exists in their own backyard, from larval dragonflies to snakes and other critters. For more information or to book a tour for your classroom, visit sacsplash.org

SMUD offers *Energy Days* at the SPLASH summer camp where students visit renewable energy sites, such as the solar field at Rancho Seco or a dairy digester farm. At camp, they learn about passive and electric solar power, make solar cook kits and explore solar cells.

Latino Outdoors

Did you know that there is a local Latino organization which helps the community celebrate nature and bring inclusion outdoors? Learn more by visiting Latino Outdoors at:

instagram.com/losacramento.cv/

facebook.com/groups/252604768455778/





High school students say YES to a clean energy future!

Every year, SMUD hosts the Youth Energy Summit (YES), which invites high school junior and senior students from schools across Sacramento County to participate in a three day climate and sustainability summit for learning. Students are given a theme and then spend the next few months executing their own community service project, before presenting it to a panel of judges from the Community Education & Technology Center team.

Students from 13 schools across the region attended this year's virtual YES in January, where the theme focused on SMUD's Zero Carbon Plan and how they can join the charge and recruit others in helping Sacramento become a Clean PowerCitySM.

"Climate change, including Sacramento's ranking as one of the dirtiest air basins in the country, is a big reason why it's important that we host YES annually," said Community Education & Technology Manager, Jacobe Caditz. "YES aims to give a voice to today's youth for tomorrow's energy future."

Nine teams from seven different schools made presentations on their community service projects that they've been working on since the competition began. The winning teams were selected for:

- Design and execution of their community project, which positively impacted their community.
- Ability to incorporate how their project directly tied to reducing carbon emissions.
- Demonstrated commitment and focus on equitable outcomes for underserved areas.

"This year's competition was fierce and the highquality projects we reviewed were off the charts" said Community Education & Technology Specialist Kaelin Sherrel, who planned the event. "In fact, it was impossible to select only three winners, so we opted to go with four this year."



2022 Youth Energy Summit Winners

First Place: Team Steria, Vista Del Lago High School

This team created a multifaceted project that included:

- Organizing education sessions at the Folsom Public Library with the City of Folsom Waste and Recycling Division.
- Coordinating an event in Folsom featuring six interactive booths educating the community about climate change.
- Working with a local donut store to donate leftover donuts to a local homeless shelter.
- Launching a very successful TikTok marketing campaign.









Second place: Team ANTIC (Anti-Carbon), Vista Del Lago High School

This team focused on removing food waste by successfully bringing food waste bins to their school campus. They also presented to environmental clubs at local middle and elementary schools about the importance of sustainable behaviors. Lastly, they worked with teachers from Folsom Middle School to apply for an environmental science and education grant, of which they are still awaiting the results.

Third Place (Tie): Team Pikachu, Mira Loma High School

This team aimed to increase accessibility to gardening by creating a seed library on a zero-dollar budget. Using SMUD's Sustainable Communities Resource Priorities Map, the team identified high-risk areas and distributed over 150 seed packets to under-resourced areas, which historically suffer from lack of shade, trees and plants that capture carbon from the atmosphere. The team also worked with the Sierra Club and the Sacramento public libraries to ensure longevity of their program after they graduate.

Third Place (Tie): Team Rocket, Cordova High School

This team aimed to educate their community on alternative fuel sources – focusing on hydrogen fuel cells. The team partnered with Mills Middle School, where they designed and implemented in-classroom activities. Their project shared the pros and cons of hydrogen fuel cells and emphasized the need for education on the topic, since the California Energy Commission is funding an increase in the number of hydrogen stations in the state.

For more on the Youth Energy Summit, visit **smud.org/YES** or contact Kaelin Sherrel at Kaelin.Sherrel@smud.org.



SMUD Solar Car Race

High school students from across the region gathered at Cosumnes River College (CRC) for SMUD's 15th annual Solar Car Race. Being one of the more popular community events, we're all excited to hold the competition after a two year hiatus due to the lockdown.

Students raced solar-powered cars across tracks, using cars they designed and built with solar panels providing the power and the motors and gear sets provided by SMUD. Although they all started with the same parts, each car was unique and it was up to the teams to be creative and innovative in their attempt to build the fastest car possible.

- Teams competed in several award categories including race time, sustainability, innovation and more.
- The race format was single elimination. Racers were placed in heats of up to four cars at a time, with the top two cars advancing to the next round.
- New this year, a set of official race day solar modules were provided.
- Lunch and t-shirts were provided to all racers and spectators.
- The Sacramento Electric Vehicle Association (SacEV) brought a variety of electric vehicles for the students to view and explore.

"We're proud to partner with CRC in hosting this spirited competition that brings hands-on innovation and STEM education to our local students."

- SMUD Energy Education Specialist, Kaelin Sherrel







"It's an opportunity for students to take what they've learned and apply those concepts to the racetrack, while gaining an understanding of solar-powered energy and how it works," said SMUD Energy Education Specialist Kaelin Sherrel.

For many of the students, it was also their first opportunity to learn more about SMUD's 2030 Zero Carbon Plan, how the use of solar and other clean energy sources fits into the long-term vision and how they can join the charge in helping meet that goal.



City Year Sacramento

Through a plan developed with City Year Sacramento, SMUD is working to address the lack of access to education opportunities for youth in under-resourced areas of our community. SMUD has a long-standing community partnership with City Year, dating back to its arrival in Sacramento in 2011, but wanted to

do more to leverage resources, staff and educational activities to deliver STEM curriculum to teachers and students who need it most.

It was from that line of thinking that a plan was devised to leverage and expand the existing partnership with City Year to bring STEM education lessons to more than 300 students over the next few years. "What makes me so excited about



this refined approach is how we're working with City Year, through the equity lens, to address the lack of educational opportunities for underserved schools and students in our community," said Community Relations, Outreach & Events Manager Rhonda Staley-Brooks. "Together with City Year, and through our Sustainable Communities program we're expanding our efforts and focusing our STEM education where it is needed most." This year, City Year has plans to utilize SMUD resources and education activities to deliver STEM activities to Father Keith B. Kenny Elementary School in Sacramento. The curriculum will include lessons about electricity, renewable energy, coding, circuits, batteries, solar-hydropower and

> much more. "Our goal is to have these lessons reach 50-75 students who may have never had the opportunity to learn STEM curriculum before," added Community Education & Technology Center Manager, Jacobe Caditz.

In 2023 and 2024, the goal is to expand the partnership to include additional STEM activities in two more City Year partner schools based on highest need and fit – reaching an additional 200 students in the process. Additionally, upon availability, City Year will identify opportunities for SMUD staff to volunteer and assist in leading STEM activities.

"We know that education is the key to so many successful outcomes for children, and by providing early access, we can help inspire early dreams that sprout into a career path for future leaders," said Manager, Partnerships Sustainable Communities Shiloh Costello. "By focusing on equity, we're helping City Year provide the next generation of students with ways to uplift themselves and their situations."







Autonomous Racing

During this year's Memorial Day weekend, SMUD sponsored a memorable race for Sacramento-area middle and high school students as they participated in the inaugural Autonomous Vehicle Racing competition held at Golden 1 Center.

About 50 students from seven local schools took part in months-long, hands-on learning about computer science, coding, programming and the benefits of transportation electrification. Then, they constructed, designed and coded their own model cars to enter into a semiautonomous race in the spirit of competition, innovation and electrification. They also raced some of the cars autonomously through various course challenges. Students programed their vehicles to follow specific pathways and traveled alongside a cardboard wall without making contact with the wall.











"We've been planning and looking forward to this competition for months. It was so rewarding to see how much fun the students had learning about robotics, coding and electrification, and then applying those lessons to their racing," said Education Specialist, Adrian Williams, who was the event organizer. "The students were really excited to learn about transportation electrification, which will play a key role in SMUD's vision of decarbonizing the region's power supply by 2030. We can't wait for next year's competition."

Before the competition, student mentors from California State University, Sacramento, University of California, Davis and the University of the Pacific engaged the younger students in hands-on STEM driven and project-based lessons modeled after the prestigious MIT Beaver Works Program — a curriculum that focuses on computer science and robotics.

Students also participated in discussion with industry experts about sustainability careers in the electric vehicle industry and SMUD's vision for the future of clean transportation.

Participating schools:

- Mills Middle School
- W. E. Mitchell Middle School
- Edward Harris, Jr. Middle School
- Robert L. McCaffrey Middle School
- Center Middle School
- Laguna Creek High School
- Cordova High School





All participants received a trophy for racing in the manual challenges. Here's the list of winners for the autonomous portion of the competition:

Middle School

- Line Following McCaffrey Middle School
- Cone Slalom Edard Harris, Jr. Middle School

High School

• Line Following – Center High School

To learn more, please contact Education Specialist Adrian Williams at Adrian.Williams@smud.org.



Educator workshops

Free workshops for regional educators

SMUD offers free workshops for teachers, after school care providers, club leaders, home school teachers and even student teachers. If you work with children and would like to provide activities on coding, technology, math or science with a focus on energy or sustainability, visit **smud.org/Education** to register for a class. This year's offerings include

smud.org/Education

opportunities for students and teachers at locations from the Sacramento Office of Education and SMUD's Museum of Science and Curiosity, to virtual classes. There is an opportunity and a venue for everyone. In some cases, food and or class materials are provided, please see class descriptions.

Tuesday, Nov. 1, 2022

4 – 5 p.m. Virtual

Presented by Joshua Zimmerman, Brown Dog Gadgets



Holiday sewing with light up circuits (Grades 5-12)

Teach your students how to create wearable, light up art. Yes, we can add art to STEM with a creative spin on textile art. Teachers will celebrate the holiday spirit by crafting wearable art decorated with LEDs. Register

by October 15 and we'll mail you a sewing LED light kit.

Tuesday, Nov. 8, 2022

5 – 6:30 p.m. SCOE Training Center 10474 Mather Blvd. Mather

Presented by Jared Amalon, SCOE



Creating an interactive light installation (Grades 4-12)

Shed some light on the California Computer Science and Art standards in this workshop. Together, we will write a computer program that creates individual and group light displays using the micro:bit and cutting-edge accessories. We will learn about color theory, computer algorithms, sensors, events and more!



Educator workshops

Free workshops for regional educators

smud.org/Education

Tuesday, Nov. 15, 2022

5 – 6:30 p.m. SMUD Museum of Science and Curiosity (MOSAC) 400 Jibboon Street Sacramento

Presented by Barry Scott, The National Energy Education Development (NEED) Project

The power of wind (Grades 5-12)

Did you know that SMUD is using wind power to help reach a zero-carbon goal by 2030? In this workshop, teachers will learn how to use wind power to teach about renewable energy. A kit will be provided at the workshop.



Tuesday, Dec. 6, 2022

5 – 6:30 p.m. SCOE Training Center 10474 Mather Blvd. Mather

Presented by Stephen Callahan

CAD and engineering in 3-dimensions with cardboard (Grades 3-6)

Teachers will be introduced to tools that can be used to sketch ideas, TinkerCAD (Computer Aided Design) and student physical engineering with MakeDo. Teachers will examine the engineering standards and consider solutions for building a cardboard dam. Students will estimate the volume of concrete necessary to build the dam. Teachers will build their bridge out of cardboard and test it. SCOE will provide workshop materials.





Venture into themed exhibition galleries on health, nature, energy, water, engineering and space. With over 100 exhibits, there are lots of interactive opportunities for hands-on learning!

SMUD MOSAC is a great place for school field trips and for people of all ages to spend a fun-filled day.

Learn more at VisitMOSAC.org

Please, be safe and stay well

To all our teachers, students and families – please, be safe and stay well. As an essential service provider, we're committed to taking proactive measures to limit the risk of exposure of coronavirus (COVID-19) for our employees and the public.

The pandemic remains a very fluid situation, for example recent spikes in virus variants. All SMUD events and workshops are subject to immediate change or modification, new or additional safety controls being implemented, cancellations and other changes as needed.

Learn more about how we're helping you and how you can help, by exploring **smud.org/HeretoHelp.**



6301 S Street, Mail Stop A226 Sacramento, CA 95817-1899