Building Solar Charging Kits at Washington Elementary

Sacramento teacher, Kim Williams, attended the Solar Schoolhouse Institute through a SMUD scholarship, and came back to school energized to integrate solar technology into her classroom. Collaborating with Sunny Eselekhomhen, who runs Wazobia Arts, Williams had her 5th and 6th grade students at Washington Elementary in Sacramento learn how to harness the power of the sun to help kids in Nigeria.

SMUD donated 25 kits to build individual solar powered charging stations. “It’s a great thing for kids to get hands-on experience and build something that impacts the life of another kid around the world,” said Kim Williams. “It’s amazing how they take ownership of learning.”
The completed charging stations will be tested and shipped to students living without electricity in Ewatto, Edo State, Nigeria. The kits include a reading light, a light bulb and a phone charger. “Some of the families have no electricity and the kids can’t study or read at night,” said Eselekhomhen. “I talked to the teacher and the kids in Nigeria. They are excited, and I know it will make a positive impact in their lives.”

“Our community partnership with SMUD makes this project authentic,” said Jose Garcia, learning support services co-ordinator at Washington Elementary. “The kids are learning to help with a real world problem and it engages them and shows them they can do the work of engineers.”

**Science Bowl puts high school students to the test**

With schools focusing on energy independence and sustainability, it’s important to promote the benefits of science and math. The Western Area Power Administration supports this vision by hosting the Sacramento Regional High School Science Bowl.

More than 20 regional teams gathered at Cordova High School in Rancho Cordova on March 18 to test their knowledge of science, technology and mathematics. SMUD’s Chief Grid Strategy & Operations Officer, Paul Lau, attended the event and gave an inspiring presentation on the opportunities and educational paths that are provided by STEM (Science, Technology, Engineering, and Math) programs.

For the second year in a row, Mira Loma High School won the competition and a free trip to compete in the National Science Bowl.

**2018 Science Bowl**
February 24, 2018
8 a.m. – 4:30 p.m.
Cordova High School
2239 Chase Drive
Rancho Cordova, CA 95670

For more information on competing in the 2018 Science Bowl, please call 916-353-4558 or email SNRSciencebowl@wapa.gov

Registration opens October 2, 2017.
For information on the DOE National Science Bowl visit science.energy.gov/wdts/nsb/about/

**Going for gold at the Science Olympiad**

Students were able to explore the world of science at the Regional 2017 Science Olympiad which was held at Mira Loma High School in Sacramento.

The Science Olympiad is a competition which includes challenges, activities, and projects that can be used in the classroom to promote science. Participation in the Science Olympiad motivates students and allows them to have fun in the process.

**2017 Winners:**

<table>
<thead>
<tr>
<th>High Schools</th>
<th>Middle Schools</th>
</tr>
</thead>
<tbody>
<tr>
<td>1. Mira Loma</td>
<td>1. Churchill</td>
</tr>
<tr>
<td>2. Sheldon</td>
<td>2. Pomalita</td>
</tr>
<tr>
<td>3. Bella Vista</td>
<td>3. Pinkerton</td>
</tr>
</tbody>
</table>

Anne Tweedy, a teacher from Bella Vista HS celebrates a good day for her team.

Mira Loma Auditorium, where the award ceremony for the middle school division was held.

Middle school student tests his tower at the Science Olympiad.
Solar Champions Project

Is your school district in Sacramento County? If so, and you’d be interested in providing solar education for your schools, please contact us for information. Your district would need to provide 35 teachers who are willing to attend a one-day workshop. In exchange, each participating school will receive a solar classroom kit and a solar fountain kit. For more information, please contact Suzette.Bienvenue@smud.org.

Sacramento Regional Science and Engineering Fair

The Sacramento Regional STEM Fair is a 12 county competition for students in grades 6-12 that encourages students to investigate science, technology, engineering and math through innovative projects. Science fair projects are an easy way to help your students meet Next Generation Science Standards (NGSS).

The 17th annual Regional STEM Fair was held on March 25 at American River College.

To learn how your school may compete in next year’s STEM Fair, please visit sacstemfair.org

Winning the SMUD awards for Best in Energy Research:

Middle School
Sutter Middle School
Sacramento
Nathan Smith
Smith researched and developed models for the best design for an urban, residential wind turbine.

High School
Vista De Lago High School
Folsom
Nishita Bagaria and Piryanta Venkatesh
Venkatesh and Bagaria compared the effectiveness of sunflower, canola and vegetable oils to be used in energy production.

Sun-powered boats at SMUD Solar Regatta

Hundreds of junior high, high school and college students from across our region put their skills and solar-powered boats to the test for two days of competition (May 5 & 6) at the 6th annual SMUD Solar Regatta at the Rancho Seco Recreational Area.

The students raced full-sized, solar-powered boats they designed and built themselves. The popular event is designed to help inspire students to pursue educational and career paths in STEM (science, technology, engineering and math) fields.

There were 17 teams of local middle school and high school students, as well as 15 teams of college students. In total, there were 32 solar-powered boats entered for the event.

For more information on the 2018 Solar Regatta or to register, please contact Suzette.Bienvenue@smud.org.

SMUD would like to thank the CA Department of Boating and Waterways for providing assistance with the boating safety course for the students participating. Learn more at dbw.ca.gov.

For more information or videos, visit smud.org/solar-regatta
SMUD Lighting Engineer Connie Samla gave a presentation on lighting technology and lighting efficiency to 20 teachers in the Sacramento region. The teachers received a GEMS (Great Exploration in Math and Science) curriculum and learned interesting ways to integrate light into their current science curriculum.

T.A.G. you’re I.T.

This is a red carpet Teachers Appreciation Gala for Inspiring Teachers in the Sacramento City Unified School District (SCUSD). Outstanding teachers nominated by students, received awards from SCUSD’s student leadership on May 18, 2017 at the Memorial Auditorium in Sacramento.

SMUD was also presented an award at the event for being an outstanding educational partner to SCUSD and the region. Some of the ways in which SMUD has supported SCUSD as well as other districts, is by providing professional development for teachers, providing SMUD employees as volunteers, engaging students in STEM competitions, investing in energy and green academies, providing intern positions, energy auditing education and providing career education and outreach.

Cardboard or Whatever Regatta

The 10th Annual Cardboard or Whatever Regatta was hosted on May 18 with four schools participating and 42 boats competing at Beals Point in Folsom. Students, teachers and parents watched teams compete for honor and glory in the drag race, slalom course, best sinking (also known as “Titanic Award”), best design/construction, greatest buoyant force and most recyclable/green boat competitions.

Receiving the Best in Show and the Slalom Masters award was the much anticipated Human Hamster Wheel.

For more information on this event, please contact Eric Wright, ewright@fcusd.org or visit their facebook page; https://www.facebook.com/Folsom-High-School-Science-Department-204013922950431/
Nearly 300 local high school students put their model solar-powered cars to the test. The 12th annual Solar Car Race was held on Wednesday, April 19 at Cosumnes River College and highlighted the most creative, innovative and fastest models that students designed and built. All teams use the same solar panels, motors and gear sets, but they chose their own construction materials. This competition is open to any high school or high school aged organization in Sacramento County. For more information please visit smud.org/solar-car-race.

### Innovation and speed on track at SMUD Solar Car Race

<table>
<thead>
<tr>
<th>Category</th>
<th>Car #</th>
<th>High School</th>
</tr>
</thead>
<tbody>
<tr>
<td>Artistic</td>
<td>10</td>
<td>Jesuit</td>
</tr>
<tr>
<td>Engineering</td>
<td>49</td>
<td>El Camino</td>
</tr>
<tr>
<td>Sustainability</td>
<td>38</td>
<td>Rancho Cordova</td>
</tr>
<tr>
<td>Stock Award</td>
<td>19</td>
<td>Delta</td>
</tr>
<tr>
<td>Judges Choice</td>
<td>18</td>
<td>Delta</td>
</tr>
<tr>
<td>3rd place speed</td>
<td>3</td>
<td>Folsom</td>
</tr>
<tr>
<td>2nd place speed</td>
<td>44</td>
<td>El Camino</td>
</tr>
<tr>
<td>1st place speed</td>
<td>59</td>
<td>Foothill</td>
</tr>
</tbody>
</table>

### 2017 Winners:

- **Artistic** 10 Jesuit
- **Engineering** 49 El Camino
- **Sustainability** 38 Rancho Cordova
- **Stock Award** 19 Delta
- **Judges Choice** 18 Delta
- **3rd place speed** 3 Folsom
- **2nd place speed** 44 El Camino
- **1st place speed** 59 Foothill

Kyle Kashe

Kyle Kashe is a junior from CSUS. As a high school student, Kashe recalls participating in the Solar Regatta, “Researching, designing, building and racing the solar boat was an experience that opened so many doors and taught me so much about what I could do with my future and what types of disciplines I could study. It was an event full of competition and fun that challenged my peers and I to work together for countless hours to achieve our goal.” Kashe’s Solar Regatta team experienced the opportunity to race their boat internationally at the Solar1 World Race in Monte-Carlo where they interacted with solar designers and engineers from all over the world.

Kashe has been working for SMUD’s Energy Education and Technology Center for a few months.

Davina Saenz

Davina Saenz is a junior at CSUS and is majoring in business. She is learning how to use her people skills to connect with young people participating in our education programs. Saenz is new to SMUD’s Energy Education & Technology Center so come and welcome her at our next event!
**Workshops**

**Teacher Workshops**

**GEMS® Bubbleology and Hosting a Bubble Festival** *(Grades 1 - 6)*

September 13, 2017
4 – 7 p.m.
Location: Historic Folsom Powerhouse
9980 Greenback Ln, Folsom, CA

*Presented by SMUD and California State Parks*

School District will review lessons in chemistry and physics using soap bubbles by devising bubble blowing devices and many other hands on activities. A light dinner will be served. Teachers will receive GEMS guides and materials.

This fun filled workshop will demonstrate how to set up 12 table top, learning stations to experience mathematical and scientific concepts found in bubble shapes and bubble measurements. Davin Bowker from San Juan Unified School District will review lessons in chemistry and physics using soap bubbles by devising bubble blowing devices and many other hands on activities. A light dinner will be served. Teachers will receive GEMS guides and materials.

**GEMS® Electric Circuits** *(Grades 3 - 9)*

September 16, 2017
9 a.m. – 3 p.m.
Location: Historic Folsom Powerhouse
9980 Greenback Ln, Folsom, CA

*Electric Circuits* is highly recommended for 6th grade teachers preparing for Next Generation Science Standards in electricity and electromagnetism. The easy to use hands-on activities support science and language arts as a student introduction to electricity and electric circuits. Davin Bowker from San Juan Unified School District will lead educators through activities in which they will learn how to build and diagram circuits and understand the presentation strategies necessary to support expository writing. Teachers will be served breakfast and lunch and will receive GEMS guides and classroom materials.

Presented by SMUD and California State Parks

**Electric Art - Paper Crafting and Sewing with Circuits** *(Grades 4 - 12)*

November 30, 2017
4 – 7 p.m.
Location: SMUD, Lighting Classroom
6301 S Street, Sacramento, CA

*Join this hands on workshop and learn how to teach the science of circuitry through art by making electronic greeting cards and fabric projects which have sound, motors or LED lights! Attendees will learn the concepts of drawing schematics, parallel and series circuits and basic electronics. A light dinner will be served. Teachers will receive classroom materials.*

Presented by SMUD and California State Parks

**Electricity Fair**

*SMUD Sponsored CSTA Field Course*

**SMUD Sponsored CSTA Workshops**

**GEMS® Hot Water, Warm Homes from Sunlight** *(Grades 4 - 12)*

October 13, 2017
Location: California Science Teachers Association
Sacramento Convention Center
1400 J Street, Sacramento, CA

Teachers discover the energy in passive construction as they build model homes and hot water heaters to determine the effects of size, color and number of windows on the amount of heat production from sunlight. They also learn an introductory activity about growing plants that defines the concepts of a controlled experiment, variable and outcome. The Green House Effect is also reviewed. Teachers must be registered for CSTA in order to attend and will receive a GEMS teacher guide and classroom materials.

**Solar Cooking** *(Grades 4 - 8)*

October 13, 2017
Location: California Science Teachers Association
Sacramento Convention Center
1400 J Street, Sacramento, CA

Teach science through cooking. Use the physics discovered in solar cooking to review conduction, convection, radiation as well as math and engineering principles to construct solar cookers. Teachers will receive curriculum and a Solar Cook-It! Participants must be registered for CSTA in order to attend.
Solar, Wind and Cow Farts –
A Renewable Energy Tour
Grades preK - 12

October 14, 2017
8 a.m. – 4:30 p.m.
Location: California Science Teachers Association
Sacramento Convention Center
1400 J Street, Sacramento, CA

Climb aboard the bus and learn how to integrate energy into your curriculum. Experts in wind, solar, biogas and electric vehicles provide information to keep your curriculum fresh while meeting NGSS. Tour a wind farm, dairy digester, solar array, electric vehicles and a home efficiency exhibit. Curriculum, materials and lunch are provided. Participants must be registered for CSTA in order to attend.

Cost: $105

Where California Science TK-12 Teachers Go for CA NGSS

The California Science Education Conference is your best source of information on implementing CA NGSS in your classroom. The California Science Teachers Association (CSTA) hosts this conference to focus on what California science educators need to know to hone their craft, stay updated on standards and apply best practices gleaned from experts throughout the state.

Join more than 1,800 educators who share your passion for science from Friday, October 13 at 8:00 am to Sunday, October 15 at 1:00 pm.

You’ll make connections, gain new classroom ideas and grow professionally with over 200 workshops, short classes and field courses to choose from.

Come and visit us at the SMUD booth and learn about the opportunities available to you and your students.

Register at http://conference.cascience.org/registration/2017-general-information cascience.org