Capturing Energy, Absorbing Knowledge

Hawaii’s complex, delicate ecosystems and reliance on imported resources make sustainability a top priority for inhabitants of our islands. Schools have the power to play a leading role in expanding sustainable technology use and sharing these concepts with students and the wider community. The Hawaii Department of Education (DOE) has embarked on Ka Hei, a five-year program across all 256 schools that offers innovative clean energy solutions and meaningful educational experiences. Solar photovoltaics installed at DOE schools will not only help conserve energy in the immediate future by harnessing energy from the sun, but also secure a healthy environment for future generations.

How Solar Panels Produces Electricity

Solar arrays convert the sun’s light energy into electricity through a process known as the photovoltaic effect. When light particles from the sun penetrate solar cells (the building blocks of solar panels), electrons are released within the cells, producing a flow of direct electricity.

- **Sunlight** excites electrons in photovoltaic panel.
- Connecting positive and negative sides across a circuit allows for current flow.
- **Silicon** solar cells are made of silicon, a semiconductive and abundant resource.
- **Photons** excited electrons concentrate on one side of cell, creating the potential for current flow.
- **Electron Flow**

Fun Fact

Although the sun is 93 million miles from Earth, it takes less than 10 minutes for light to travel that distance.

**The Power of an Hour of Solar**

The energy generated by a 100 megawatt system operating at full capacity for just one hour is equivalent to one of the following:

- Carbon sequestered by 56.5 acres of U.S. forest in an entire year
- Powering 9.5 homes for an entire year
- Removing 74,066 pounds of burning coal for an entire year
- Removing greenhouse gas emissions from 14,542 cars for an entire year
- Removing CO2 produced by 74,066 pounds of burning coal

FAQ’s

**Why is our school installing solar panels?**

- Solar panels generate electricity year-round without emitting greenhouse gases and serve as a unique learning tool for students and teachers.
- Solar panels are suited perfectly for Hawaii’s tropical climate and continue to operate even in the rain. Rain can even help to keep the panels clean of dirt and dust.

**What are the environmental benefits of solar?**

- Solar panels are a clean and reliable energy source that minimize schools’ reliance on imported fossil fuels. A single solar panel can reduce carbon dioxide emissions by up to 515 pounds per year.
- By installing these renewable energy solutions schools can reduce their carbon footprint and significantly cut back our operational expenses.
- Savings can be applied to further measures to improve the environment, such as energy efficiency, water conservation, and hands-on sustainability education.

**What other benefits does Ka Hei provide?**

- In addition to reducing our school’s energy usage, Ka Hei provides teachers with new tools that incorporate the science behind our campus’ solar technology into the classroom.
- Professional development sessions and standards-aligned science, technology, engineering, and math (STEM) curriculum help teachers prepare our students for expanding career opportunities in 21st Century fields.

Find out more:

http://www.hawaiipublicschools.org/ConnectWithUs/Organization/SchoolFacilities