Solar Schools

How Albemarle County Schools Got Green Energy

Overview
Albemarle County Public Schools serve approximately 14,000 students from preschool through grade 12. Albemarle County was the first public school district in Virginia to use solar energy through a Power Purchase Agreement. The project is expected to save the school system $80,000 over the life of the service agreement.

How does a Power Purchase Agreement work?

- A Power Purchase Agreement (PPA) is an arrangement between a power producer and a power purchaser.
- The producer for a solar PPA owns, operates and maintains a photovoltaic system on the purchaser's property.
- The power purchaser agrees to buy the energy produced for a set price over the period of the arrangement. This allows the power purchaser to avoid the upfront costs of a photovoltaic system.

How did Albemarle County use a PPA?

- Albemarle County Public Schools signed a 20-year PPA with Secure Futures*.
- Secure Futures owns and operates the project and maintains the equipment through Albemarle Solar LLC*, requiring $0 from Albemarle County. They continuously monitor system performance and conduct maintenance a few times a year.
- The power generated is sold to Albemarle Schools at a contracted rate.

How did Albemarle County identify the opportunity?
In 2013 a student-led organization in Albemarle County worked with Generation 180 to advocate for reducing their environmental footprint with solar energy. The student group coordinated a campaign to support solar as a way to maximize economic resources while reducing their impact on the environment. Albemarle County already had a strong sustainability program in place and the School Board voted unanimously to add on-campus solar panels.

What was the installation process?
Secure Futures contracted with two companies to install 1.1 MW of solar panels on six schools in 2016. Installation only took a few months and was primarily completed during the summer break. The portions of the project that were completed during the beginning of the school year did not cause any disruptions to the learning environment. There was a planned electricity shutdown during the installation, but it was during a time when the building was not occupied. Secure Futures worked with the roof installer of record to ensure the warranty periods were maintained on all roofs. The system consists

of over 3,000 panels that are all American-made. The focus on American-made equipment was to ensure high quality and durability as well as fair environmental and labor practices. The panels meet 22% of the six schools' annual electricity requirements. The panels have a projected service life of 35-45 years and the school system has the option to purchase at set intervals of the service agreement, or Secure Futures will remove it as part of the contract.

Are there educational opportunities for the school district?
After initial installation, Secure Futures coordinated a National Energy Education Development (NEED) Project workshop as part of the PPA. NEED is a nonprofit organization offering energy education. Secure Futures also organizes educational opportunities throughout the school year for students and teachers. Curriculum enhancement tools and teacher training help bring the solar energy technology from the rooftop to the classroom. A web-based solar monitoring page allows students and teachers to access information about the school's solar array in real time. The teacher trainings also included information on using the solar kits and accessing the web-based data monitoring systems. Solar charging picnic tables are available at two of the schools to allow students to experience firsthand the impacts this technology can have.

What were the results?
The projected savings per year is approximately $3,800. The estimated carbon footprint reduction is 2,109,000 pounds of carbon dioxide per year. The solar panels are resilient and were able to withstand a tornado that struck one of the schools after installation. The school district was one of only nine school districts across the United Stated to win the Department of Education's 2017 Green Ribbon Schools Award. In addition to the solar panels, the school system has also participated in an Energy Performance Contract to find opportunities for energy efficiency. Twenty-three schools have now earned the ENERGY STAR label, and all interior and exterior lighting was recently upgraded to LEDs through an Energy Performance Contract. The cost to install LED lighting will be paid for by the recurring annual energy savings, avoiding the need to use bond funding to finance the project.

Solar Statistics on Albemarle County Public Schools

School	System size kW (DC)	Number of Solar Panels	Equivalent to Average American homes
Greer Elementary	75	216	9
Albemarle High	124	360	14
Brownsville Elementary	130	378	15
Baker-Butler Elementary	224	648	25
Monticello High	267	774	30
Sutherland Middle	279	809	32
Total	1099	3185	125

What are the Benefits?

- No capital investment with a PPA
- Predictable electricity prices
- Using economic resources wisely
- Reducing the County's environmental footprint
- Promoting renewable energy sources
- Generating educational opportunities

*DEQ does not approve or endorse vendors.