Renewable Energy Resource Center

Henley Middle School

The Renewable Energy Resource Center includes a 42 kilowatt solar photovoltaic array, (6) solar thermal panels to provide hot water to the school, and a Skystream 3.7 wind turbine. Students are working on a sculpture to be powered by the demonstration solar photovoltaic array at the entrance to the school. Data on power generation from each system can be accessed at: http://live.deckmonitoring.com/?id=henley_middle_school

The Media Center hosts renewable energy resources that include a demonstration wind turbine, books and science kits. This fact sheet includes a list of resources and contact information for further information.

Renewable Energy Resource Center Books

Energy

- Alternative Energy Sources (by David Craddock)
- Biofuels, Solar and Wind as Renewable Energy Systems: Benefits and Risks (by D. Pimentel)
- Building a Green Community (by Ellen Rodger)
- Careers in Renewable Energy: Get A Green Energy Job (by Gregory McNamee)
- Energy Harvesting: Solar, Wind and Ocean Energy Conversion Systems (by Alireza Khaligh, Omer Onar)
- Energy Makes things Happen
- Energy Science: Principles, Technologies, and Impacts (by John Andrews)
- Energy Systems and Sustainability (by Godfrey Boyle)
- Fundamentals of Renewable Energy Processes (by Aldo da Rosa)
- Living off the Grid (by David Black)
- Renewable Energy Made Easy: Free Energy from Solar, Wind, Hydropower, and Other
- Renewable Energy: Power for a Sustainable Future (by Godfrey Boyle)
- Sustainable Energy: Choosing Among Options (by Jefferson Tester, Elisabeth Drake, Michael Golay)
- The Third Industrial Revolution: How Lateral Power is Transforming Energy, the Economy, and the World (by Jeremy Rifkin)
- What if we Run Out of Fossil Fuels? (by Kimberly Miller)

Wind

- Generating Wind Power (by Niki Walker)
- Homebrew Wind Power: A Hands-On Guide to Harnessing the Wind (by Dan Bartmann)
- Power from the Wind: Achieving Energy Independence (by Dan Chiras)
- The Boy who Harnessed the Wind (by William Kamkwamba, Bryan Mealer)
- Wind Power Basics (by Dan Chiras)
- Wind Power: Renewable Energy for Home, Farm and Business (by Paul Gipe)
- Wind Turbine Technology (by Ahmad Hemami)

Solar

- Done in the Sun: Solar Projects for Children (by Astrid Hillerman, Anne Hillerman, Mina Yamashita)
- Energy from the Sun
- Solar Electricity Basics (by Dan Chiras)

Renewable Energy Resource Center Kits

Kit Description	Grade Levels	NEED Reference	Materials
EnergyWorks The *EnergyWorks* guides include background information and hands-on experiments explore motion, light, sound, heat, growth, and powering technology. Teacher demonstrations are also included. The kit comes with a Teacher Guide, a class set of Student Guides, and most of the equipment necessary to conduct the experiments. Replacement parts can be purchased separately so that the kit can be used for many years.	4 – 8	EWKit	**Exploring Light Investigation** • Teacher guide • 1 Wooden spool • 2 Spectroscopes • 1 Prism • 1 Magnifier with convex lens • 5 Small mirrors and holders • 4 Colored filters • Protractors **Exploring Motion Investigation** • 1 Metal sphere • 2 Spring scales • 2 Friction blocks • 2 Spheres with holes, each different masses • String • Teacher guide **Exploring Sound Investigation** • 1 Spring wave • 2 Tuning forks, 256 Hz • 2 Tuning forks, 1024 Hz • 2 Mallets • 3 Metal cans • 2 Flexible tubing 8 feet each • Clay • Teacher guide **Exploring Heat Investigation** • 3 1000 mL Pitchers • 5 500 mL Pitchers • 1 Wallpaper pan • 4 Digital Thermometers • Sand • Teacher guide
Solar Kit: **Exploring Photovoltaics** Secondary students learn how solar energy is used to generate electricity. Students will read about photovoltaic systems, concentrated solar power, and developing solar technologies. Students will investigate how photovoltaic cells work and what variables affect their electrical output.	Secondary	SolarSKit	• 15 Thermometers • Solar cell • Pull-Back vehicle • Marbles • Balloons • Wallpaper pan • 4 Measuring tapes • Stopwatch • Rulers • Teacher guide

The kit includes a Teacher Guide, a class set of Student Guides, and the materials necessary to conduct the activities.			
Wonders of Wind Elementary students learn about wind through reading and activities that focus on observation and inquiry. Students will learn to measure wind speed and direction, they will investigate how wind does work, including the ability to lift materials and generate electricity. The kit comes with a Teacher Guide, a class set of Student Guides, and the materials necessary to conduct the activities, including one KidWind Weightlifter Turbine and one KidWind Basic Turbine.	Elementary	Wonders of Wind	• Adventures of Genecan • Hand Crank • Bundle of pencils • Straws medium, small, large • Push pins • Tape • 1 Compass • 3 Packages of Binder clips • Wind meter • Wind vane • Anemometer • Teacher guide
Hydropower: **Energy of Moving Water** Intermediate students will develop a comprehensive understanding about energy, electricity, hydropower, and emerging ocean energy technologies. The kit comes with a Teacher Guide, a class set of Student Guides, and the materials necessary to conduct the activities, including those needed to build six model hydropower turbines.	Intermediate	HydroPowerIKit	• Teacher guide • Science of Electricity model Supplies (1 Plastic jar, 1 Styrofoam pole, Wires, Magnets, Multimeter, Copper wire, Two black stoppers, Two nails, 1 Wooden stick) • 6 White Jugs • 3 Wires • Batteries • Two volt meters • 6 Wallpaper pans • Bag of Small wood poles • Black turbine hubs • Wind Turbine generators • 3 38mm Dispensing kits

			• Box of magnets • 3 Funnels • 3 Triangular shaped containers • D8 batteries
Learning and Conserving kit Secondary students learn about energy consumption and conservation by reading utility meters and utility bills, comparing EnergyGuide labels, and exploring electric nameplates. Students conduct comprehensive surveys of the school building and school energy consumption—gathering, recording, and analyzing data, and monitoring energy usage. Students work in groups to develop comprehensive energy management plans for the school that include suggestions for retrofits, systems management, and conservation practices. The kit includes a Teacher Guide, class set of Student Guides, and the materials necessary to conduct the activities.	Secondary	LCKit	• Teacher guide • Two decorative lights • 1 Eco florescent bulb • 1 Incandescent light bulb • Water proof digital thermometer • 2 Electricity usage meters • Digital light meter • Thermo-Hygrometer pen (measures Humidity and Temperature • Indoor/ Outdoor thermometer • 1 Spinning disk

Renewable Energy Resource Contacts

Onsite Contact
Susan Guerrant, Media Center Specialist & Henley Environmental Coordinator
Contact for: Book and kit information, visits
sguerrant@k12albemarle.org
(434) 823-4393

Building Services Contact
Lindsay Snoddy, Environmental Compliance Manager
Contact for: Detailed data access requests, tours
lcsnoddy@k12albemarle.org
(434) 975-9340

Renewable Energy Resource Center Address
Henley Middle School
5880 Rockfish Gap Turnpike
Crozet, VA 22932

Additional Center Information:
http://www2.k12albemarle.org/dept/osp/building/environmental/Pages/Renewable-Energy.aspx