FY09 ARC Renewable Energy and Energy Efficiency For Schools Program

Open Date: February 18, 2009
Close Date: May 29, 2009
Announcement Date: June 30, 2009

ARC Grant Funds Available: $250,000. Maximum award $45,000.
ARC anticipates providing six to ten grant awards under this program.

This Appalachian Regional Commission (ARC) grants program will underwrite costs of installing renewable energy and energy efficiency equipment in K – 12 schools in Appalachia, and provide support for the implementation of associated science, environment, and business curricula in the classroom. Renewable energy equipment eligible for this RFP will include: wind power; solar power, both solar thermal and photovoltaics; fuel cells; biofuels; and geothermal systems. A range of energy efficiency technologies are also eligible for this grants program.

Components of the grants program include:

- Identification of renewable energy or energy efficient technology or equipment.
  The applicant must clearly identify the proposed equipment or technology to be used, with associated costs. Energy production ratings and/or energy savings ratings must be provided.
- Installation and operation of equipment - identification of a technical support partner.
  An entity capable of providing technical assistance for the installation and operation of the renewable energy or energy efficiency equipment must be identified. This partner could be a postsecondary institution, an energy focused non-profit, a state agency, a private contractor, a utility, etc. An appendix of potential technical assistance partners is provided on page 9.
- Partnership with local utility (if applicable).
  For projects that are interconnected to the electric grid, support from a local electric utility is required. In addition, many projects could benefit from technical, educational, or financial support from a partnership with a local electric utility.
- Implementation of classroom curriculum.
  A curriculum that helps students understand the relationship between the technology implemented in the school and the world around them must be implemented during the grant term. Curricula could focus on relevant science, environment or business concepts, and several excellent sources for existing curricula are available, see p. 9.

It is expected that ARC will award six to ten grants, up to $45,000 each, for $250,000 in total awards. Grantees will be required to provide matching funds at a ratio of $1 of support for each grant dollar. Activities supported by these grants are expected to be completed within 18 months of the award date. Funded activities will be promoted by ARC to a range of partners, and may receive exposure in local, regional, and/or national media.

ARC funds may be used for the purchase and installation of renewable energy and energy efficiency equipment at K-12 schools, the purchase / licensing and implementation of related educational programs at K-12 schools, and associated program costs such as instructional supplies, costs of teacher training and certification, release time, and instructional time.

Project Examples

Wind for Schools, Madison County, NC
One example of an ARC-funded program is the Madison County 'Wind for Schools' Education Demonstration, in North Carolina. The grantee will help install four small wind turbines at Madison County Public School sites and at the Madison County Cooperative Extension Service. Curriculum will be employed at local High Schools, Middle Schools, and Elementary Schools to provide scientific and economic education about wind power. Teachers will be trained to provide this curriculum to public school students, which will also be offered to the community at-large through the Extension Service. A professional wind installer will help install the turbines which will be interconnected by the French Broad EMC and Progress Energy utilities. Additional project partners providing technical assistance include Appalachian State University Appropriate Technology Program, which operates a wind turbine demonstration center, and the Southern Alliance for Clean Energy. The grantee anticipates that 240 students will receive training. For more information about this project contact Russell Blevins, russell.blevins@nc.usda.gov or visit the US Department of Energy web site: www.windpoweringamerica.gov/schools.asp.

Solar Energy Academy, Texas
TXU Energy (a Texas utility) launched a solar power education program that helps teachers meet state testing requirements, and helps students and their families understand basic energy concepts and bring demonstration solar installations to local communities. In 2008, the Solar Energy Academy installed 10 photovoltaic (PV) systems in local school districts and will install 15 in 2009. These PV systems included software that monitors the electricity output of the system and displays the data on a website for students, their families, and community members. In addition to the PV installations, the Academy provided teacher training workshops where participating teachers received professional development credit, as well as hands-on educational kits and classrooms materials. Substitute reimbursement was also provided for participating teachers. TXU Energy and the National Energy Education and Development (NEED) project came together to provide both the solar installation and the teacher curriculum and support materials. For more information contact Mary Spruill at mspruill@need.org or visit: www.txu.com/residential/Solar_Academy4.htm

Background
Appalachia enjoys an abundance of cultural, natural and structural assets, from its scenic mountains and small towns to its rivers, forests, music, and energy resources. These wide-ranging resources can play an important role in building a strong and sustainable “asset-based” economy, bringing jobs and prosperity to rural communities while preserving their character. This grants competition is designed to assist communities in leveraging renewable energy and energy efficiency resources to create jobs and revitalize their economies.

Appalachia and energy have been closely linked throughout the history of the nation, through the first production of oil to the importance of coal mining in the Region. By using its full range of energy resources and staying at the forefront of emerging energy technologies and practices, the Region has the potential to increase the supply of locally produced, clean, affordable energy, and create and retain jobs. This approach will help the Region find new ways to satisfy domestic energy demand, minimize environmental impact, and attract service and supply side industries and businesses that rely on energy resources to grow and sustain jobs. Developing Appalachia's energy potential will provide clean, safe, affordable, locally produced energy to customers, create and retain jobs, help companies stay competitive, and keep the Region economically strong.

In 2006, the Commission released *Energizing Appalachia: A Regional Blueprint for Economic and Energy Development*, to provide a strategic framework for the promotion of new energy-related job opportunities throughout the Appalachian Region. Approved by the governors of the 13 Appalachian states and the ARC Federal Co-Chair, the blueprint was developed in response to the changing energy supply, policy, and use environment.

In developing the blueprint, the Commission created an energy advisory council made up of one energy expert from each of the 13 Appalachian states, local development district representatives, and two federal representatives. Members of this group used their expertise, ideas, and experience, as well as the information gathered by ARC, to develop regional energy strategies and identify opportunities for ARC and its member states to address the changing energy market environment.

The Commission has identified three basic strategic objectives for the Region:

- Promote energy efficiency in Appalachia to enhance the Region's economic competitiveness.
- Increase the use of renewable energy resources to produce alternative transportation fuels, electricity, and heat.
- Support the development of conventional energy resources, especially advanced clean coal, in Appalachia to produce alternative transportation fuels, electricity, and heat.

The Appalachian Region is well positioned to take advantage of all the economic development opportunities in today's changing energy landscape. The Region possesses a diverse set of energy resources that hold the potential to generate additional businesses and jobs. ARC Federal Co-Chair Anne B. Pope stated that "the blueprint shows the way to maximizing the development of Appalachia's abundant natural energy resources. It draws on the input of over 100 industry experts, educators, government officials, and entrepreneurs in assessing the Appalachian Region's broad energy picture. Appalachia is one of the nation's richest areas in energy assets, and we believe it can become a leader in new energy development." (Visit www.arc.gov/energy for a copy of the Blueprint.)

Renewable Energy and Energy Efficiency:

Significant renewable energy opportunities can be found in the development of energy from biomass, biofuels, wind, solar power, and hydropower. Energy from biomass converts specially grown crops, sawmill wood residue, agricultural wastes, and other organic matter into new energy sources and fuels. The total annual biomass resources for the Appalachian states are estimated to be over 108 million tons. Biofuel potential is estimated to be 500 million gallons annually, based on converting 2005 output for corn and soybean production to ethanol and biodiesel fuels. Additional potential is available from the commercialization of new cellulose-based biofuel technologies, which are currently being developed.

Wind power is significantly underdeveloped in the Region, and has the greatest potential for development along the ridge lines of the Appalachian Mountains. There are 528 megawatts of installed wind power capacity in the Appalachian states, nearly 1,000 megawatts of planned capacity, and the potential for over 11,000 megawatts of additional capacity.

Solar power's best potential in the eastern United States, including Appalachia, is likely to be for both residential and commercial application. In the Appalachian Region, production of residential and commercial photovoltaic (PV) power is currently viable in southern Appalachia, and several PV manufacturing plants are located throughout northern Appalachia. Passive solar installations such as day-lighting, solar ventilation air preheating, hot water heaters, and pool heating may also provide an effective return on investment in solar technology.

Small and low-impact hydroelectric capability is another largely undeveloped energy resource in Appalachia. The Region is traversed by several major rivers and watersheds that create numerous opportunities for small-scale and low-flow hydropower installations. This category of hydroelectric generation is based on damless technology. Total hydropower potential could be as high as 5,700 megawatts of average available capacity.

The nation has also managed to address some of its rising energy needs through improved energy efficiency, which can be measured in two different ways: energy use per dollar of gross domestic product (GDP) and energy use per capita. The amount of energy used for every dollar of GDP produced by the economy has fallen steadily since 1980. The Energy Information Administration (EIA) of the U.S. Department of Energy forecasts that this trend will continue, based on existing policies of the federal and state government and on private sector investment trends. Economic restructuring also plays a part in explaining the fall in energy use per dollar of GDP, because it caused a shift in economic activity away from manufacturing and energy-intensive uses and toward the relatively less energy-intensive service sectors. The combined effect of energy-efficiency measures and economic restructuring has been that the total amount of energy used by each person in the economy has remained relatively steady.

Despite these gains from efficiency investments and shifting economic activity, there are some countervailing trends that are increasing energy use per capita, including increased travel demand and the rising intensity of energy demands by residential users and the service sector. The growth of computing and telecommunications applications, due to the expansion of the Internet, has led to an increased demand for electricity by residential and commercial users. This

trend is so widespread that the EIA has forecast that energy use per capita will begin to rise and will continue to escalate slowly for the next two decades. This means that total U.S. energy consumption will grow slightly faster than it has in the past.

For information on ARC funded activities in this program area, visit www.arc.gov/energy.

Asset Based Development Initiative:
This grants program for energy efficiency and renewable energy training and certification will build on the Commission's Asset Based Development Initiative which has provided over $21.6 million in grant support to 264 projects since 2005. These projects are projected to leverage tens of millions of dollars of private investment and create over 4,500 jobs. The Asset Based Development Initiative focuses on the cultural, natural, leadership, and structural assets of the Region, assisting communities in creating jobs and building strong and sustainable "asset-based" economies. The Commission has supported projects that capitalize on traditional arts, culture, and heritage, supporting local entrepreneurs and attracting visitors. Activities have leveraged unique natural assets, supporting the production of value-added agricultural products and assisting Gateway Communities to prosper. And the Commission has helped turn community liabilities into opportunities, focusing on such strategies as Brownfield redevelopment, adaptive reuse, and downtown redevelopment. (See www.arc.gov/abd for additional information on the Asset Based Development Regional Initiative.)

ARC Background
The Appalachian Regional Commission is a federal-state partnership established in 1965 by the Appalachian Regional Development Act to promote economic and community development of the Appalachian Region. The Act, as amended in 2008, defines the Region as 420 counties comprising all of West Virginia and parts of Alabama, Georgia, Kentucky, Maryland, Mississippi, New York, North Carolina, Ohio, Pennsylvania, South Carolina, Tennessee, and Virginia—an area of 200,000 square miles and about 22.9 million people. To promote local planning and implementation of ARC initiatives, the Commission established 73 Local Development Districts (LDDs) comprising groups of counties within each of the 13 states. The Commission has 14 members: the governors of the 13 Appalachian states and a Federal Co-Chair, who is appointed by the President.

For almost 30 years, the Commission has assisted a wide range of programs in the Region, including highway corridors; community water and sewer facilities, telecommunication, and other physical infrastructure; health, education, and human resource development; economic development programs, local capacity building and leadership development.

Goals / Outcomes
Funded projects will install renewable energy or energy efficiency equipment in K – 12 schools in Appalachia, thereby reducing energy costs for local school(s). Funded projects will also implement associated classroom curricula to educate K – 12 students about energy efficiency or renewable energy production.

Renewable energy equipment eligible for this RFP includes: wind power; solar power, both solar thermal and photovoltaics; fuel cells; biofuels; and geothermal systems. A range of energy efficiency technologies are also eligible for this grants program.

Implementation of renewable energy or energy efficiency curricula must also be completed during the grant term. For information on existing K – 12 educational programming, see Training and Curricula Resources, p. 9 of this RFP. ARC funds may only be used for curriculum development if no suitable curriculum is available in the marketplace.

Application Format

Please submit your application in the following format:

1. Cover Page – Complete the Cover Page, attached.
2. Application Narrative – 6 pages maximum in 12 point font. Please address the following items:
3. Project Summary – one paragraph, 200 word limit.
4. Description of proposed activity, including anticipated outcomes. Energy production ratings and/or energy savings ratings for proposed equipment/activities must be provided. The applicant must identify or provide a summary of the curriculum to be purchased / licensed / used, and project the number of teachers and students that will participate in the coursework.
5. Identification of assets that will be leveraged by the proposed project. This could include specific institutional facilities, faculty, local business partners, utility partners, windy or sunny location, or other assets.
6. Capability of applicant and community partners. ARC believes that successful development takes place when schools, business, government, nonprofit organizations, and community groups mobilize resources towards a common goal. Describe the involvement of community partners (including the involvement of the School Board or School District, if applicable). As appropriate, address the development of new, or the capability of existing, partners in the planning and implementation of the proposed activity. Be sure to describe any similar training programs in the service area.
7. Outreach activities for disseminating or promoting the program.
8. Plans for sustainability. How will the activities continue at the end of the grant period, both the operation and maintenance of the renewable energy or energy efficiency equipment, and the on-going implementation of the associated curriculum? Describe current or proposed revenue generating activities, financial partners, donors, etc.

Attachments – please include the following attachments:

- Project Budget – Complete the Line Item Budget form, attached, listing project expenses by funding source. Also, include a budget narrative describing the elements of each expense line item. (Matching support: Grantees are required to provide matching funds at a ratio of $1 of support for each ARC grant dollar. This match may be provided as 'in-kind' from non-cash sources. Matching support may be provided from private sources, both for profit and non-profit, local and state government, philanthropies, educational institutions, federal agencies, and other partners.)

- Staff background – include resume of project leader and brief bios for key staff and contractors. Note estimated hours per week (FTE's) to be allocated to project activities for each staff member, contractor, and project leader.
- Timeline. Note key project milestones and outcomes. Activities supported by these grants are expected to be completed within 18 months of the award date.
- Map. Include a state map indicating the location of the proposed activities. Simple maps generated through internet providers (such as Yahoo, Google …) are acceptable. Project activities must occur within the ARC service region.

Note: Additional materials will be discarded.

For consideration, ten hardcopies of the response must be received at ARC offices by May 29, 2009. Please note, submitted materials will not be returned.

ARC Eligible Costs

ARC funding may be used for:

- Purchase and installation of renewable energy and energy efficiency equipment at K-12 schools.
- Purchase / licensing and implementation of renewable energy and energy efficiency curriculum and educational programs at K-12 schools.
- Associated program costs, including instructional supplies, costs of teacher training and certification, release time, and instructional time.

ARC funds may only be used for curriculum development if no suitable curriculum is available in the marketplace.

Who is eligible to apply?

Governmental and non-profit organizations, including public schools, private non-profit schools, state and local government, non-profit trade associations, and cooperatives are eligible to apply. Private for-profit organizations are not eligible to apply. All applicants must have established a clear partnership with a local K – 12 school serving an Appalachian community(ies).

Selection Criteria:

An independent review panel will be convened to evaluate submissions. This panel will include leading energy efficiency and renewable energy training organizations, federal, state and local partners. The review panel will forward recommendations to ARC for final approval.

Applications will be evaluated on several criteria, including:

- Feasibility of proposal; likelihood of achieving proposed outcomes, including implementation of proposed training program, within the grant period.
- Capability of applicant: expertise in relevant program areas and in grants management. Quality of the curricula.
- Level of community support, including support from School Board or School District, if applicable. Overall level of match, including match from private sector or educational

partners. A minimum match of 1:1 will be required and may be provided as 'in-kind' from non-cash sources.

- Articulation of clear, measurable outcomes, including energy production ratings and/or energy savings ratings for proposed equipment/activities, and anticipated number of teachers and students that will participate in the coursework.
- Outreach activities focusing on disseminating or promoting the program.
- Sustainability of effort; ability to continue the activity upon conclusion of grant period.
- Distressed Counties and Areas, At Risk Counties. Additional consideration will be provided for projects focusing on ARC designated Distressed Counties and Areas, and At Risk Counties. Please visit: www.arc.gov/index.do?nodeId=58 , County Economic Status 2009 tab, for a map of ARC Distressed and At Risk Counties.
- Collaboration. Additional consideration will be provided for projects that target activities within two or more states.

Submissions

Submit ten (10) hardcopies of your proposal to:
Elaine Jackson, Program Operations Division
Appalachian Regional Commission
1666 Connecticut Ave, NW
Washington, DC 20009
202/884-7750
Fax: 202/884-7691

Deadline for receipt of responses: May 29, 2009. Please note, submitted materials will not be returned.

Curricular Resources
The following resources provide information on both K – 12 curriculum and teacher training in the renewable energy and energy efficiency fields.

US Department of Energy – Energy Efficiency and Renewable Energy
K – 12 Lesson Plans and Activities
www1.eere.energy.gov/education/
www.eere.energy.gov/windandhydro/windpoweringamerica/schools_teaching_materials.asp

National Energy Education Network (NEED)
Extensive information on renewable energy and energy efficiency K – 12 curricula, organized by grade level and subject matter. NEED can also provide technical assistance to partner schools.
www.need.org/
www.need.org/needpdf/Catalog.pdf
www.need.org/stateandlocal.php - for a listing of existing state programs

Technical Assistance Resources
The following resources provide referrals to technical assistance and installation services for renewable energy and energy efficiency technologies and products.

US Department of Energy - Wind Powering America
For small wind projects, the US Department of Energy Wind Working Group and associated Wind Application Centers at state Universities can provide technical support for wind installations. Costs per turbine are estimated to be $10,000, plus installation costs. Standard small wind turbines of up to 70 ft are used for this program, and several tower options are available. For more information on this program visit:
www.windpoweringamerica.gov/state_activities.asp

Under the U.S. DOE Wind for Schools model program, schools provide the land for the project while utilities provide support for the interconnection of the wind turbine to the school electrical system or grid. Schools are anticipated to save a modest amount of money by offsetting their power needs. Additional power may be sold by the school through a Green Power program to either a sponsoring company or a local utility. For additional information on the model Wind for Schools program, please visit: www.windpoweringamerica.gov/schools.asp (The ARC RFP is able to fund this program within the Appalachian Region.)

According to the US Department of Energy, a wind turbine located at a school provides students and teachers with a physical example of how communities can take part in providing for the economic and environmental security of the nation, while allowing hands-on education and opportunities. Community education is one of the goals of the Wind for Schools program, and community meetings and outreach can be incorporated into the program. In addition, support from the State Energy Offices is recommended. The local electricity provider is also a critical

partner and will be an integral part of the project, assisting in turbine installation and associated electric interconnections.

Specialized wind power curriculum is available from National Energy Education Network (NEED). Extensive information on existing available curriculum can be found at www.need.org/ and www.eere.energy.gov/windandhydro/windpoweringamerica/schools_teaching_materials.asp

Interstate Renewable Energy Council
Celebrating its 26th year, the Interstate Renewable Energy Council is a non-profit organization dedicated to moving renewable energy resources into the marketplace. IREC emphasizes education and outreach, stakeholder coordination, technical assistance, workforce development, the adoption and implementation of uniform guidelines and standards, consumer protection and building networks to share experiences and information.
www.irecusa.org
Visit the 'Schools Going Solar' url for resources and information on what's happening with solar schools across the country. www.irecusa.org/index.php?id=36

Southern Alliance for Clean Energy
Southern Alliance for Clean Energy promotes responsible energy choices that create global warming solutions and ensure clean, safe and healthy communities throughout the Southeast. Founded in 1985, SACE is focused on developing clean energy solutions throughout the Southeast. www.cleanenergy.org
For support on solar installations in their service area contact:
Gil Melear-Hough, gil@cleanenergy.org

Find Solar
A partnership between American Solar Energy Society (ASES) and Cooler Planet to provide consumer access to information about solar power, as well as qualified solar installers in North America. www.findsolar.com

North American Board of Certified Energy Practitioners
The North American Board of Certified Energy Practitioners (NABCEP) supports the renewable energy and energy efficiency industries implement quality credentialing and certification programs for practitioners. For their certified solar installer locator visit: www.nabcep.org/installer-locator

US Department of Energy – Energy Efficiency and Renewable Energy (EERE). Resources for a range of renewable and energy efficiency technologies. www.eere.energy.gov

Appalachian Regional Commission
Renewable Energy – Energy Efficiency Grants Competition

Energy for Schools
2009

Cover Page

Project Title: _____

_____

Organization/Applicant: _____

Primary Contact: _____

Address: _____

_____

Email: _____

Phone: _____

Fax: _____

County(ies) served: _____

Grant Request: $_____

Appalachian Regional Commission
Renewable Energy – Energy Efficiency Grants Competition

Energy for Schools
2009

Project Budget
Line Item Budget

Expense	$ ARC Costs	$ Matching Costs*	$ Total
Personnel	_____	_____	_____
Benefits	_____	_____	_____
Travel	_____	_____	_____
Equipment	_____	_____	_____
Supplies	_____	_____	_____
Contractual	_____	_____	_____
Other	_____	_____	_____
Sub total	_____	_____	_____
Indirect	_____	_____	_____
Total	_____	_____	_____

* Sources of Matching Costs:

Source	$ Amount	Type (Cash, In-kind)
1. _____	_____	_____
2. _____	_____	_____
3. _____	_____	_____
4. _____	_____	_____

Total Matching Costs: _____

Please attach a budget narrative describing each expense line item, above.