

Virginia Wind for Schools Funding Guide



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PURPOSE

THE FUNDRAISING PROCESS

The Wind for Schools program is a great opportunity to engage teachers, students, and the community in wind development and to increase awareness of this renewable energy source. Fundraising, finding donations, and writing grant proposals will be invaluable to the success of your small wind turbine installation process. This guide is designed to provide information on potential funding opportunities, offer tools to help you put together an effective proposal, and help you gain a better understanding of the Virginia Wind for Schools program for planning and discussing your fundraising goals.

FUNDING OPPORTUNITIES

Many funding opportunities are available to educators working in collaboration with organizations in the community, however, it is important that you research and identify sources that will best fit your school's project. Here you will find a list of funding opportunities and information on their intended purpose, application deadlines, amounts, and project preferences. You will not necessarily want to apply to all of the opportunities that are listed here depending on your unique funding needs. In addition, you are encouraged to seek out additional and current funding sources. Grants from government agencies, corporations, foundations, individuals, and non-profit campaigns change each year as funds run out, organization goals change, and new opportunities are created.



GRANT WRITING

There are many questions you will need to consider before beginning the grant writing process and even while you are narrowing down appropriate funding sources. This guide will help you to define your fundraising goals and consider key aspects of your project before you are asked to provide these answers by potential donors. A general proposal outline will help lay out the headings and information that will be important to include in your grant applications. You will also find general tips for effectively communicating, writing, and evaluating your proposal.

RESOURCES

Sample grant proposals from previous projects in Virginia and other states that have received positive responses from donors are available for you to reference. These grants will help you to see how to piece together descriptions of the objectives and funding needs in a way that will help potential donors better evaluate your project. As you search through available funding opportunities you will find that most organizations and grants have their own unique goals and requirements. Research findings and summaries will help you consider how to write for various donors and how to approach your project from multiple perspectives such as best pedagogical practices, environmental education, and conservation.

In the resource section, you will also find brief overviews of the Wind for Schools program in Virginia and estimated funding needs based on previous Wind for Schools projects. Gaining a better understanding of the structure of the program, its mission, and project history may help you to speak to and answer specific questions from potential donors and funders. Detailed information about the

materials and resources that will be needed to install the recommended Skystream wind turbine at your school, including expected costs for maintenance and installation will be important to include in your proposal. There are also recommendations for points in the installation process where you may be able to reduce the total costs you will need from major funding sources by drawing on donations and volunteer services from the community.

This guide will also give you a suggested timeline for seeking funding, installing the turbine, and integrating wind energy into the curriculum. Recommendations for aspects of and activities to include in your project may facilitate the installation process and encourage potential funders that the project has long-term applications and support.



CONTINUING SUPPORT, COOPERATION, AND EVALUATION

Your state facilitator is committed to helping you develop a small wind project on your campus by overseeing project development, aiding in planning and funding, providing training, and finding a qualified installer. This includes helping you research and identify sources of funding, write the grant proposals, and respond to feedback. Keeping in contact with your state facilitator before, during, and after the installation process may not only help you reach your project goals, but could allow your school project, the successes and obstacles you encounter, to serve as a point of reference for other schools hoping to initiate their own project.

FUNDING OPPORTUNITIES

FUNDING OPPORTUNITIES

RESEARCHING AND IDENTIFYING FUNDING SOURCES

Funding in the United States primarily comes from three sources – the federal government, individuals, and cooperations and foundations. While the largest sums of money come from federal grants, there are over 90 thousand foundations in the United States alone. An important aspect of your proposal will be finding the right fit between a funder and your project. There are many directories and online search engines for finding grant source information. In this section you will find a list of resources we have researched and believe will be appropriate for your project. This list will give you a good idea of the types of grants that are available for school wind turbine projects, however, you will need to check that these specific grants are current before applying.

Below is a list of web sources that may help you focus your funding search beyond.

- Catalogue of Federal Domestic Assistance: www.cfda.gov
- National Endowment for the Humanities: www.neh.gov
- Community of Science: www.cos.com
- National Institute of Health: www.grants.nih.gov/grants/oer.htm
- National Science Foundation: www.nsf.gov
- American Educational Research Association: www.aera.net
- US Department of Education: <http://www2.ed.gov/fund/grants-apply.html>
- Non-profit Sites: www.councilofnonprofits.org & www.nonprofits.org
- Government Grants: www.grants.gov
- Guide Star: www.guidestar.org
- US DOE Forecast of Funding Opportunities: www.ed.gov/fund/grant/find/edlite-forecast.html
- EPA Environmental Education Grants: www.epa.gov/enviroed/grants.html
- Eelink North American Association for Environmental Education: <http://eelink.net/grants-generalinformation.html>
- School Grants: www.schoolgrants.org
- Fundset Services: www.fundsetservices.com
- The National Education Association Foundation: www.neafoundation.org

DIRECTORY OF POTENTIAL WIND FOR SCHOOLS FUNDING OPPORTUNITIES

The JMU Wind for Schools program has received funding assistance from multiple sources and can suggest several areas where schools can look for non-profit, business, and government support for portions of the wind turbine purchase and installation that cannot be covered by donations. The availability of funds and the specific guidelines for these programs may change from year to year. Grants and other funding opportunities can be separated into several categories based on the type of organization providing funds, the goals and priorities of projects they wish to fund, the amount and type of funding, and the frequency in which funds are available. The list below arranges these funding opportunities by source. The objectives of each grant is highlighted to assist in the development of grant proposals that will need to provide details on how the Wind for Schools program meets the desired outcomes of each program or organization.

Federal Departments and Agencies

Department of Education

- Investing in Innovation Fund Development Grant

Educational Best Practices, Annually

The Investing in Innovation Fund, established under the American Recovery and Reinvestment Act of 2009, provides funding to support local educational agencies or nonprofit organizations in partnership with a local educational agency or consortium of schools. The goal of this program is to expand the implementation of, and investment in, innovative practices that are demonstrated to have an impact on improving student achievement or student growth, closing achievement gaps, decreasing dropout rates, increasing high school graduation rates, or increasing college enrollment and completion rates. These grants will allow school groups to expand and develop practices that can serve as models of best practices, to work in partnership with the private sector and the philanthropic community, and identify and document best practices that can be shared and taken to scale based on demonstrated success. Development grants provide funding to support high-potential and relatively untested practices, strategies, or programs whose efficacy should be systematically studied.

Website: <http://www2.ed.gov/programs/innovation/index.html>

Environmental Protection Agency

- Environmental Education Grant Program

Environmental Awareness Education, Annually, \$15,000-\$100,000

The purpose of the Environmental Education Regional Grant Program is to increase public awareness and knowledge about environmental issues and provide the skills that participants need to make informed environmental decisions and take responsible actions toward the environment. Applicants must demonstrate how they will provide non-federal matching funds of at least 25% of the total cost of the project. Projects must include at least one of EPA's educational priorities and include at least one environmental priority. As an environmental education program, each project must demonstrate how it involves not only outreach in the form of environmental awareness and knowledge, but also critical thinking, problem solving, decision making, action, and stewardship.

Website: <http://www.epa.gov/enviroed/grants.html>

- Supplemental Environmental Project (SEP) Settlements

Environmental Protection and Renewable Energy Development, Rolling applications

The Environmental Protection Agency (Supplemental Environmental Project Settlements) were designed by the EPA to give businesses or individuals who violate environmental laws an alternative to standard fines for noncompliance. Instead of paying the full amount of its fines, the company can volunteer to fund environmentally friendly projects. The EPA's goal is to use this program to protect and enhance public health and the environment.

Overview Website: <http://www.epa.gov/oecaerth/civil/seps/>

School Wind Project Overview: <http://www.nrel.gov/docs/fy04osti/34866.pdf>

United States Department of Agriculture

- Rural Business Enterprise Grant (RBEG)

Workforce Development and Rural/Small Business Support, <\$10,000 - \$500,000

The RBEG program provides grants for rural projects that finance and facilitate development of small and emerging rural businesses help fund distance learning networks, and help fund

employment related adult education programs. To assist with business development, RBEGs may fund a broad array of activities.

Website: http://www.rurdev.usda.gov/BCP_rbeg.html

- Rural Energy for America Program Grants – Renewable Energy Systems/Energy Efficiency Improvement Program (REAP/RES/EEI) or Energy Audits and Renewable Energy Development Assist (REAP/EA/REDA)

Rural/Small Business Support, 25% project costs

The REAP/RES/EEI/EA/REDA grant programs are designed to help farmers, ranchers, and small businesses conduct energy audits and begin renewable energy development. It provides funds to agricultural producers and rural small businesses to purchase and install renewable energy systems and make energy efficiency improvements.

Website: http://www.rurdev.usda.gov/RD_Grants.html

U.S. Department of Health and Human Services’ Rural Initiative, Rural Assistance Center

- Sustainable Communities Regional Planning Grant Program
Environment and Watershed Education, Rolling applications, \$500, \$750, or \$1000

The VA Naturally

State Energy Office and Other Departments in the Commonwealth

Virginia Department of Environmental Quality – VA Naturally

- Classroom Grant Program

Environment and Watershed Education, Rolling applications, \$500, \$750, or \$1000

The VA Naturally Classroom Grant Program is supported by the Virginia Resource Use Education Council, the Department of Environmental Quality, the Department of Conservation and Recreation and the Virginia Environmental Endowment. The goal of this program is to provide teachers with funding support for environmental education. Any school or school division is encouraged to apply for a grant to create and participate in meaningful outdoor experiences with their students. Activities that are eligible for funding include restoration, enhancement, protection and monitoring projects and investigative or experimental design activities that foster academic success, reinforce responsible citizenship, and give children the tools they need to contribute to a healthy and enduring environment. Priority will be given to projects that focus on meaningful watershed educational experiences, are new or greatly enhanced activities, and engage minority or under-served communities. These experiences should be investigative or project oriented, sustained over an appropriate period of time, integrated into the instructional program, based on good instructional design, include reflection and communication, and involve all learners. Activities should consider the watershed as a system and as long as there is intentional connection made to water quality, the watershed, and the larger ecological system, outdoor experiences that meet other requirements may include terrestrial and pollution prevention activities.

Website: <http://www.vanaturally.com/classroomgrants.html>

- Partner Grant Program

Environment and Watershed Education, Rolling applications, \$1000 - \$5000

The Partner Mini-grant Program supports community groups working to provide students with meaningful watershed educational experiences. One-time or seed funding is intended to help community groups build capacity for delivering and sustaining high quality, meaningful

environmental education related to water and watersheds. Program funds must be used for non-consumable supplies and some money may go towards transportation or teacher training. The program will complement the Virginia Classroom Grants program designed for teachers. Priority is given to local educational programs, areas of Virginia not currently being served by other programs, programs that provide students with sustained outdoor experiences, and/or to groups actively working on a long term basis to immerse youth in meaningful watershed educational experiences.

Website: <http://www.vanaturally.com/mweegrant.html>

Foundation for Virginia's Natural Resources

- FVNR Project Funding and Grant Program

Teaching Best Practice and Technology Education, Annually

Enhancing Education through Technology was set up as part of the Elementary and Secondary Education Act and also receives funding by the American Recovery and Reinvestment Act. Its goals are to improve student achievement through the use of technology in instruction, help ensure every student is technologically literate by the end of eighth grade, and promote effective integration of technology, teacher training and curriculum development. Competitive Grants are intended to support programs that encourage the use of technology to improve teaching and learning. School divisions are encouraged to work with other groups, such as high need school divisions, colleges and universities, businesses, public and private non-profit groups.

Website: <http://www.fvnr.org/>

Virginia Environmental Endowment

- Virginia Mini-Grant Program

Environment Education, Biannually winter and summer, \$5000 or less

The Virginia Mini-Grant Program supports community-based efforts to strengthen environmental education and to promote stewardship of Virginia's waterways. These are intended to be one-time, start-up grants, and preference is given to modest local projects. Public and private k-12 schools, nongovernmental and non-profit community organizations in Virginia may apply. Environmental education and water quality protection projects may include starting up an environmental science course and outdoor classroom projects, volunteering to monitor water quality in dozens of local streams and rivers, and developing innovative strategies to ensure environmental quality is improved in the community. Preference is given to projects that present an objective and balanced approach to important issues, show evidence of assessing community needs and opportunities to cooperate with diverse organizations, use existing resources and expertise from local businesses and academic institutions, include the evaluation of progress, and offer a model for use by other schools and communities.

Website: <http://www.vee.org/mini.cfm>

Virginia Department of Education

- Enhancing Education through Technology Competitive Grant Program

Teaching Best Practice and Technology Education, Annually

Enhancing Education through Technology was set up as part of the Elementary and Secondary Education Act and also receives funding by the American Recovery and Reinvestment Act. Its goals are to improve student achievement through the use of technology in instruction, help ensure every student is technologically literate by the end of eighth grade, and promote effective integration of technology, teacher training and curriculum development. Competitive Grants are intended to support programs that encourage the use of technology to improve

teaching and learning. School divisions are encouraged to work with other groups, such as high need school divisions, colleges and universities, businesses, public and private non-profit groups. Website: http://www.doe.virginia.gov/federal_programs/esea/title2/part_d/index.shtml

Virginia Department of Mines Minerals and Energy

- Local Government and Public School Renewable Energy Utilization Program
Workforce Development and Renewable Energy Development, up to 75% of project costs
This program is intended to allow local government agencies to gain experience and exposure to solar and wind power technologies at their facilities. The program will emphasize systems located at schools and coupled with renewable curriculum.
Website: <http://www.dmme.virginia.gov/DE/ARRA-Public/LocalGovSchoolRE.shtml>
- Economic Development Programs
Renewable Energy Development, Annually
These programs are taken from a \$10 million fund Virginia proposes to use for economic development and to develop clean energy business and industry. The Commonwealth plans to distribute this money with three programs that range from traditional business support to innovative, fair investment tools. Programs encourage projects to match federal investments with non-federal dollars. Programs must also match federal dollars with investments from non-federal sources. Some programs will also generate program revenue to sustain the infrastructure-building efforts after federal funds no longer are available for this purpose.
Website: <http://www.dmme.virginia.gov/de/arra-public/SEPProgramGrant.shtml>

Campaigns and Non-Profit Organizations

Dream It.Do It.

- Shenandoah Valley Mini Grant Program
Workforce Development, average \$6000 - \$7000
In 2010, the Shenandoah Valley Mini Grant Program awarded grants to 15 schools, agencies, and education programs to help connect students with careers in advanced technology, healthcare, construction, manufacturing, and green related occupations. Recipients included schools installing and allowing student exploration of small solar photovoltaic systems and wind turbine service technology. The program covers 20 areas near and within the Shenandoah Valley – from Frederick County in the north, to Botetourt County in the south.
Website: <http://www.dreamit-doit.com/virginia/shenandoah/>

National Science Foundation

- Innovative Technology Experiences for Students and Teachers, Strategies Projects
STEM Education and Workforce Development, \$300,000
The Innovative Technology Experiences for Students and Teachers program was created to address the growing demand for STEM professionals in the U.S. and find solutions to help in the development of a strong STEM workforce. Projects should involve students and teachers in kindergarten through high school and may focus on any content area related to the STEM workforce. The program is especially interested in proposals to design and implement robotics competitions, and to study their effectiveness as a means of engaging students in learning STEM content and 21st Century skills. Three types of projects are invited to apply. Strategies projects are targeted at students and/or teachers. These projects design, implement, and evaluate models for classroom, after-school, summer, virtual, and/or year-round learning

experiences. The strategies are intended to encourage students' readiness for, and their interest and participation in, the STEM and ICT-intensive workforce of the future. Strategies proposals must describe the anticipated contributions to the research knowledge base about STEM career preparation in addition to immediate impacts on participants.

Website: http://www.nsf.gov/funding/pgm_summ.jsp?pims_id=5467&org=NSF

StEPP Foundation: Strategic Environmental Project Pipeline

- Environmental Project Program

Renewable Energy Development and Environmental Protection, Rolling applications

The StEPP Foundation supports organizations in creating projects that demonstrate the positive benefits of energy efficiency, renewable energy, and pollution prevention in their communities. The foundation works with government entities, non-profit organizations, academic resources, and other groups that need funds for projects at the local, state, or national level. The foundation encourages projects to apply which aim to achieve one of the organizations core principals, including to provide strategies for improving air and water quality, develop ways to reduce solid and hazardous waste, provide incentives for the development and implementation of energy efficiency and renewable energy projects, support environmental benefits from renewable related projects, support energy efficiency/renewable energy (EERE) products, services and technologies, connect land use and ecosystem health, and connect environmental and public health issues.

Website: <http://stepp.steppfoundation.org/main>

National Education Association NEA Foundation

- Nickelodeon Big Help Grants

Environmental Awareness Education, Three reviews per year, \$5,000

Nickelodeon Big Help Grants are available in the form of Student Achievement grants to K-8 public school educators. The purpose of this program is to the develop and implement ideas, techniques, and approaches for addressing four key concerns – environmental awareness, health and wellness, students' right to a quality public education, and active community involvement. The grants target these four concerns as areas of great promise in helping develop a sense of global awareness in 21st century students that will encourage and enable them to make a difference in their world. Proposals should engage students in critical thinking and problem solving that improve their knowledge of standards-based subjects and improve their habits of inquiry, self-directed learning, and critical reflection. Funds should be spent on materials, supplies, equipment, transportation, software, and educational experiences for the students.

Website: <http://www.neafoundation.org/pages/educators/grant-programs/nea-foundation-green-grants/>

National Weather Association

- Sol Hirsch Education Grants for Meteorology

STEM Education, Annually, \$750

The National Weather Association sponsors the Sol Hirsch Education Fund, which offers \$750 to K-12 teachers who wish to improve and develop programs, curriculum and equipment for the education of students in meteorology. Selected teachers may use the funds to purchase scientific materials or equipment for the classroom, school or community. The grant is also intended to allow schools and communities to begin new science outreach and education programs or build on existing meteorology or science education programs. Teachers may use

the funds to attend courses, workshops or conferences related to meteorology that will enhance their teaching activities.

Website: <http://www.nwas.org/grants/solhirsch.php>

Captain Planet Foundation

- The Captain Planet Foundation Grant Program

Environmental Awareness Education, Three reviews per year, \$250-\$2500

The Captain Planet Foundation grant program awards funds to school and community-based environmental and educational organizations that propose activities supporting high-quality educational programs that enable children and youth to understand and appreciate the world through learning experiences that engage them in active hands-on projects to improve the environment in their schools and communities. The program goals are to provide funds that will encourage environment-based education in schools and inspire youth and communities to participate in community service through environmental stewardship activities. It is preferred that applicants secure at least 50% matching or in-kind funding for their program.

Website: <http://www.captainplanetfoundation.org/default.aspx?pid=3&tab=apply>

National Girls Collaborative Project

- Mini STEM Grants for Girls

STEM education and gender equity, \$1000

The purpose of the STEM Grants for Girls initiative is to support programs that engage girls in science, technology, engineering, and mathematics learning, address gaps and overlaps in STEM education between boys and girls, and share promising teaching practices. Projects must relate to informal learning or evaluation and assessment. The National Girls Collaborative Project hopes to award the mini grants to projects which build collaboration between existing programs and organizations in order to support girls in pursuing STEM related educational programs and careers.

Website: <http://www.ngcproject.org/mini-grant/index.cfm>

Regional Organizations

Appalachian Regional Commission

- Renewable Energy and Energy Efficiency Grants

Renewable Workforce Development, Annually, <\$75,000

The Appalachian Regional Commission is a federal-state partnership that works for sustainable community and economic development in Appalachia. Funds may be awarded in the form of startup grants, project grant funds, operating grant funds, and in-kind grants. ARC provides a range of assistance to help communities develop clean energy programs, as well as support to help new energy businesses expand and create local jobs. Commission-supported activities include training and education programs focusing on energy efficiency, renewable energy, and clean fossil energy production.

- Education and Training

Renewable Workforce Development, Occasionally Available

The Appalachian Regional Commission may have funding opportunities for programs that encourage the development and expansion of workforce training and vocational education programs, support local and regional efforts that raise the levels of educational achievement

and attainment for all students, support programs that increase college-going rates, and support dropout prevention programs.

Website: <http://www.arc.gov/index.asp>

American Electric Power/Appalachian Power

- Charitable Donations and Economic Development Program Grants

Education and Economic Development, Sponsorship, In-Kind Donations and Matching Gifts

American Electric Power provides financial support to non-profit organizations as part of its goal “to support and play an active, positive role in [communities].” Contributions are made in the areas of education, the environment and human services. Priority is based on the overall benefit to communities and, in the area of education, to grades pre-K through 12 in the fields of science, technology, and math.

Website: <http://www.aep.com/citizenship/community/corpGive/>

The Virginia Tobacco Indemnification and Community Revitalization Commission

- Education Program Grants

Education and Workforce Development, Rolling applications

The Virginia Tobacco Indemnification and Community Revitalization Commission’s Education grants are intended to prepare students for “new economy” employment through workforce development and competitive grants. The goal is to promote the economic growth and development of Virginia’s southern regions, attract and retain modern businesses, and increase the skill levels of the region’s labor force. Other grants from the Tobacco Commission include Economic Development Programs, Special Projects, and Research and Development.

Website: <http://www.tic.virginia.gov/education.shtml>

The Alleghany Foundation

- Alleghany Highlands Grants

General Region-Based, Rolling applications

The Alleghany Foundation was established with proceeds from the sale of Alleghany Regional Hospital. The program awards grants in the areas of healthcare, education, recreation, economic development, arts and humanities, historic preservation, and social and community services.

Website: <http://www.alleghanyfoundation.org/>

The Community Foundation for Northern Virginia

- Education Grants

General Region-Based and Education, Annually, < \$10,000

The Community Foundation for Northern Virginia provides grants each year through the Community Investment Fund to non-profit organizations providing services in Northern Virginia in the areas of poverty relief, child and youth development, education, health, mental health and aging. Education grants have included support for literacy programs as well as classroom hands-on science programs.

Website: <http://www.novacf.org/page32063.cfm>

The Foundation for Roanoke Valley

- Grants 4 Teachers Program

General Region-Based and Education, Annually, \$250

The foundation for Roanoke Valley is a community foundation serving the cities of Roanoke, Salem, Lexington and Martinsville, the counties of Roanoke, Botetourt, Craig, Floyd, Franklin,

Henry, Alleghany, Rockbridge, and the surrounding areas. The purpose of the Grants 4 Teachers Program is to allow teachers to bring innovative ideas to engage students to the classroom despite budget constraints on schools. For the first year, the grant will only be available to k-12 teachers in Roanoke City Public Schools.

Website: http://www.foundationforroanokevalley.org/grants_For_Teachers.html

WHSV, Chanel 3, ABC Television

- Project 3 Grants

General Region-Based and Education, Seven announcements per year

WHSV Project 3 supports partnerships in the community between businesses, schools, and the station. Businesses which provide financial support include Bob Wade Autoworld, Botkin Rose Attorneys and Counselors at Law, LD&B Insurance Agency, Loyaltan Assisted Living Community, Papa Johns Pizza, Pendleton Community Bank, the Rockingham Cooperative, and Rule Real Auto. Grants have been awarded for literacy programs, textbook purchases, and surveillance systems.

Website: <http://www.whsv.com/project3>

Foundations and Businesses

Green Energy Certificates: Large businesses in the state will purchase the environmental attributes associated with the first 10 years of operation of a small wind turbine on school property, called a Green Energy Certificate, for about \$2,500. Schools will want to identify possible companies in their area and write letters to invite them to sponsor the project.

BP Global

- Lowe's Toolbox for Education Grant

Education, spring and fall, \$5,000, \$10,000

BP's A+ for Energy Program was developed to recognize teachers for innovation and excellence in teaching energy or energy conservation in the classroom. PreK-12 teachers at public or private schools in eligible locations are encouraged to apply. Grants are awarded directly to teachers, based on the budget submitted with the application. In addition, grant winners receive energy education curriculum units designed and developed by the National Energy Education Development (NEED) Project. Teachers receive over \$1,500 of resources -- including hands-on classroom energy transformation kits, tools to teach energy in any discipline, and sponsorship to attend Energy Educators Training Conferences facilitated by NEED.

Website: www.aplusforenergy.org

Lockheed Martin

- Lockheed Martin k-16 Science and STEM Education Program

STEM Education, Quarterly

Website: <http://www.lockheedmartin.com/aboutus/community/philanthropy/funding.html>

Lowe's Charitable and Educational Foundation

- Lowe's Toolbox for Education Grant

Education, Biannually spring and fall, \$5,000

The Lowe's Toolbox for Education Grant Program provides \$5 million to public schools and public school partner teacher groups each year. The goal of the program is to provide support

for projects that encourage parent involvement and build stronger community and that have a permanent impact such as facility enhancement (both indoor and outdoor) as well as landscaping/clean up type projects. Only 10% of any award granted can be used toward outside resources such as labor, installation, consultation and delivery.

Website: <http://www.toolboxforeducation.com/>

ING Foundation

- ING unsung Heroes Award
Educational Best Practice, Annual, \$5,000, \$10,000, or \$25,000
ING hopes to provide funding for educators with breakthrough projects that are short on funding, but have long term potential. Educators apply by describing projects they have initiated or would like to pursue and requests are judged based on innovative method, creativity, and potential for positive influence.
Website: <http://ing.us/about-ing/citizenship/childrens-education/ing-unsung-heroes>
- ING Environmental Sustainability Grant
Environmental Protection, January and April, >\$2,500
As part of being a responsible global business leader, ING is committed to environmental protection. ING strives to be environmentally sustainable in its everyday operations and to engage in worldwide discussions addressing climate change. In the U.S., ING hopes to support projects that increase energy efficiency and reduce energy consumption, invest in green energy, promote awareness, and practice the three R's: reduce, reuse, and recycle.
Website: <http://ing.us/about-ing/citizenship/ing-foundation-grants>

Toyota U.S.A Foundation

- Toyota Tapestry
Science Education, Annual, \$10,000
Website: <http://www.nsta.org/pd/tapestry/index.htm>

Merck charitable grants

- Institute for Science Education Program k-12
Website: <http://www.merck.com/corporate-responsibility/research-medicines-vaccines/science-education/mise-institute-science-education/home.html>

Hewlett Packard

- Technology for Teaching Grant Program
Website: http://www.hp.com/hpinfo/socialinnovation/us/programs/tech_teaching/index.html

Dominion

- Environmental Education
- Energy Grants
- Mini-grants
Website: <http://www.dom.com/about/education/grants/index.jsp>

Andersen Corporate Foundation Education and Youth Development Grants

- Youth Development
Website: <https://www.srinc.biz/foundations/andersen-corporate-foundation/>

GRANT WRITING

Funding Goals

Proposal Development

Writing Tips

Evaluation

FUNDING GOALS

INTRODUCTION

The following questions will help you outline your goals for purchasing and installing the wind turbine and summarize information for outside groups that may be able to offer support for the project. You will continue to refine and focus your initial ideas as you go through the planning and grant writing process.

WHO AM I?

It is important to review information on the Wind for Schools program as well as information about your specific school such as its location, district characteristics, mission statement, and past energy education successes and future needs. You may also want to consider other groups that will be collaborating with your Wind for Schools program and what these partnerships will look like. What will be the role of the school district, local universities, community members, businesses, and non-profit organizations in your project?

WHAT IS MY PROJECT?

Your host school will be funding a small wind turbine installation project on campus as part of the Wind for Schools Program in Virginia. Wind resource in Virginia is patchy and limited mainly to mountain ridges and coastal regions. Your project will serve mostly to increase education and awareness, rather than lower energy costs or significantly reduce grid load. The Wind for schools programs recommends that schools install the Skystream 3.7 wind turbine.

WHY DO I NEED THE MONEY?

The total cost of the wind turbine project may be up to \$20,000. The Wind for Schools program at JMU will help your school develop the project, but it cannot provide funding. Your school will be responsible for finding grants or soliciting donations from the community.

WHEN DO I NEED THE MONEY?

Many donors will want to know that your project is feasible. Before applying for grants and donations, Wind for schools encourages schools to make sure that all the necessary parties approve the construction of the wind turbine. As a general timeline, Wind for Schools suggests that schools secure or at least apply for all the necessary building permits over the summer to allow students to begin labs and discussions on wind energy in the fall. Teachers and schools can work on writing grants throughout the summer and into the fall. Application, notification, and distribution dates vary from grant to grant, however, frequently applications submitted prior to the end of December will allow time for funds to be available for use during the spring semester. Wind for Schools suggests host schools strive to have all funds available by mid-March in order to receive all supplies and install the wind turbine in time for it to be operational before the end of the school year. This will allow students who began engaging in activities related to wind energy in the fall to see the final data before they leave for summer break.

WHO WILL BENEFIT?

It is necessary to identify what groups the project will benefit before beginning your funding search. Many organizations may have their own objectives for who the projects they fund will benefit, how sustainable these benefits will be over time, and how these target groups should be incorporated into the planning and implementation parts of the project proposal. Based on the primary goal of the Wind for Schools program, students will be a necessary component of the project. The wind turbine should be integrated into the school curriculum to enhance student learning. The turbine may also benefit

math and science teachers by providing real-time data. It should be used to strengthen the schools energy curriculum and help the school to achieve several state standards of learning. The community could benefit from the resource the school will provide to learn about small scale wind projects and renewable energy. The experiences students receive with the technical aspects of the turbine may provide renewable business in the region with workforce development opportunities. Your school's project may also help to contribute to regional or national benefits. By promoting a clean, renewable resource, your school project could help reduce stream and air pollution or boost renewable energy sectors of the economy.

WHO WILL IMPLEMENT THE PROJECT?

Many organizations that could offer help and financial support for the wind turbine project will benefit from knowing who the champion of the project will be in the school or community. This person or group will follow the project from planning to daily implementation in the schools and will help coordinate communication between the different groups involved, from teachers to funders to federal regulators. It is also important to identify as early as possible who will oversee specific aspects of the project. Who will install the wind turbine, who will provide teacher training, or who will present lessons and activities to students allowing the wind turbine to serve as a tool for instruction and learning.

WHAT OTHER QUESTIONS SHOULD I WANT TO BE ABLE TO ANSWER?

You may encounter further questions from funders. For example, where will the funds be directed, or what is your evaluation plan? However, you may not be able to answer all of these questions at the beginning of the fundraising process and you may find that as you work towards installing your own small wind turbine, many of your plans and initial perceptions will change. Take time to consider what lingering questions you have about the project, from technical aspects of the construction process to how you will overcome obstacles specific to your school or district, and try to answer as many of these as possible early in the planning stages.

PROPOSAL DEVELOPMENT

BASIC COMPONENTS

Grant proposals may be written with many different formats depending on their purpose and audience. For example a proposal seeking funds for ongoing research may look very different than you proposal for a project to install a small wind turbine. Elements that are common to most strong grant proposals include a proposal summary, an introduction of organization, a statement of the problem or a needs assessment, the project objectives, the project methods or design, a plan for project evaluation, expectations for future funding, and the project budget.

THE PROPOSAL SUMMARY

The proposal summary provides an outline of the project goals. It should be brief and appear at the beginning of the proposal. It may be helpful to prepare the summary after the remaining aspects of the proposal have been developed so that you can be sure it encompasses all the key points necessary to communicate the objectives of your school's project. This section provides a foundation for your project and will give potential donors a critical a first impression. In this section, you may want to highlight how your project addresses local needs, what influence a campus wind turbine will have both before and after installation, and the significant changes the project will be able to bring about as a result funding.

INTRODUCTION OF ORGANIZATION

Within your proposal, you want to present your school, and any other organizations collaborating with the school on the project, as a credible applicant. Summarize the organization of the groups involved in the project, from the project champion at your school to the role of the Wind for Schools state facilitator. You may want to include a brief biography of staff members involved and a description of the goals, philosophies, past and present activities, and success stories from your school and the Wind for Schools program that are relevant to the project.



STATING THE PROBLEM OR NEED

It is important to make a clear, concise, and well-supported statement of the problems or needs that will be addressed by installing a small wind turbine on your campus. This portion of the proposal will be most specific to your particular school, the community, and the organization you are appealing to for funding. Each of these areas will greatly affect the problems you choose to focus on. You can use this space to emphasize how your project will tackle concerns that align with the aims of the donor organization and are relevant in your region.

Take time to collect information about problems specific to your area. You may even want to involve students in a project to conduct and document an informal needs assessment. For example, a wind turbine producing only 2-5kW installed on your campus will not likely address local energy concerns directly, but you can show through surveys and interviews how local businesses in your area would be interested in viewing the data from a school wind turbine before looking into their own options for small-scale renewable energy. For another example, you could provide evidence that there is an

interest in strengthening your school’s energy curriculum to fulfill workforce development needs in the area. It may also be helpful to site literature on energy education or practices that engage students in hands-on learning experiences, real-time data manipulation, or real world applications and discuss the urgent need to develop programs within schools that will support teachers in using these researched methods in the classroom.

Possible topics to discuss include:

- The purpose for developing the proposal
- Who will benefit from the project and how
- The social and economic costs that will be affected
- The nature of the problem (wind energy awareness, pollution, workforce development, local energy concerns)
- How your school became aware of the problem (Standards of learning or community activities that highlighted the need for energy education) and what is currently being done about the problem
- What will happen to the project once funding has run out or is no longer needed
- The specific ways in which the problem might be solved

PROJECT GOALS AND OUTCOMES

The proposal should provide a detailed review of the project objectives, specific activities in the proposal, and the methods that will be used to achieve these goals. Refer to your project statement as you are considering your objectives. How might you be able to measure ways in which your small wind turbine addressed the problems you focused on? Your objectives may be used by the funder to the progress of the project. You will want to have a realistic plan for assessing student learning, community responses, or other measures of the project’s success during the installation process and at different intervals of time following the installation of the wind turbine.



PROJECT DESIGN AND PLAN OF ACTION

Your proposal should provide a clear picture how the project is expected to work to solve the problems you focused on earlier. Include information on the activities that will occur and the resources and people needed to set the project in motion. You may want to provide a timeline or flowchart showing how the different people and resources will interact over the course of the installation process, including specifics such as transportation, location, and volunteer services. You may want to provide a diagram of the wind turbine, its components, the site location, or landscaping plans. Provide a rationale for why different components or actions are needed and address economic, safety, and efficiency concerns. You may want to add an appendices section to separate portions of the project design from the body of your proposal. These may include time tables, work plans, schedules, methods, permits and legal papers, personal references for contractors or installers, and letters of support in the form of donations or volunteers.

EVALUATION

There are several ways in which you may want to evaluate your project and you may change your evaluation procedure over the course of the project. However, you want to provide some specific ideas for how you are going to evaluate (1) the project installation process and (2) the project's desired outcome and implementation. Some points to consider are:

- Did the installation process go successfully and as planned? Why or why not?
- Is the wind turbine successfully integrated into the school's energy system?
- Is the data from the wind turbine available and is it benefiting all intended groups?
- Did the student's awareness about wind energy during the installation process?
- Are future students, other schools, or community members benefiting from the permanent presence of the wind turbine on campus?

LONG-TERM PROJECT PLANNING

In your proposal, you will need to discuss maintenance and future program funding, and, describe how other expenses will be covered. Questions you may want to consider include:

- How will the small wind turbine continue to be supported by the school, community, and other groups beyond the grant period and installation?
- How will the wind turbine be maintained over the years?
- Who will assist the school if there are technical or mechanical problems in the future with the wind turbine?
- Who will oversee the curriculum implementation?
- What plans are there for broadening the reach of the campus turbine?

THE PROPOSAL BUDGET

The budget you propose should be consistent with the full project proposal and should justify all expenses. A single funding source will probably not cover the entire material purchases and installation process related to your project. Include information in your budget on how you plan to cover these additional costs. Many donors may ask specifically for you enlist other organizations to match their funds. They may also have specific budget requirements for where their funds can be applied. For example, some organizations may call for no amount of their funding to be used for transportation, salaries, training, or equipment. Make sure your budget considers these requests and provides as much detailed information as possible. This will help your project appear well-organized and ready to implement as soon as funding is available.

WRITING TIPS

CLEAR, REALISTIC, AND SIGNIFICANT

Individual funding opportunities will have different requirements for you to consider as you begin writing your proposal. It should be clear from your proposal that there are well-defined goals, carefully planned methods, and clear need and long term support for your small wind turbine project. Below is a list of recommendations and check points for you as you write your proposal.

1. Have clearly defined needs and describe how those needs were identified
2. Be consistent with the goals and requirements of the agency or group providing funding
3. Write in positive terms while describing the need for and worth of the project
4. Describe how the project will encourage cooperation between different segments of the community including schools, businesses and non-profits
5. Create a clear picture for the reader of what will be done
6. State what groups or individuals will champion your project and describe how they will ensure communication between different groups as the project gets underway
7. Explain how existing resources and expertise from local business, public agencies, academic institutions, and community organizations will be used in the process
8. Provide reasoning for why the project is technically and financially sound
9. Develop a plan for long-term success and sustainability
10. Describe how this project could provide a model for other organizations
11. Include a plan for communicating results or for allowing data from the project to be used by other groups
12. Present material in a logical manner and make sure the proposal is professional looking
13. Carefully review and revise proposals

EVALUATION

OVERVIEW

Each grant application will be evaluated differently depending on the source of the funding opportunity you have found. Sometimes your proposal may be reviewed by a group outside of the organization that will be supplying the funds. This evaluation survey is only a recommendation for you to self-evaluate the effectiveness of your proposal before it is submitted. You may want to hand the evaluation form and proposal to a colleague or someone who has not been a part of the writing process to offer their own feedback and suggestions. This evaluation was adapted from a grant proposal assessment created by the Oklahoma State Regents for Higher Education.

LEGEND

1 = Not included

2 = Incomplete or has conflicts

3 = Adequate

4 = Good but needs editing

5 = Excellent, meets all criteria and is effective in terms of audience and purpose

SCORING SHEET

CLARITY AND RELEVANCE

- _____ a. Demonstration of a real need or problem.
Proposal documents demonstrate a real need or problem and include data, case studies, interviews, etc.
- _____ b. Innovation, creativity, and uniqueness.
- _____ c. The objectives are clear, appropriate, and measurable.
The objectives should explain why it is important to the society, in terms of the longer-term benefits to final beneficiaries. It also should show how the program fits into the regional policies, as well as into the overall objective. The objective should also include measurable indicators for monitoring & evaluation purposes (quantity, quality, target group(s), time, and place).
- _____ d. The objectives have academic and technical merit.
- _____ e. The project outputs, outcomes, and results are clear, tangible, sustainable, and do include measurable indicators. For example, the project will create greater public awareness, pollution reductions, new or improved systems, replicable models, provision of services, research findings, etc.
- _____ f. Methodology. The proposed methods, approaches, and strategies are realistic, reasonable, effective, outcome-oriented - drawing on best practice and the latest thinking and research.
- _____ g. The project activities are expected to achieve the expected outputs, outcomes, and results.
- _____ h. The target groups in the project are well defined, including how they will benefit and be actively involved in the implementation process.
- _____ i. The project activities are reflected in the estimated budget.
The activities of the project have a cost for implementation, and this should be shown in the estimated budget.
- _____ j. Monitoring and Evaluation Plan.

There is a plan to collect and analyze information to help identify and solve implementation problems, and assess progress in relation to what was originally planned.

INFLUENCE AND IMPACT

- _____ a. There is a long-term, wide, and large impact on a particular local or national problem such as social (workforce development) or environmental (pollution reduction) concerns.
- _____ b. There is a potential impact on institutional improvement and human resources.
The project creates opportunities for staff development, training, new equipment, or the development of new systems.
- _____ c. External benefits are measured by partnership.
The proposal describes and provides evidence that the project will support continued collaboration between the school and other contributing or benefiting organizations.
 - o Develops partnerships with local, regional and global higher education institutions and promotes the shared use of teaching and learning resources.
 - o Develops partnership with the private sector or industry;
 - o Develops partnership with the public sector, including local and regional authorities.

FEASIBILITY AND SUSTAINABILITY

- _____ a. The organization or school has a history in management and implementation capacity.
The organization or school has credibility for this kind of work (strength, name recognition, a history or track record of achievements, related mission and goals).
- _____ b. The human and physical resources allocated to this project are appropriate.
The project uses internal staff expertise, appropriate external consultants, and an advisory committee.
- _____ c. The project is sustainable; it will be institutionalized; alternative sources of funding will be pursued.
There is a likelihood that the benefits produced by the project will continue after the period of external support has ended. The school insures a source of funding or show a commitment to cover all needs of financial resources to the project after the end of the funds for this particular grant.
- _____ d. In-kind contributions (if required).
There are in-kind contributions for funding, staffing, equipment, office space, or areas where funds from the particular grant being applied to cannot be used.
- _____ e. The quality improvement is demonstrated through the impact of the project on the institution and the sector.
A significant impact on the sustainability of benefits generated by the project, and which are taken into account in the design and the implementation plans (ownership by beneficiaries, policy support, economic and financial factors, socio-cultural aspects, gender, appropriate technology, environmental aspects, and institutional and management capacity).
- _____ f. The expected risks and the tools to overcome them are well defined.

OTHER RESOURCES

Sample Wind for Schools Merck Grant Proposal

Sample Wind for Schools Lowes Grant Proposal

Applying Wind for Schools to Education Concepts &
Community Issues

Virginia Wind for Schools Program

Wind for Schools Funding Overview

Project Timeline and Development Steps

SAMPLE WIND FOR SCHOOLS MERK GRANT PROPOSAL

This grant was proposed in the spring of 2011 by the Harrisonburg City Public School District.

ABSTRACT

Thomas Harrison Middle School (THMS) and Harrisonburg High School are requesting **\$14,500** to help fund a small wind turbine installation project on the THMS campus as part of the Virginia Wind for Schools Program.

ABOUT WIND FOR SCHOOLS

Wind for Schools is a Department of Energy funded program through Wind Powering America that began in 2005. There are currently 11 states that are part of the program with Virginia joining in 2010. The goal of the program is to raise awareness in rural America about the benefits of wind energy, while simultaneously developing a wind energy knowledge base in future leaders of our communities, states, and nation. The basic structure of a Wind for Schools program includes the creation of a Wind Application Center at a university where wind energy education will be infused into the undergraduate and graduate curriculum. Additionally, a state facilitator is appointed to reach out to K12 schools (host schools) to encourage the implementation of a small wind turbine at the school to increase awareness and support education about wind energy.



Figure 1: Skystream installed at Northumberland Middle/High School

The Virginia Center for Wind Energy (VCWE) at James Madison University (JMU)¹ supports courses and modules that incorporate wind energy. In addition, the WAC Leader makes available wind-related projects for seniors to address as part of their capstone requirement. Undergraduate projects typically involve working with teachers, school administrators, students, and installers on small wind project development.

The Facilitator is responsible for seeking K12 schools around the state that are interested in developing a small wind project on their campus. The Facilitator also works with JMU students to oversee the project development at the school. In addition, the Facilitator works directly with the teachers and the school administration to aid in the planning and funding for the project and also helps find a qualified installer for the project. Once the turbine is installed, the Facilitator provides training in coordination with the National Energy Education Development (NEED) project² for teachers interested in using the real time data from the turbine in their classroom for teaching about wind energy in a manner that is consistent with the SOLs.

ABOUT THE PROJECT

Thomas Harrison Middle School (THMS) is collaborating with Harrisonburg High School to put up a small wind system as part of the Wind for Schools Program in Virginia. The turbine will be located at THMS, visible from Route 33. The Ecology Club at Thomas Harrison has been actively involved in the project.

¹ <http://windpowerVA.org>

² <http://need.org>

They have made a formal presentation to the Harrisonburg City School Board for approval of the project and have been working with students at JMU on understanding the steps of developing a small wind turbine project.

The wind turbine to be installed is a Skystream 3.7 manufactured by Southwest Wind Power in Flagstaff, AZ and will be installed by Skyline Turbine, a wind installation company headquartered in Afton, VA. The wind turbine can generate 2.4kW of electricity at peak wind speeds, has a rotor diameter of 12' and sits on a 55' tower. The amount of energy that the school will get from this turbine over a year will be about as much as would power one classroom's lights, thus the major benefit of the system at the school will be largely educational.



Figure 2: Thomas Harrison Middle School, Harrisonburg, VA

Once the turbine is installed, the students at each of the schools will be able to access the data generated by the wind turbine in real time and apply it in math and science classes to help them to better understand the concepts being taught. Research shows that disadvantaged students learn more when real life applications are used in the classroom. The teachers at each school will also receive professional development training on wind energy curricula to facilitate integration into the classroom. Educators from NEED in Manassas, VA and trainers around the state will offer a workshop and provide teachers with kits full of educational material.

The wind project at Thomas Harrison Middle School will be the second small wind turbine installed as part of the Wind for Schools Program in Virginia. The first installation took place on February 11th, 2011 in Heathsville at Northumberland High/Middle School³.

Goals

The goals of this project are to install a working Skystream 3.7 wind turbine on the campus of Thomas Harrison Middle School and for this turbine to play a key role in educating students in 6th grade, Earth Science, and A.P. Environmental Science about alternative energy production. This turbine will also serve as an object lesson to the community about alternative energy production.

Evaluation

We will measure our success in steps. The first step is the installation of a working wind turbine. We will measure this success by being able to document the power supplied to THMS by the turbine. The second step is use of the turbine in educating our 6th grade, Earth Science, and A.P. Environmental Science students regarding alternative Energy production. Teacher will record when and how many students utilize the turbine, data from the turbine, or data from the Wind for Schools network in their science and math lessons. A third level of evaluation is for the 6th grade students at THMS to write a response to a prompt regarding the turbine and their education at the end of the school year after its installation. We hope to see students making positive comments about their ability to utilize a real turbine and real data to study energy production.

³ <http://www.nucps.net/education/components/scrapbook/default.php?sectiondetailid=3874&linkid=nav-menu-container-1-8898>

Publicity

The THMS ecology club will be sponsoring a fund raising event and a kickoff party for the installation of the turbine. This will be advertised through the THMS community by newsletter, Parent Teacher Organization network, and the THMS email list serve. The raising of the turbine will also be a media event that the Daily News Record and the local TV station will be invited to cover. The Daily News Record has already run an article about the Ecology Clubs efforts to get a turbine.

FUNDING REQUEST

The Wind for Schools program helps schools develop their projects, but does not provide the funding. The schools are responsible for finding grants or soliciting donations from the community. The total expected cost of this project is \$30,500 before cost match and in-kind donations (see table below). Students in the Ecology Club will be helping to solicit the community for donations of cash or services or equipment (\$6,000). Working with the community is not only beneficial to helping fund the installation, but also to create community awareness of the project and wind energy in particular. We are also working with a small wind installer who is willing to donate his time and services and work with the JMU students to cut down and even eliminate the cost of labor for the project. Lastly, THMS will be responsible for raising only \$3,000 in funds to help the project.

Item	Costs	Cost Match/ In Kind
Skystream 3.7 Wind Turbine	\$12,500	
Monopole Tower		
SMarT Foundation		
Shipping		
Backhoe Rental		\$6,000
Crane Rental		
Trenching		
Electrical		
Concrete		
Labor		\$7,000
Thomas Harrison Middle School		\$3,000
Educational Supplies	\$1,000	
Community Outreach	\$1,000	
Total	\$14,500	\$16,000

Figure 3: Table of projected project costs

So, in the end, we are asking from Merck a donation of **\$14,500** to cover the remaining costs of the project.

COMMUNITY IMPACT

This charitable donation provides the opportunity for local children, including those of Merck employees, to learn about wind energy using a hands-on approach. Sponsorship of a STEM (Science, Technology, Engineering and Math) project is also beneficial due to its focus on the type of curriculum that will encourage students to pursue careers in science and technology. From a technical perspective,

this project will benefit Merck in that the wind speed/direction data used for siting the turbine as well as the data that the turbine will record can be used for incident simulations as well as other applications. Overall, the donation along with Merck's support of a renewable project will show the company's continued dedication to "greening" our environment.

It will benefit the larger community in supplying over 1000 children of THMS the knowledge that a small portion of their electrical power is supplied in a sustainable and non-polluting manner. The visibility of the turbine will also serve to educate the community in a like manner.

Other Funding Sources

The THMS ecology club will be hosting a fundraiser to contribute a small share of the cost. This has yet to take place, but is tentatively scheduled for this spring. Valley Building Supply has also pledged \$500 in support of the project.

SAMPLE WIND FOR SCHOOLS LOWES GRANT PROPOSAL

This grant was proposed in the summer of 2008 by the Pocatello Community Charter School, a public K-8 school in Pocatello, Idaho.

SCHOOL DEMOGRAPHICS

Number of Students: 311

Caucasian: 95

African American: 1

Hispanic: 2

Asia: 1

American Indian: 1

PROJECT AND FUNDING OVERVIEW

Name: Pocatello Community Charter School Wind Turbine

Short Description: We hope to participate in the Wind for Schools program. This project helps schools to install a working 1.8kW Skystream 3.7 wind turbine and will provide materials to supplement our renewable energy curriculum.

Project Budget: \$14,445.25

Grant Amount: \$5,000

Raised Budget: \$2,000

BUDGET DETAILS

Special use permit from City \$75

Building permit from City \$100

Net metering permit from Idaho Power \$100

Foundation kit \$373

Concrete \$1000

R-bar \$600

Forming materials \$150

Foundation clearing \$320

Tower \$3,450

Crane \$2,000

Wire 1800ft, 3 wire 600ft each 4 gauge and 600ft bare wire 8 gauge \$1,500

Licensed electrician \$150

Wind turbine \$3,250

Landscaping \$400

Labor (volunteer/donation)

PROJECT SCHEDULE

Fall 2008

- Present information to city planning and zoning for special use permit
- Secure additional contractor services and volunteers

Winter 2008

- Set dates for installation of tower, electrical work, and installation of the turbine and electrical panel and final connections to the panel

Spring/Fall 2009

- Construction work
- School energy curriculum implementation

DETAILED DESCRIPTION OF THE PROJECT

Our school participates in an extra-curricular middle school math program called MATHCOUNTS. Our MATHCOUNTS volunteer and advisor is an electrical engineer working in the semiconductor industry, but her passion lies in sparking students' interest in science and math. She approached the Pocatello Community Charter School (PCCS) administration about the Wind for Schools program after attending a turbine dedication at Skyline High School in Idaho Falls. She said that the program would be an excellent fit for our school, and she is right!

The Wind for Schools project at the Pocatello Community Charter School (PCCS) will be implemented for the purpose of promoting renewable energy school-wide and covering important curriculum standards in the middle school grades. Our school's mission is to educate students through authentic, real-world activities. This project will represent hard work and commitment on the part of many community members who have partnered with PCCS to bring this opportunity to our students.

As an Expeditionary Learning School, PCCS operates under ten design principles. One of them is the natural world. The appreciation and protection of the natural world are woven into curricular and character development activities at every grade level. PCCS is also a member of the Idaho Environmental Education Association. Our goal is to produce citizens who understand that the health of this planet is everybody's responsibility. Having a turbine on campus further conveys to our students and the rest of the community that wind turbines are becoming the symbol of clean and responsible energy.

Another school-wide goal is to develop in-depth studies and investigations that cover the major Idaho science standards at each grade level, but offer authentic real-world learning activities. We accomplish this through field work on and near our school grounds. We learn about native plants in our native plant garden and study water quality through actual samples from the Portneuf River. PCCS has built a green, energy efficient building with very few maintenance needs, and we have a solar panel which helps our students understand how the sun's energy can turn on lights and run computers. A wind turbine would assist us in the development and delivery of our renewable energy curriculum through another resource right in our front yard. It is one thing to study renewable energy in a text book, but it is another thing entirely to have a wind turbine right outside the classroom.

Idaho is a wind-rich state holding great potential for wind related careers. In addition to fulfilling energy education requirements, we want to ensure that our kids learn about careers available to them in our own community. Our students will experience what it's like to be wind energy scientists, engineers, and technicians as they collect and analyze the turbine's data and apply the scientific method through proving and disproving their hypotheses involving wind energy.

WHY IT IS DESERVING

There are a number of reasons this project would be a good investment for Lowes:

- The project has a champion who is committed to seeing it through;
- PCCS is a school with a clear environmental focus; and,
- Our school's educational model embraces project-based learning through real-world investigations.

We have already made great strides in the direction of renewable energy education and a Lowe's grant would help us complete our vision. We have the infrastructure to support a Wind for Schools turbine on campus and bring the power of this hands-on experience to students. We just need the funds to make this extraordinary opportunity happen.

DETAILED DESCRIPTION OF THE VOLUNTEER PLAN

Our project champion, an electrical engineer with a Master's degree in Business, will work with the City and Idaho Power to secure permits and net metering. The project requires the turbine to be installed by professionals. We are hoping to have Brennan Construction handle the foundation design and tower erection with Pocatello Ready-Mix supplying the concrete. The local electricians union has expressed interest in volunteering to do the final wiring and panel hook-up. We will use parents, teachers, middle school students and Lowes volunteers to do the landscaping.

HOW LOWES COULD HELP

We can use Lowe's employees to help with landscaping around the base of the turbine. One of the elements of our middle school curriculum is character development through student service projects. It is likely that a number of kids will want to be involved, not just to fulfill a requirement, but because the culture at our school is one in which kids feel a true ownership of our grounds. They want to be a part of our growth and improvements. There would not be a dull moment for Lowe's employees as they work hand-in-hand with our middle schoolers. Our kids are great!

APPLYING WIND FOR SCHOOLS TO EDUCATIONAL CONCEPTS AND COMMUNITY ISSUES

APPLYING TO VARIOUS FUNDERS

Broadening the focus of the Wind for Schools program allows schools to consider applying for a larger variety of grants and funding opportunities. In Virginia, where there are not widespread or consistent wind resources in most of the state, the main purpose of the Wind for Schools program is to increase awareness about renewable energy by engaging students in learning about wind power. However, the activities associated with installing a wind turbine on your campus can be applied to many efforts beyond improving energy or environmental education programs. Students have the opportunity to engage in discussions on the economic and social aspects of wind energy and participate in hands-on learning experiences that align with current best practices. Below is a bibliography of resources that can help you provide evidence of research and literature that support the use of energy education, hands-on learning activities, real-world applications, or real-time data in the classroom. Other articles detail the need for programs which provide training and workforce development among secondary age students for the field of renewable energy. There are also references for how the promotion of wind energy supports the reduction of harmful emissions from fossil fuels use, stream and freshwater conservation, pollution reduction, or habitat protection.

EDUCATIONAL BEST PRACTICES

- Center on Instruction. (2010). *Effective Science Instruction: What Does Research Tell Us*, 2nd ed. <http://www.centeroninstruction.org/effective-science-instruction-what-does-research-tell-us---second-edition>
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ENVIRONMENTAL PROTECTION

- Schelly, Chelsea & Cross, Jennifer E. & Franzen, William S. (2011). Reducing Energy Consumption and Creating a Conservation Culture in Organizations: A Case Study of One Public School District. *Environment and Behavior*, v43 n3 p316-343
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VIRGINIA WIND FOR SCHOOLS PROGRAM

PROGRAM OVERVIEW

Wind for Schools is a Department of Energy funded program through Wind Powering America that began in 2005. There are currently 11 states that are part of the program with Virginia joining in 2010. The goal of the program is to raise awareness in rural America about the benefits of wind energy, while simultaneously developing a wind energy knowledge base in future leaders of our communities, states, and nation. The basic structure of a Wind for Schools program includes the creation of a Wind Application Center at a university where wind energy education will be infused into the undergraduate and graduate curriculum. Additionally, a state facilitator is appointed to reach out to K12 schools (host schools) to encourage the implementation of a small wind turbine at the school to increase awareness and education about wind energy.

WIND APPLICATION CENTER (WAC)

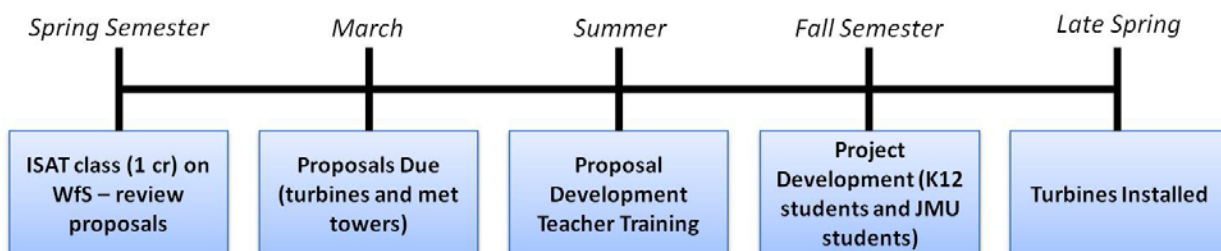
As the WAC, James Madison University (JMU) will work to develop more courses to be offered at the University that incorporate wind energy. In addition, the WAC Leader will make available wind related projects for seniors for completion of their capstone requirement. Undergraduate projects typically involve working with teachers, school administrators, students and installers on small wind project development.

STATE FACILITATOR

The Facilitator is responsible for seeking K12 schools around the state that are interested in developing a small wind project on their campus. The Facilitator will also work with JMU students to oversee the project development at the school. Additionally, the Facilitator will work directly with the teachers and the school administration to aid in the planning and funding for the project and will also help in finding a qualified installer for the project. Once the turbine is installed, the Facilitator will provide training for any teachers that are interested in using the real time data from the turbine in their classroom for teaching SOLs related to wind energy.

CHOOSING HOST SCHOOLS

The goal of the Wind for Schools program is to put up turbines at four to five host schools each year. In order to select those schools an application process is in place. In March a proposal will be required from any school that would like to pursue a wind project on their campus. This proposal is very simple and requests information on campus location, intended use of wind turbine in classroom, school support, community awareness, and more.



From there JMU student in a course about Wind for Schools will review and rank proposals. The top four to five schools will be notified during the summer about the acceptance of their project proposal. JMU will offer training for interested teachers over the summer on how to engage their students in the project development process as the project is progressing at the school in the next year. JMU seniors will also be working through the project development process for some of the schools as part of a senior capstone project requirement and may be available to engage students at the K12 schools and provide technical assistance. The hope is that turbines will be installed on campuses in late spring.

PARTNER SCHOOLS

Because of the diverse wind resource in Virginia and our goal to put up four to five wind turbines a year at schools, we realize that not every school that wants a turbine will get one. So we offer a Partner School program in which we offer 20m meteorological towers outfitted with an anemometer and a wind vane to schools that have little to no wind resource but would like to be part of the Wind for Schools program or would like to get a turbine at their school but don't have the funds ready or are not able to get into the program that year due to high demand.

As a partner school, schools will be adding data to the Virginia wind data repository as well as be partnered with a nearby school with a turbine. Sister schools are encouraged to communicate monthly with project updates and share stories of wind activities they have done and data they have gathered as well as take field trips to visit each other each year.



AFFILIATE SCHOOLS

There are many schools in Virginia that have put up wind turbines without the help of the Wind for Schools program. The Wind for Schools affiliate program has been implemented to allow these schools to be part of the Wind for Schools network and benefit from those services that come with being part of the network. Schools that join the affiliate program will receive access to technical assistance, program web sites, and information. Schools will also be eligible for teacher training to assure that the turbines and the data collected by the system are being used in the classrooms for educational purposes.

MUSEUM PARTNERS

As informal science education institutions, museums have the opportunity to educate students from many schools in their area as well as the public. Museums are encouraged to install a Skystream 3.7 wind turbine at their location and use the real time data to educate visitors about wind energy. In addition, museums are a perfect place for holding regional teacher training workshops on wind energy curricula as well as providing a location for gatherings of all the Wind for Schools schools in the area.



CONTACT INFORMATION

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WIND FOR SCHOOLS FUNDING OVERVIEW

FUNDING OVERVIEW

Through the Wind for Schools program at JMU, there is no funding provided for the purchase or installation of the turbine at the school. The state facilitator will help schools to find funding sources for the cost of the turbine and installation. Finding an installer that is willing to work with the school at little to no cost is very helpful in this process.

SYSTEM COMPONENTS

The base wind turbine suggested for the Wind for Schools program is the Skystream from South West Wind Power. This is a 2.4kW system that sits on a tower up to 70 feet in height. The school will need to have an area large enough to house this turbine while complying with the city or county set back requirements, usually a distance equal to or higher than the maximum height of the turbine (76 feet for a Skystream with a 6' blade on a 70' tower).

Below is a list of the necessary hardware required:

Item	Details	Cost (educational discount)
<i>Wind turbine</i>	Skystream 3.7	\$9,614 (60' tower)
<i>Tower</i>	33' (not recommended), 45', 55' or 70' monopole tower	
<i>Foundation</i>	SMaRT foundation	\$768
<i>Shipping</i>	To Virginia	\$995
TOTAL		\$11,377

Also necessary are a fused disconnect and junction box at the base of the turbine, a location for electrical connection to the school, a disconnect and junction box at the school, and an empty spot in the 240V or 208V electrical panel for interconnection.

The turbine comes with the SkyView Monitoring Software that can be used for monitoring the turbine's performance on a dedicated computer in the school. Some funding should also be set aside as needed for a dedicated computer and some schools add in funds for a large screen to display the data in a public area like the cafeteria, main office, or main hallway.

MAINTENANCE AND INSTALLATION COSTS

Annual maintenance is required on the turbine. For a Skystream, the facilities team should perform an annual visual inspection to check the blades for clean leading and trailing edges and any potential damage as well as check the electrical components not in the turbine itself (standard electrical inspection of the disconnect, service panel connection, etc.). It is not necessary to open up the nacelle. The cost of this maintenance is simply the cost of the time for your facilities team to inspect the system. Training outside of what is given at installation is not necessary for this maintenance. These steps are spelled out specifically in the manual. Any service work necessary for the turbine itself would be done by the installer. Skystream turbines are under a 5 year limited warranty on all components. After that time, any service costs would be the responsibility of the school.

The installation of the turbine will vary depending on the installer you are working with and how much of the services and materials you can get donated by members of the community.

Below is a list of those services and materials and their estimated costs:

Item	Estimated Cost
<i>Permitting</i>	\$400
<i>Concrete (7.4 cubic yards)</i>	\$760
<i>Backhoe rental and operator (4 hr day)</i>	\$550
<i>Crane rental and operator (4 hr day)</i>	\$2,000
<i>Trenching for cable (150 ft)</i>	\$300
<i>Electrical conduit</i>	\$200
<i>Wire</i>	\$2,000
<i>Disconnect switch/ground bar</i>	\$100
<i>Electrical meter</i>	\$300
<i>Electrical meter housing</i>	\$300
TOTAL	\$6,910

FUNDING SOURCES

There are many funding options for schools that want to a wind turbine on campus. Remember that the members of your community, parents, and other family members of your students, are usually very willing to help in any way they can. Soliciting them for donations of equipment or services associated with the installation, listed above, is a good starting place. To fund the remaining system component costs, explore grants and approach businesses looking to “green” their image.

Some ideas are listed below:

- JMU has received cost matching from **BP Wind** to support Wind for Schools projects and we are working on securing more of this kind of support from businesses in Virginia
- In 2010 the Virginia **State Energy Office** offered funds from the American Recovery and Reinvestment Act to help schools install small wind systems on their campuses. JMU is hoping that the State Energy Office will be able to find funds in years to come to continue to help fund these worthy projects
- **Appalachian Regional Commission** and **Tobacco Commission**: Schools in the Appalachian Regional Commission and the Tobacco Commission territory may also be eligible for funding for projects
- The **US Department of Agriculture** has two grants, **REAP EEI** and **RBEG**, that could be used to fund renewable energy projects at schools in rural areas
- The **Lowe's Tool Box** grant is commonly used for projects in other Wind for Schools states
- Large businesses in the state will purchase the environmental attributes associated with the first 10 years of operation of a small wind turbine on school property, called a **Green Energy Certificate**, for about \$2,500. Schools will want to identify possible companies in their area and write letters to invite them to sponsor your project. JMU can help with this process as well.
- **Supplemental Environmental Project (SEP) Settlements** are a policy vehicle designed by the US Environmental Protection Agency (EPA) to give violators an alternative to standard fines for noncompliance. Instead of paying the full amount of its fines, the company can volunteer to fund environmentally friendly projects. JMU can help get schools in touch with the right contact at the Virginia Department of Environmental Quality.

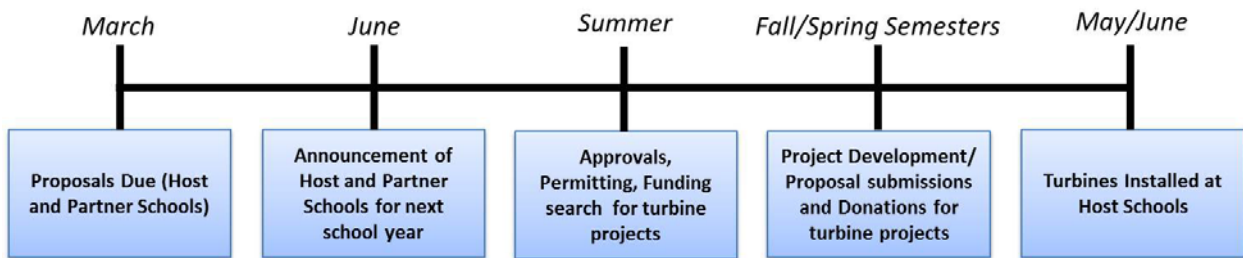
PROJECT TIMELINE AND DEVELOPMENT STEPS

PROJECT TIMELINE

Virginia joined the Wind for Schools program in 2010 and each year the state facilitator tries to select four to five new host schools. Host schools are schools for which the Virginia Wind for Schools program will assist the school in incorporating a wind turbine on campus and in the curriculum. Any school that is interested in beginning a discussion on renewable energy is encouraged to submit a proposal to the state facilitator.

Note that partner schools are given a meteorological tower on loan and may later be selected to become a host school. Schools may also plan and install a wind turbine project on their campus at any time without the assistance of the state facilitators. These schools can later go back and become affiliated with the Wind for Schools program through data collection and sharing, and can access all of the technical, web, and curriculum resources available.

Proposals to be considered for a host school must be submitted by March. The project is expected to take a full year to successfully install the wind turbine and involve students in the development process and learning activities. The following timeline will help guide you in planning and developing your Wind for Schools Project.



It will be helpful to overcome approval, permitting, and funding obstacles in the summer to allow you to focus on engaging students in the projects development in the fall and finalizing installation logistics in the spring. The summer will also be an important part of the funding process because many potential donors will want to know you already have already secured the approval and permitting for the project. Others may also want know the installer you plan to work with, the site location, and as many details as you can provide to encourage them that the project is feasible and well-supported by the community.

By the end of summer you should plan to:

- Locate potential sites for the wind turbine
- Develop a working knowledge of the activities associated with small wind installation
- Acquire school board and county approvals
- Apply for all necessary permits, identify funding sources
- Write your project proposal, and
- Determine potential installers for your wind turbine

During the fall semester you will be able to gather more information about the construction and installation process and you will begin to engage students in the development process through discussions and activities in the classroom, school, and community. Many grant applications will need to be turned in by late fall and winter deadlines in order for funds to be received in time in the spring to purchase materials and begin laying the foundation and erecting the wind turbine. Students who started engaging in wind discussions in the fall should be able to see the final product before leaving school in June.

During the fall semester you should plan to:

- Form or engage clubs at school to work through project development
- Submit your proposals and hear back from grants applied to in summer
- Start fundraising at school, and
- Go out for bid for installation of project

In the spring, all that will be left to do is:

- Work with installer on install logistics
- Plan kick-off party to inform community of project and obtain community donations
- Plan installation dedication
- Plan teacher workshop, and
- Install the turbine
- Complete paperwork to begin sharing data from the turbine

DEVELOPMENT STEPS FOR HOST SCHOOLS

In the fall and spring semesters, you and your students may be engaged in many activities related to the development of your Wind for Schools project. You can conduct an energy audit of your school and discuss energy conservation options. Students may participate in site selection by discussing factors such as elevation and distance from the school building, creating anemometers and measuring the wind, and assessing the wind resources around your school. The students may also participate in a blade challenge that would help them to consider which turbine and tower should be selected for effectiveness, efficiency, and safety. Your students can estimate the costs and power production of the wind turbine your school chooses by considering its design and the site specific wind resources.

Your students can be involved in surveys and outreach opportunities that help encourage community acceptance. After school clubs may also be able to help volunteer their time to organizing fundraising opportunities. In your outreach to the community you should also determine where you might be able to find donations for equipment and services for your wind project. Once the school determines the suppliers and installers that you will use, you will be able to improve your cost estimates and make a more detailed budget to continue applying for grants.



You may continue to communicate with the installer and state facilitator throughout the fall and spring. This will help you to navigate the installation logistics, which include the foundation design, electrical connections and grid connections. Once you have received all funding, you can order the turbine equipment, begin construction, and learn more about operations and maintenance.

Students in the classroom will continue to learn more about wind energy and wind turbines. Once the turbine is installed, they can begin analyzing real-time data, calculating the capacity factor of your turbine, and discussing the impacts of weather on turbine performance. You should take opportunities to assess and evaluate the installation process and the Wind for Schools program throughout the project development stages, immediately following installment, and over time as the wind turbine becomes a permanent presence on your campus.

RESOURCES AND CONTACTS

WIND FOR SCHOOLS PROGRAMS

There are several levels of organization for the Wind for Schools program. Your state facilitator will be able to help you answer many questions as you continue your funding search and will be a good source of information throughout your project installation process. If you would like to contact other host schools in your state with a Wind for Schools turbine already in place or at different points in the process, please feel free to contact your state facilitator for this information. In addition we encourage you to share your data and any records of achievements or obstacles you have reached in your school's installation project and curriculum implementation. This will help us to improve the effectiveness of the program and the experience of future educators who hope to initiate a small wind turbine project on their own campus.

WIND FOR SCHOOLS & WIND POWERING AMERICA

Wind for Schools is a program funded by the US Department of Energy through Wind Powering America. Wind Powering America is a commitment to increase the use of wind energy in the United States. Through its state Wind Working Groups, programs at the National Renewable Energy Laboratory, and partnerships, this initiative establishes new sources of income and meets the growing demand for clean sources of electricity.

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www.eere.energy.gov/windandhydrowww.windpoweringamerica.gov/schools.asp

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VIRGINIA WIND APPLICATION CENTER

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VIRGINIA STATE FACILITATOR

The state facilitator assists Wind Powering America staff in developing the Wind for Schools project in each state. The facilitator's primary responsibility is to identify candidate K-12 host schools and support the project's development by working with the local communities and school administrators. The state facilitator is also responsible for working with Wind Powering America and the Wind Application Center to line up funding and implement each project. The facilitator's role is designed to last about 3 years, at which point the Wind Application Center assumes the facilitator responsibilities.

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