

**Colorado Wind for Schools**  
**Candidate Host School Summary**  
Revised November 27, 2007

**Objective:** Establish your school as a Colorado Wind for Schools Host School. The overall objective of the Wind for Schools (WfS) program is to engage rural America in a discussion of wind energy while encouraging the development of a knowledge base for wind energy. There are three primary goals of the WfS program:

1. Engage rural school teachers and students in wind energy education,
2. Equip college students in wind energy applications and education to provide the growing wind industry with interested and equipped engineers, and
3. Introduce wind energy on a small scale to rural communities to initiate a discussion of the benefits and issues associated with wind energy.

If selected as a host school, a small 1.8 kW wind turbine would be located at your school to provide your students with a concrete example of how wind energy works, allowing for an exciting hands-on educational opportunity using state-of-the-art technology.

**Need:** Wind energy is one of the most steadily and rapidly expanding industries in the United States. At the end of 2006, wind energy comprised 11,575 MW of capacity (only 0.8% of the Nation's generation capacity). But with the type of consistent 25-30% annual growth we've seen over the last five years, wind energy is expected to provide 20% of the country's electricity by 2030. The Department of Energy (DOE) predicts Colorado's wind industry alone will grow from its current installed capacity of less than 1000mW to over 10,000 mW of capacity in the next 25 years (equivalent to 30 Grover-sized projects). Expanding use of wind energy is widely regarded as one way to bring greater prosperity to rural communities. We think that getting "ahead of the curve" by informing/educating our youth about this new energy e-volution would be a good idea.

A main driver of the WfS program is the education of students and others in the community about renewable energy, and specifically wind energy. Engaging those who will become the leaders in our communities, state, and nation on the importance of creating a secure energy future for America is one goal that this program hopes to achieve.

**Background:** Wind Powering America (WPA), a division of the Department of Energy (DOE) and the National Renewable Energy Laboratory (NREL), launched the Wind for Schools program in 2005. NREL conducted a WfS pilot project in Colorado that resulted in one small turbine project in Walsenburg, wind energy curriculum development, and a great deal of enthusiasm for the WfS program's potential. The general approach of the WfS program is to replicate the process piloted in Walsenburg by installing many more small wind turbines at rural schools in Colorado and five nearby states; Nebraska, Kansas, South Dakota, Idaho and Montana. The program plans to choose three to five project Host Schools per state in the initial year.

**Project Stakeholders:** Implementing a wind project at a public school is a fairly

complex undertaking that will involve many stakeholders. The WfS program is based around three primary entities: 1) the local school (Host School), 2) a Wind Application Center (WAC) developed at a local college or university (in our case, CSU-Fort Collins) and 3) a state facilitator (Tom Potter/All American Energy). The Host School will be the owner of the small wind turbine, and will work to educate students and the community about wind energy. The WAC will provide technical expertise in the application (analysis, siting, installation, monitoring), of the Host School's wind system. Finally, the State Facilitator will work in the first few years to develop momentum for the program in the state and link Host Schools to the WAC. All American Energy's role as Facilitator is to engage and coordinate among stakeholders, including rural schools' administration and teachers, the associated communities, the WAC leadership, the Governor's Energy Office, and other state agencies. Over time, it is expected that the WAC leadership will take over this role, becoming the main Facilitator for WfS in Colorado.

**Role of Host School:** Any WfS Host School will have to *want* the installation of a wind turbine. For a WfS project to be successful, all levels of the school structure must be supportive of the program in concept and practice. This support structure must include an interested science faculty, the school principal/administration, the district administration and the school board. Following the wind turbine installation, it is expected that the science faculty will use the wind turbine as a teaching aid in energy-related educational curricula and as a source for activities such as science fair projects. The Host School will own and be responsible for operating and maintaining the wind turbine and associated hardware. The WAC and State Facilitator will be available for advice in maintaining the Host School's wind generator.

**Host School Responsibilities:** Host School responsibilities will include:

**1. Commitment:** Becoming a WfS Host School will require an informed commitment from key stakeholders in your local community. You will have time following an initial program contact to consider your desire to become a Host School. This decision will surely require consultation with school administration and community members. WfS partners (NREL, the State Facilitator, the Colorado WAC) will be available for help in making your decision. Following Candidate Schools' declaration of their desire to become a Host School, WPA and the State Facilitator will select five 2008 Colorado Host Schools.

**2. Training and Curriculum Development:** One Host School staff member (and spouse) will be invited to attend an expenses-paid training seminar at the National Wind Training Center (NWTC) in Boulder, CO during August or September, 2008. Seminar activities will include instruction in wind energy basics and system installation and operation, as well as an explanation of the wind energy curriculum for the appropriate levels of instruction.

**3. System Installation:** Working with NREL, the Colorado WAC will install a WfS wind system at a location at (or in close proximity to) the Host School campus as a platform for WfS activities. It is expected that the Host School will provide land for the project, support for the interconnection of the wind turbine to the school electrical system, facilities support, financial support (typically \$1,500 to \$2,000, depending on details of the installation) and support of community meetings or other organizational events.

**4. Wind Energy Education:** The Host School's wind energy system is intended to act as a springboard for renewable energy education at the school. NREL will continue to develop curriculum that will help integrate the WfS project into existing and new classroom activities.

**Timeline:**

A basic timetable for Colorado's 2008 WfS Host Schools is as follows:

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|---|------------------|
| 1. Deliver WfS Application and Declaration of Intent to Facilitator | February, 2008   |
| 2. WfS and GEO select Colorado's five 2008 WfS Host Schools         | March, 2008      |
| 3. Initial web-based training (as needed)                           | Spring/Fall 2008 |
| 5. Plan Installation  | Spring 2008      |
| 6. Staff Training Week at NREL                                      | September, 2008  |
| 7. Install Turbine  | Fall 2008        |
| 8. Integrate curriculum (as needed)                                 | Spring 2009      |

This schedule can be accelerated to accommodate special opportunities.

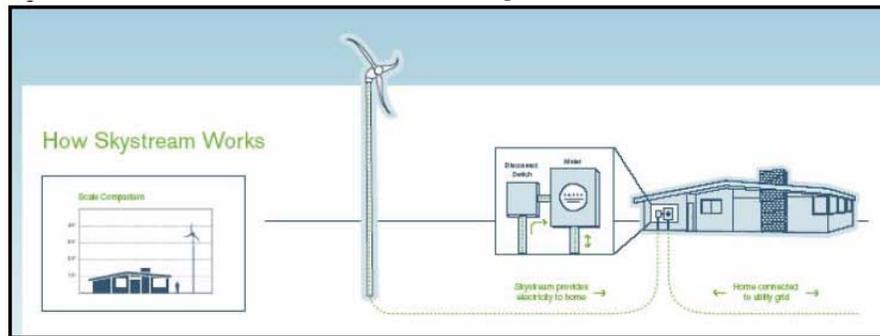
**Economics and Project Funding**

A typical cost for standard purchase and installation of the SkyStream™ turbine is \$14,000 overall, out-of-pocket costs. While NREL/DOE will not provide funds for turbine hardware, it may contribute to the cost of data monitoring systems and other educational materials. Of this \$14,000, *it is expected that the school will provide approximately \$1,500*, while the sale of the green tags could provide as much as \$4,000 and state or utility-based grants (such as the Governors Energy Office (GEO) Wind for Schools funds) will provide the remaining \$5,000 of cash outlay. The State Facilitator will be responsible for securing this balance, in collaboration with GEO. Many project participants also will be donating their time and materials, and the local utility, with assistance from the State Facilitator and the Colorado WAC, is expected to provide in-kind support for the installation of the turbine (an in-kind donation worth as much as \$3,500). The use of other tower configurations, such as the popular freestanding monopole design, may increase system costs. This increase must be paid from the school's cost-share.

## Project/Turbine Details

The Wind for Schools program uses a basic configuration for each school project. As shown in the Fig. 1, standard installation includes a single SkyStream™ 1.8 kW wind turbine, 70ft guyed tower, disconnect boxes at the base of the turbine and at the school, and interconnection to the school's electrical system. The SkyStream™ is the latest in affordable, fully integrated, utility-connected wind generators. The turbine won't supply the whole school's power needs, so no special electrical permits are likely to be required.

The WfS package includes all disconnects/tower hardware associated with the project. Depending on the specifics for installation at a particular site, a foundation and guy wire anchors will have to be installed as well as fencing around the base of the wind turbine.



## Host School Benefits:

- Engaging students with real-world experience in a dynamic and promising industry
- Providing a myriad of educational opportunities using state-of-the-art technology
- Strengthening your area's reputation as a premier venue for wind energy in the state
- Supporting the national goal of growing a qualified workforce for the wind industry

## What's Next?

Your school could be a good Candidate School because of your geographic location, interest, and proximity to proven wind resources. If you have these characteristics, you already have a very good chance of being selected as a WfS Host School.

At the end of this document is a page titled *Host School Declaration of Intent*. Its purpose is to secure your school as a Host School Candidate, and does not obligate you to any cost or responsibility of the WfS program. It simply states that you understand the program, and intend to participate as a Host School if selected. Please return this page as soon as possible to enter your school on the list of Colorado Wind for Schools candidates.

The signed *Host School Declaration of Intent* can be returned to All American Energy electronically (scanned and emailed to [tpotter@allamericanenergy.com](mailto:tpotter@allamericanenergy.com)) or mailed to 515 South Magnolia Ln., Denver 80224. Please call or email Colorado WfS Facilitator Tom Potter at All American Energy with any questions or concerns. Mr. Potter can be reached at 303.503.2230 or [tpotter@allamericanenergy.com](mailto:tpotter@allamericanenergy.com).

Thank you for your time in considering being part of the Wind for Schools program. We look forward to hearing from you soon.

**Colorado Wind for Schools**  
**Candidate Host School Declaration of Intent**  
(revised November 27, 2007)

I (print name) \_\_\_\_\_, by signing this Declaration, signify the intent of (print school) \_\_\_\_\_ to participate in the Department of Energy's Wind for Schools (WfS) program as a Host School. As an administrative official of the above-named school, I confirm that the WfS program and the responsibilities of becoming a Host School have been adequately defined, and are understood by the necessary school officials. I recognize that signing this document does not obligate the above-named school to participate in the WfS program, but rather it signifies the school's ability and intent to become a Host School if selected.

<b>Date:</b> _____	<b>By</b> _____,
	(signature)
	_____ of
(administrative title)	(school/district name)