

## Appendix B

### How could the Power of the Wind partnership and funding have been better used to improve the training and support that you received during your work on the Power of the Wind project? (n=9)

#### More training

- More time allowed for hands-on experience. The workshop was a bit rushed.
- It would have great if the one training had not been cancelled due to the weather. I think that training would have helped our state develop more interest among peers.
- Was unable to attend the second meeting due to inclement weather. I think it would have been beneficial for all to have attended.
- I would of liked to gain more knowledge in the wind industry and wind teaching resources.

#### Other

- Project was not the issue. Biggest problem in our state had was getting through the IRB process. Delay hurt our momentum.
- Seems like we needed more publicity.
- MEs also provided suggestions on how the POW curriculum could be improved. As described below, four MEs suggested a variety of changes to the curriculum and two had suggestions for the kit.

### How could the curriculum that was used for the Power of the Wind project be improved? (n=8)

#### Suggestions for the curriculum

- Curriculum is a bit too traditional. Advantage of the project was the impact on volunteer's perspective on using the curriculum to promote the inquiry process. Curriculum isn't strong in that aspect.
- It is a very complex curriculum, but the concepts are good. Simplifying the curriculum into more of a grab n go activities.
- The activities provided in the curriculum could and should be more hands-on. When I use it, I use pieces out of it as background, but the activities I use are adaptations and further developed hands-on activities.
- I think it could be more educational about wind power in general. Much of what I learned came from other sources such as Kid Wind.

#### Suggestions for kits

- Integrate more with the Kidwind turbine kits.
- More sturdy parts/components for building wind turbines. I was always afraid of breaking something.

## Appendix C

### Types of groups by state

#### Iowa

- Nodaway Valley Middle School 4-H Program

#### Minnesota

- Redwood Renewable Energy 4-H Club
- Marshall Renewable Energy 4-H Club
- Ridgeway Community School 4-H club for gardening, forestry and energy
- Big Stone County 4-H (2 groups)
- Rochester Multi-Cultural Center 4-H club
- POW activities embedded within a 6<sup>th</sup> grade science class curriculum

#### Missouri

- Shiloh 4-H club
- 4-H Energy club with homeschoolers

#### Texas

- 4-H group during the school day as part of a class

#### Wisconsin

- 4-H SET Club
- 4-H Winter Camp
- Black River Falls Public Library summer program
- BLAST Afterschool Program
- Kennedy YMCA Afterschool Science Club
- Mendota Safe Haven Afterschool Program

# Appendix D

## Types of events by state

### Iowa

- Talented and Gifted event
- Kelen Panec class at Waterloo West High School
- Iowa City Home School Support
- Summer science camp

### Minnesota

- Big Stone County Fair

### Missouri

- Northwest Missouri 4-H Camp
- Power of Wind sessions at a 4-H Camp (2 sessions)
- MST/4-H Aerospace Camp (2 sessions)
- 4-H State Congress, Electricity for Tomorrow workshop
- Making the Best Better member/leader training
- 4-H project meeting

### South Dakota

- State Fair Science Center
- Discovery Center at State Fair
- Dakota Fest
- Agriculture Day
- Science Engineering Camp
- SET Camp
- Power of the Wind presentation

### Texas

- Apache Elementary Science Night
- McCamey Elementary Field Day

### Wisconsin

- Jackson County Fair
- Science and Engineering Fair
- Midwest Renewable Energy Fair
- Curious Kids Camp
- 4-H Gateway Academy, Summer Engineering Day Camp
- 4-H Summer Camp
- Farm Technology Days
- Exploration Days
- 4-H Club Meeting (2 different clubs)
- Fall Youth Leadership Conference
- 4-H Youth Conference



## Appendix F

### **The main reason youth decided to become involved in POW (n=20)**

#### **50% (10) To learn something new**

- I wanted to know how using wind made power and how much power.
- I did it to know more about how wind power works.
- To learn about innovation and advancement within wind tech. To see physical differences of electrical production of different types of wind turbines.
- I like to help find ways to help the Earth, and using wind can't use up material resources.
- New chance to learn more about the world around me.
- To learn more about wind energy.
- So I can learn.
- I like exploring things.
- To learn something new.
- I wanted to learn.

#### **20% (4) Interested in the topic**

- I am interested in wind energy.
- It looked fun.
- I thought it would be fun.
- I thought it seemed interesting.

#### **15% (3) Parents signed him/her up**

- Parents didn't tell me until 5 minutes till.
- My mom.
- My mom.

#### **15% (3) Did POW during a pre-existing group**

- At my club.
- Our 4-H Staff decided to do it.
- My home school group had a class on it.

## Appendix G

### Youths' favorite thing about working with POW (n=26)

#### 27% (7) Testing Blades

- Testing blades.
- I liked testing the different fan blades. I like measuring power output.
- Testing different blades.
- Testing propellers.
- Testing different blades.
- Find out which type of blades made more power.
- The propeller bracket.

#### 15% (4) Inquiry process

- Figuring it out.
- When doing it on my own.
- Everything because I had to explore.
- Be able to do what I want because that's me.

#### 15% (4) Making pinwheels

- Making pinwheels because it was fun.
- My favorite was building the pinwheel and others to help out the cup to the top. It was so much fun!
- Making pinwheels.
- Making pinwheels and measuring the different fans.

#### 15% (4) Building wind turbines

- My favorite thing was building a model windmill because I love hands-on activity.
- Being able to create my own wind turbines because it made me think.
- Building model wind turbines. Allowed for experimentation.
- Getting the kit and building.

#### 8% (2) Using circuits

- Playing with the motors to get a charge because it's cool to see how it works.
- Trying different things with a circuit and figuring out how to make lights light up and make blades move.

#### 23% (6) Other

- Working with Marret/Spud.
- Using something people might not think of using. It helps big problems in a small world.
- The movie.
- The cool fan colors.
- All
- ?

## Appendix H

### Youths' least favorite thing about working with POW (n=20)

#### 15% (3) Aspects of the materials

- Some of the wheels did not fit. It was hard to combine everything.
- I didn't like being limited to materials. There were some more but more random things would be good.
- The pieces were very vague and limiting so although you could do what you want there were limited possibilities.

#### 10% (2) Watching the video

- The movie, because we just sat there.
- Watching the video that explained it.

#### 10% (2) Instructional aspects

- Listening to people and getting shown how to.
- The talking.

#### 30% (6) Other

- How we didn't work together.
- It was too easy for me.
- Building a pinwheel - too low-key.
- Cleaning because I had to stop.
- Lab finishes, questions on why things did/did not work.
- All of it.

## Appendix I

### **Specific plans to continue offering training to adult and youth leaders.**

- Iowa plans to provide the AEs they trained during the grant period ongoing support and professional development through online webinars. Iowa will also hold additional POW trainings for adult leaders, primarily through online methods. They may also develop trainings tailored to Boy Scout and Girl Scout leaders.
- Missouri 4-H has an emphasis on science education, which means in the future the state will offer training on inquiry. POW will be integrated as a secondary component of these inquiry trainings, using POW activities to model the inquiry process. This strategy will help to disseminate POW activities to individuals who may not see wind energy as relevant to their region and as a result wouldn't attend a POW training, but may come to an inquiry training. Missouri will also continue to offer POW trainings to afterschool providers, as part of statewide volunteer trainings, and at energizers.
- South Dakota will train their next round of volunteers using the kits they developed as part of their mini-grant.
- Texas is holding summer and early fall 2010 SET trainings for 4-H agents, with the intent that eventually every district within Texas will have someone who has participated in a SET training. The trainings will include a POW component so that all districts are aware of POW and know how to engage in POW activities. During Texas' 4-H Agents Annual Meeting there will be an alternative energy workshop and wind farm tour, which will provide an opportunity to distribute information about POW and the Kid Wind kits. Texas will also continue to offer POW-specific trainings for individuals who are interested.
- Wisconsin plans to continue to offer leader trainings, with the intent that some of these trainings will be led by adult explorers for others adults in their county.

### **In addition to trainings, states will offer educational tools for individuals leading POW activities.**

- All of the states will continue to provide the Kid Wind and KISS the Wind kits to individuals leading POW activities with youth. Missouri plans to purchase solar cells for the kits they keep in their state so that their kits focus more on renewable energy than just wind, making them more relevant for leaders who don't have wind energy in their area.

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- Minnesota will continue to have their Pedal Power Bike exhibit available for adults leading POW activities with youth.
  - Missouri used part of their mini-grant funds to create a video-based document about the stages of inquiry. This document will be available online for states to use as a supplement to their inquiry trainings and a resource for leaders.

**States will also continue to reach youth of all ages through a variety of activities including camps, fairs, and clubs. Below is just a sampling of some of the activities states plan to do into the future. As South Dakota 4-H said “We are just hitting the tip of the iceberg...at the beginning stages right now.”**

- Iowa will showcase POW activities at their state fair and integrate POW into wind camps during the summer of 2010.
- Minnesota will market POW and provide hands-on activities at county fairs during the summer of 2010. Minnesota used grant funds to create POW displays for each of the 15 regions on Minnesota. Each region will receive a portable floor stand that is the cover of the POW curriculum along with a kit to set up. Counties can then decide if they would like to have a POW display at their fair.
- Missouri will continue to offer POW activities at camps. They are also going to work on integrating POW into new SET clubs in St. Louis funded through a Cargill grant.
- South Dakota plans to tie POW activities into a SET camp for middle school youth.
- Texas has an AE working with a local teacher to continue tying POW to their 7th grade science project. The 2010-2011 school year will be the second time integrating POW into the project and they plan to make it an annual activity.
- Wisconsin will offer POW activities at their Wisconsin Farm Technology Days, Iowa County Project Learning Day, Green Living and Energy Expo, and Midwest Renewable Energy Fair. This will also integrate POW activities into summer camps, summer school, afterschool programs, workshops, and a youth conference.

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