

## Resources for teachers:

1. Wind turbine software for STEM  
<https://www.whiteboxlearning.com/>

KID WIND 2 shows how to design gliders and turbine blades, software for STEM.  
You get a free trial

2. <https://www.vernier.com/products/kidwind/wind-energy/>  
Vernier kits to make blades and run experiments

3. From Canada  
<http://www.re-energy.ca/wind-turbine>  
resources for teachers including lesson plans

Shows how to make a biogas generator and a wind turbine, also has a solar oven contest.

4. <http://energyforkeeps.org/for-teachers>  
Through 8<sup>th</sup> grade and contains content standards that are addressed.

### Activities

[Chapter 1 - The Energy Times](#)

[Chapter 2 - Going for a Spin: Making a Model](#)

[- Steam Turbine and Getting Current: Generating Electricity Using a Magnet](#)

[Chapter 3 - Watt's My Line?](#)

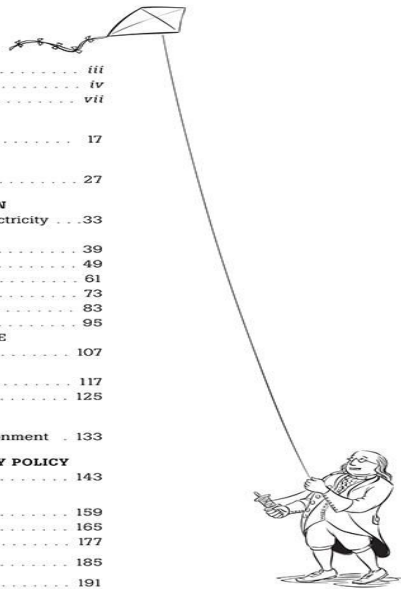
[Chapter 4 - Grime Scene Investigation](#)

[Chapter 5 - Renewable Energy Action Project: What's in Your Energy Portfolio?](#)

Energy for Keeps BOOK \$ 19.95

### TABLE OF CONTENTS

About this Publication .....	iii
Acknowledgments .....	iv
Benjamin Franklin: An Inspirational Figure .....	vii
<b>1 A BRIEF HISTORY OF ENERGY</b>	
How our use of energy has changed over time .....	17
<b>2 ENERGY AND ELECTRICITY</b>	
How we produce and deliver most of our electricity .....	27
<b>3 ENERGY SOURCES FOR ELECTRICITY GENERATION</b>	
How we use different energy sources to produce electricity .....	33
<b>RENEWABLE ENERGY RESOURCES</b>	
Biomass .....	39
Geothermal .....	49
Hydropower .....	61
Ocean .....	73
Solar .....	83
Wind .....	95
<b>THE RENEWABLE AND NONRENEWABLE RESOURCE</b>	
Hydrogen .....	107
<b>NONRENEWABLE ENERGY RESOURCES</b>	
Fossil Fuels .....	117
Nuclear .....	125
<b>4 ENERGY, HEALTH, AND THE ENVIRONMENT</b>	
How energy choices affect our health and the environment .....	133
<b>5 ENERGY MANAGEMENT STRATEGIES AND ENERGY POLICY</b>	
How energy decisions affect our lives .....	143
<b>APPENDIX</b>	
Energy Timeline .....	159
Glossary .....	165
Additional Information Resources .....	177
<b>INDEX</b> .....	185
<b>THE AUTHORS</b> .....	191



See page samples below!

## **Books**

### **Catch the Wind \$ 9.95**

Wind farms are impacting our environment in an extraordinarily positive way. They produce clean, renewable energy that helps maintain air quality, preserves natural gas and reduces our dependency on traditional energy sources.

*Catch the Wind* takes readers on a journey that will teach them about wind energy and the importance of making environmentally responsible choices. It was developed with input from educators and experts from within the wind industry. Children can follow Nels, an inquisitive boy, as he visits a wind farm with his father to discover the power of the wind. Diagrams of wind turbines and their components as well as key terms, defined in a glossary, make up the educational content of *Catch the Wind*. While exploring topics such as renewable energy, the history of wind power, and the steps to building a wind farm, *Catch the Wind* also raises awareness of wind power as a viable source of clean, renewable energy.

This book is a nonprofit effort courtesy of Mortenson Construction. Proceeds will be donated to nonprofit entities promoting the development and use of renewable energies.

### 5. Solar From NREL site

- [History of Solar Cells: Grades 9-12PDF](#)
- [How Solar Cells Convert Light to Energy: Grades 9-12PDF](#)
- [Photovoltaics in the Classroom: Grades 9-12PDF](#)
- [Solar Energy Science Projects: Grades 9-12](#)

### 6. FROM NREL

wind- Pretty complex but has standards it addresses

Wind

[Teacher's Guide to Wind Energy: Grades 9-12](#)

- Solar Panels
  - [Factors Affecting Power Output by Photovoltaic Cells LessonPDF](#)
  - [Factors Affecting Power Output by Photovoltaic Cells Design Lab FormPDF](#)
  - [Formal Lab ReportPDF](#)
  - [Investigating Temperature Effects on PV Arrays LessonPDF](#)
  - [Investigating Temperature Effects on PV Arrays LabPDF](#)
- Wind Measurements Ping Pong Ball
  - [Ping Pong Ball Anemometers Lesson PDF](#)
  - [Ping Pong Ball Anemometers Worksheet](#)

### 7. CLEAN

<https://cleanet.org/index.html>

Climate Literacy and Energy Awareness Network CLEAN

This is a GREAT site , lots of videos, lesson plans, data,

<https://cleanet.org/resources/41537.html>

Climate Literacy and Energy Awareness Network

THIS IS FABULOUS AND ENDORSED BY NSF AND NOAA!!!!

It has over 700 lessons with ages and content standards!

[https://cleanet.org/clean/educational\\_resources/collection/index.html](https://cleanet.org/clean/educational_resources/collection/index.html)

8. NEED National Energy Education Development

<http://www.need.org/>

GREAT! Has state standards , correlations, conferences and workshops.

There is a national conference and you can host a workshop in your area. LOTS of workshops and does not just have renewable it has gas too... but also wind and solar. Site also has online free energy books for all grade levels. You can download them. You can read online too!

\*\*\*\*\*

**Contacts:**

1. Wind Turbines of Ohio, LLC 330 502 1250 Alliance Ohio
2. Smucker's Energy [info@smuckersenergy.com](mailto:info@smuckersenergy.com), Millersburg, Ohio  
(handouts) Tim sent me pdf of handouts with head to head comparisons of energy sources
3. Solar Max in Brunswick, Ohio (info on site)
4. Modern Energy Dublin Ohio [info@gomodernenergy.com](mailto:info@gomodernenergy.com)
5. Third Sun Solar (female owned) left message on FB
6. Paradise Energy (some handouts) Sugarcreek Ohio
7. One Energy Wind for Industry (TONS OF DATA ON SITE!!!) camous in Findlay, Ohio [contact@oneenergyllc.com](mailto:contact@oneenergyllc.com)
8. AWEA American Wind Energy Association (policies and issues) also has a wind 101 course on site, advocacy group too [grassroots@awea.org](mailto:grassroots@awea.org)  
(sent an email with two other resources KidWind and RECharge Labs)
9. NREL National renewable Energy Lab has teacher programs, energy education
10. Sierra Club re-inventing power documentary (I think this will be in Marietta Nov 17)
11. POWER of WIND VERY GOOD SITE!!!! Tips for talking to elected officials, monthly conference calls, Wednesday Nov 14 a 7 pm 5639991441 also has fact sheets too!
12. Wind exchange also has K-12 resources, lots of data too  
Books "Catch the wind" and videos

13. Greg Courtney of Wind Turbines of Ohio emailed me, he taught renewable energy class for 4 years at OSU/ATI campus, he will talk about it too his phone is (330-502-1250)