NEED Project

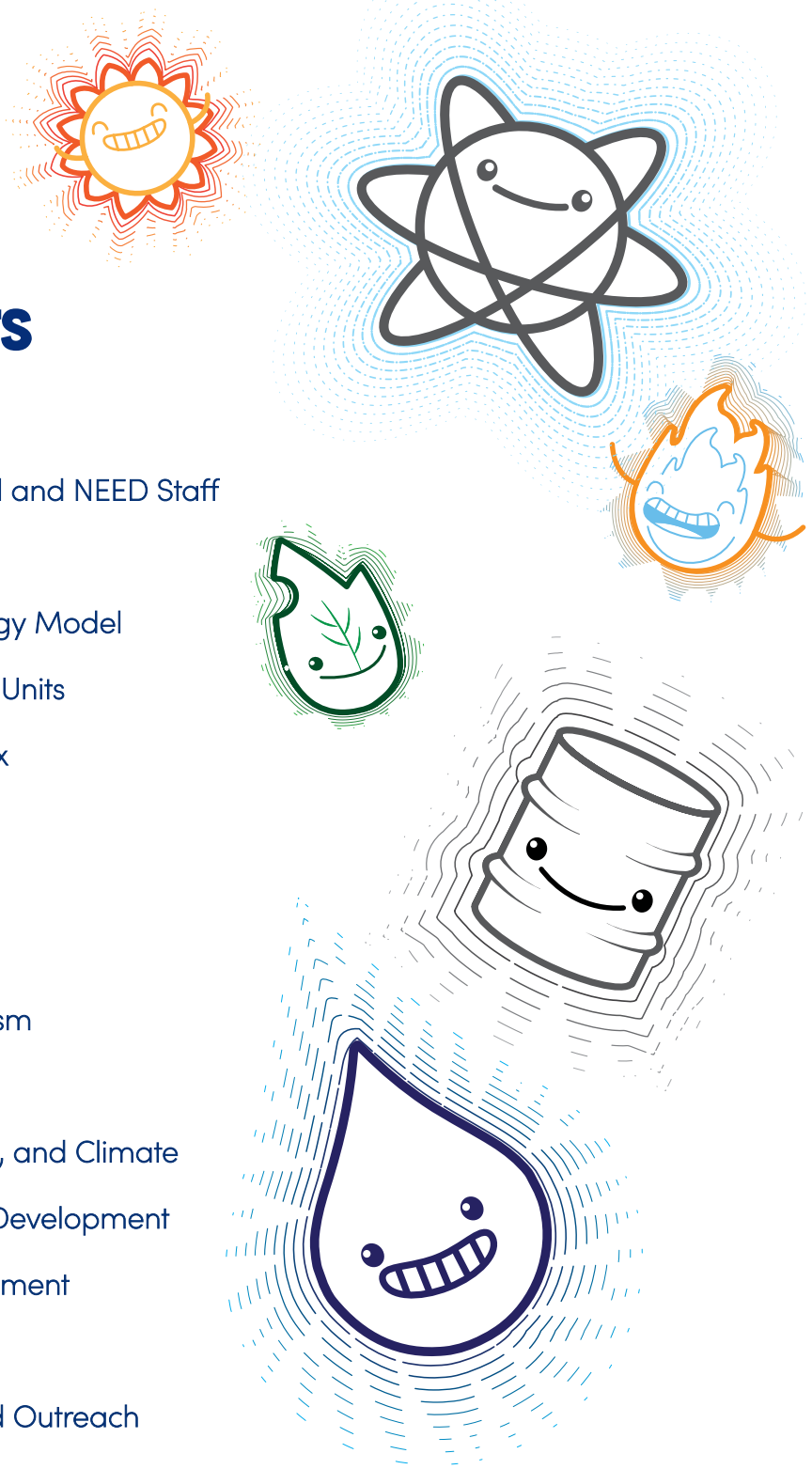


2026-2027 RESOURCE CATALOG & PLANNING GUIDE

NATIONAL ENERGY EDUCATION DEVELOPMENT PROJECT

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THIS IS NEED

Putting Energy into Education for nearly 50 years

The NEED Project provides innovative K–12 educational materials, in-person and virtual teacher and student training programs, evaluation, and recognition. NEED materials and training conferences are designed to provide comprehensive, objective information about energy production and consumption and the major energy sources—how they are used and their impact on the environment, economy, and society. The program emphasizes the development of critical-thinking and problem-solving skills using student-driven, inquiry-based activities that encourage students to consider the trade-offs inherent in energy decisions.

NEED materials have been designed to meet the needs of teachers and students, support the Next Generation Science Standards, and are correlated to all state science standards and the Common Core State Standards. For more information on curriculum correlations, visit **www.NEED.org/educators/curriculum-correlations.**

Activities are available across all grade levels, where appropriate, and can be used in technical schools, community colleges, and universities. Modules and materials embody NEED's *Kids Teaching Kids* pedagogy by encouraging students to teach and learn from others. The NEED Project relies on a Teacher Advisory Board to ensure that all curriculum materials work in the classrooms, are objective, up-to-date, scientifically accurate, and meet the requirements of national and state standards.

NEED works with school districts and teachers across the country to design and implement individualized energy programs to meet their education goals and objectives. In many areas, NEED materials are incorporated into the formal curriculum at many grade levels. NEED tailors programs to meet the specific requirements of individual states, school districts, and teachers. NEED is fortunate to be the education partner for many local, state, and national energy outreach programs.

NEED MISSION STATEMENT

The National Energy Education Development (NEED) Project is a 501(c)(3) nonprofit education organization. The mission of The NEED Project is to promote an energy-conscious and educated society by creating effective networks of students, educators, business, government, and community leaders to design and deliver objective, multi-sided energy education programs. NEED works with energy companies, agencies and organizations to bring balanced energy programs to the nation's schools with a focus on strong teacher professional development, timely and balanced curriculum materials, signature program capabilities and turn-key program management.



PROFESSIONAL DEVELOPMENT

The NEED Project conducts workshops and professional development programs throughout the year to meet the needs of school districts and individual teachers. Workshops and PD can be conducted in-person or virtually. These training programs provide comprehensive energy information and introduce educators to NEED materials and other energy education resources. Information about upcoming conferences, workshops, and other events is available on NEED's website, **www.NEED.org/events**. To discuss hosting a training program, call NEED headquarters at 1-800-875-5029 or email **info@need.org**.

NATIONAL ENERGY CONFERENCE FOR EDUCATORS

Each summer, NEED conducts a five–day conference for educators. Educators delve deeply into how to teach energy and how to implement NEED programs in the classroom. Graduate credit is available for teachers in the program. Registration fee includes lodging (double occupancy), most meals, and materials. For more information, contact NEED at 1-800-875-5029 or visit **www.NEED.org/educators/national-energy-conference-for-educators**.

STUDENT LEADERSHIP AND OUTREACH

As students learn about energy during the year, they put their knowledge to good use. Since The NEED Project began in 1980, students have been learning and leading others to an understanding of energy in the world. They are teaching the next generation to make wise energy decisions. The *Kids Teaching Kids* approach works. To recognize outstanding achievement and reward this leadership, The NEED Project conducts an annual Youth Awards Program for Energy Achievement.

Students of any age who submit a signature-level project are invited to attend the Youth Energy Conference and Awards in Washington, D.C., held each June. Students from across the nation are brought together to expand their energy knowledge and explore the world of STEM—science, technology, engineering, and math. The weekend-long event concludes with the Youth Awards Ceremony, celebrating outstanding student projects and achievements from the past year. We invite you to learn more at **https://youthawards.need.org**. See **page 35** for more information on Youth Awards and the *Youth Awards Program Guide*.

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NEED CURRICULUM

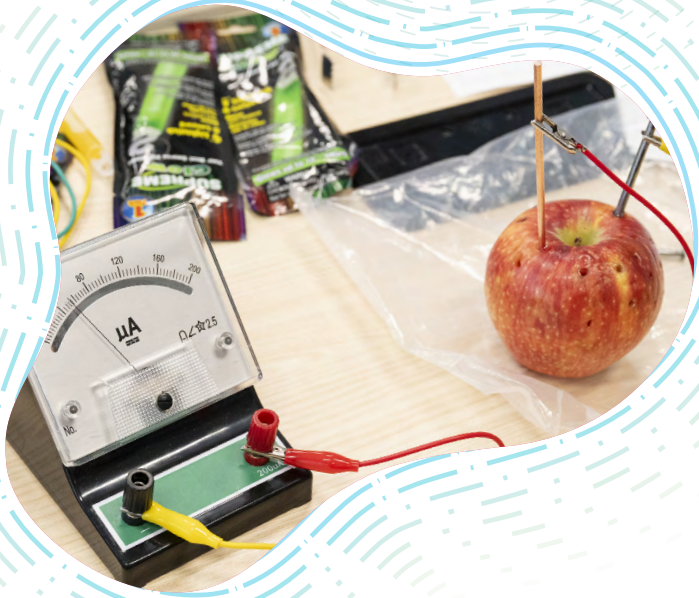
NEED curriculum is developed by our curriculum team and tested and refined by a national Teacher Advisory Board (TAB) that is dedicated to developing and promoting standards-based energy curriculum and training. The curriculum employs a number of strategies for teaching students about energy. Most NEED modules are inquiry-based, and student-driven using a *Kids Teaching Kids* approach. Activities that are not inquiry-based are designed to be engaging and interactive, helping students to develop and access critical-thinking skills, or creative arts skills. NEED strongly believes in integrating energy education across all subject areas, including science, technology, engineering, mathematics, language arts, social studies, and creative arts.

NEED also believes in providing current energy data to our teachers and students. The majority of statistics and data published in NEED's content are derived from the most recent, complete annual data made available by the U.S. Energy Information Administration (EIA) at the time of publishing. Working in partnership with the EIA, NEED includes easy to understand data in our curriculum materials.

In order for students to receive a comprehensive energy education, NEED has developed an eight-step model to help teachers plan a complete energy unit. Each step of the model is outlined on **page 6**. NEED has designed Basic Curriculum Units for each grade level, that follow this comprehensive model for energy education. For more information on these basic units, see **page 7**. Educators may easily build their own units that follow this eight-step model. NEED's entire curriculum portfolio is available online. If large quantities of a title are needed, please contact NEED for more information on printed titles and requests for printing.

While careers are not a prescribed part of NEED's eight-step model, careers and workforce content can be found within titles across all eight steps. NEED has also developed several energy industry careers and technology focused, stand-alone units for those wishing to pursue a deeper study of the skills and content in each area of focus. See **page 29** for a list of all of NEED's career activities and content.

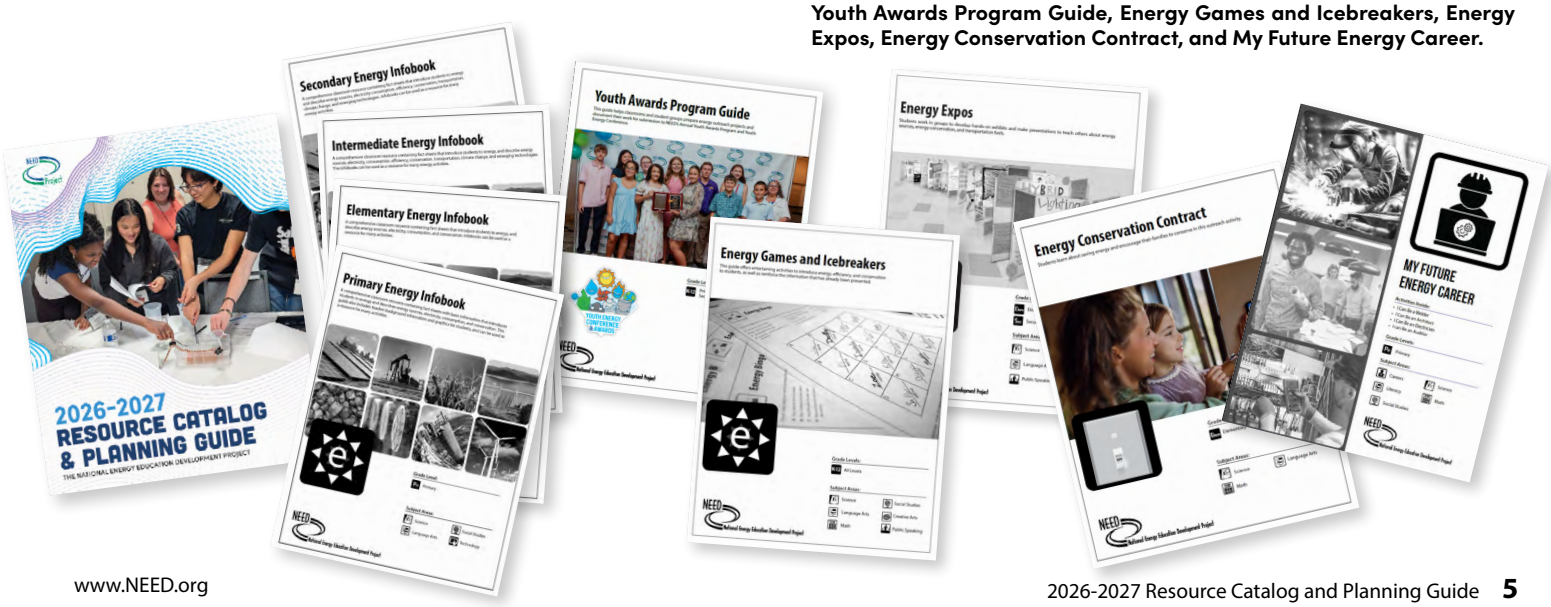
On **pages 8-10** is a matrix of all available NEED materials categorized by NEED's eight-step energy education model and by grade level. Educators may use this list and the curriculum descriptions found within this guide to customize their own energy unit. **Pages 11-12** include a list of additional resources that can enhance instruction. Please note, prices listed within this guide are subject to change. Please consult NEED's online shop for most current available pricing, **www.NEED.org/shop**.



NEED CURRICULUM PACKET

Any educator can become part of NEED's dynamic network of classrooms and educators participating in innovative energy education programs across the nation. NEED educators receive a NEED Curriculum Packet; e-newsletters; invitations to NEED conferences, workshops, and the Youth Energy Conference and Awards Program; and the opportunity to personalize classroom programs by accessing materials on the NEED website. Teachers can download all curriculum guides and supplemental materials in NEED's library for free from the NEED website. NEED Curriculum Packets are provided by sponsors to all educators who attend NEED workshops. Curriculum packets are updated periodically and always include NEED's *Energy Infobooks* and *Energy Games and Icebreakers*, in addition to a few NEED classics, new or refreshed titles, and/or engaging and topical activities we know students will enjoy. The packet also includes our *Youth Awards Program Guide*. Check out the images below for a showcase of the 2026-2027 standard packet contents, and head to **www.NEED.org/shop** to download additional copies of the included titles.

The 2026-2027 Curriculum Packet features the following titles: NEED's Resource Catalog and Planning Guide, Energy Infobooks (at four levels), Youth Awards Program Guide, Energy Games and Icebreakers, Energy Expos, Energy Conservation Contract, and My Future Energy Career.



NEED'S EIGHT-STEP ENERGY MODEL



SCIENCE OF ENERGY

Students need to learn the science of energy before they can learn about the sources of energy, electric power generation, and energy efficiency and conservation. In NEED's *Science of Energy* content, students explore the forms of energy and how energy can be transformed. Secondary students can extend their knowledge to thermodynamics. Several hands-on kits are available for sale, such as primary, elementary, intermediate, and secondary *Science of Energy*, *What is Energy?* and *EnergyWorks*.



SOURCES OF ENERGY

These guides and activities help students become familiar with the energy sources used today—their formation, exploration, production, distribution, consumption, and economic and environmental trade-offs. Several units and kits are available that explore specific energy sources in-depth. NEED *Energy Infobooks* also provide comprehensive information on the major energy sources at four reading levels.



ELECTRICITY AND MAGNETISM

These units provide students with information and hands-on explorations of the properties and variables of electricity and magnetism, electricity generation, transmission, and efficient use of electricity. *Wonders of Magnets* explores the basics of magnetism, while *Energy Infobooks* provide background information on electricity. NEED's *ElectroWorks* curriculum is available, as well as solar, wind, nuclear, coal, and hydropower units and kits that include hands-on activities on electromagnetism. *Current Energy Affair* provides students with language arts activities about electricity.



TRANSPORTATION

Several modules are available that teach students about the transportation sector of the economy, current transportation fuels, and the fuels and technologies of the future. *Transportation Exploration* and *Energy on the Move* help introduce students to transportation sources and technologies in a fun, hands-on way. Try *Transportation Fuels Enigma*, T*ransportation Fuels Debate*, and *Transportation Fuels Live!*, too. These fun, stand-alone, options will introduce transportation fuels and get your energy unit moving!



EFFICIENCY AND CONSERVATION

Students learn how energy is consumed in our lives, about efficient technologies, ways to conserve energy at home and at school, and careers in energy management. Check out our efficiency and conservation curriculum materials and kits, available for all grade levels.



SYNTHESIS AND REINFORCEMENT

Many critical thinking and hands-on activities are available to help support the information the students have learned. Activities for students to teach others what they have learned are also available. These titles include games, creative arts activities, spreadsheet-based activities, and more!



EVALUATION

Most NEED activities include evaluation strategies within them, including pre/post and formative/summative assessments, rubrics, and project-based tasks. NEED's Evaluation and Assessment website contains several examples of these tools for use in the classroom. One such tool, NEED's Question Bank, gives teachers the ability to customize evaluations to fit the needs of their energy unit. Also found on the website are NEED's *Energy Polls,* multiple choice energy knowledge polls, at four grade levels. Visit **www.NEED.org/educators/evaluations-assessment** to download the polls, search for assessment questions, view sample rubrics, and for links to standards correlation information to fuel your planning.



STUDENT LEADERSHIP AND OUTREACH

NEED's Youth Energy Conference and Awards Program rewards students and classrooms for documenting their energy outreach efforts and student leadership. See **page 35** or visit **https://youthawards.need.org** for more information, and check out past winning projects to garner inspiration. The deadline for project submissions is always April 15 each year.

NEED BASIC CURRICULUM UNITS

NEED and its Teacher Advisory Board have collaborated to design NEED's Basic Curriculum Units at four levels to help teachers plan for and implement energy units in their classrooms. These units are designed to meet national and state standards for each level. A course can be academically aligned, while exploring themed topics on the science of energy, sources of energy, electricity and magnetism, transportation, and efficiency and conservation. Synthesis, reinforcement, evaluation, student leadership, and outreach activities are also included.

A teacher may choose to use the NEED Basic Curriculum Unit as shown below by level. Download each basic unit by visiting **www.NEED.org/educators/basic-curriculum-units**. Teachers may also customize the unit for themselves by choosing and downloading guides or units that meet the needs of their students, or localized standards and programming. Descriptions of all NEED curriculum guides are contained in this catalog. All titles in NEED's library can be downloaded from NEED's website and online store for free in PDF format. Kit-based guides and infobooks are also available in print. See **pages 13-33** for pricing information of printed items, where available.

To access each basic unit and download its components, please visit **www.NEED.org/educators/basic-curriculum-units**. If large quantities or class sets of a title are needed, please contact NEED for more information on printed titles and print requests.

NEED BASIC CURRICULUM UNITS	BASIC PRIMARY UNIT (K-2)	BASIC ELEMENTARY UNIT (3-5)	BASIC INTERMEDIATE UNIT (6-8)	BASIC SECONDARY UNIT (9-12)
INTRODUCTORY ACTIVITIES	Energy Polls			
	Energy Games and Icebreakers			
STEP ONE: SCIENCE OF ENERGY	Energy Infobooks*			
	Primary Science of Energy*	Elementary Science of Energy* EnergyWorks*	Intermediate Science of Energy*	Secondary Science of Energy*
STEP TWO: SOURCES OF ENERGY	Energy Games and Icebreakers, Energy Infobooks*, and Energy Infobook Activites			
	Energy Stories and More	Energy in the Balance	Great Energy Debate	Energy Enigma
STEP THREE: ELECTRICITY AND MAGNETISM	Energy Games and Icebreakers, Energy Infobooks*, and Energy Infobook Activites			
	Wonders of Magnets	ElectroWorks	ElectroWorks	Mission Possible
STEP FOUR: TRANSPORTATION	Transportation Exploration	Transportation Exploration	Energy on the Move	Energy on the Move
STEP FIVE: EFFICIENCY AND CONSERVATION	Energy Games and Icebreakers and Energy Infobooks*			
	Using and Saving Energy	School Energy Inspectors*	School Energy Experts*	School Energy Managers*
		Energy Conservation Contract		
			Understanding Climate Science*	Exploring Climate Science*
CAREER AND WORKFORCE DEVELOPMENT	My Future Energy Career	Energy Careers Excursion	Energy Careers Excursion Energy Careers Enigma	Energy Careers Excursion Energy Career Enigma
STEP SIX: SYNTHESIS AND REINFORCEMENT	Energy Games and Icebreakers			
	Primary Energy Carnival	Energy Carnival	Energy Carnival	
			Energy Jeopardy	
			Global Trading Game	
STEP SEVEN: EVALUATION	Question Bank			
	Energy Polls			
STEP EIGHT: STUDENT LEADERSHIP AND OUTREACH	Youth Awards Program Guide			

Note: The guides with asterisks (*) are also available in print. Pricing is subject to change.

NEED CURRICULUM MATRIX

The NEED Curriculum Matrix on the following pages is designed to assist teachers in planning an individualized energy unit. All NEED curriculum guides are listed by grade level, and by where the majority of information in the material fits into NEED's recommended eight-step model. Individual descriptions of the curriculum begin on page 13. It is important to note that many curriculum pieces overlap steps. NEED *Energy Infobooks* are the foundational pieces of any energy education unit. Written at four levels—primary, elementary, intermediate, and secondary—these student readers have in-depth information on the major energy sources, electricity, transportation, and conservation. Subject-specific guides such as the wind and nuclear modules have more extensive separate student backgrounders on the subject. Information in these guides include how the source is formed, how we harness energy from the source, and how we use the energy source to meet our needs. Information on historical uses of the source, electricity generation, developing technologies, and related careers are often included as well. Whether using a NEED Basic Curriculum Unit or selecting individual curriculum pieces, teachers should thoroughly review all materials and plan their units according to the needs of their students and their classroom timing and sequencing.

	PRIMARY (K-2)	ELEMENTARY (3-5)	INTERMEDIATE (6-8)	SECONDARY (9-12)
INTRODUCTORY ACTIVITIES	Energy Games and Icebreakers Energy Polls	Energy Games and Icebreakers Energy Polls	Energy Games and Icebreakers Energy Polls	Energy Games and Icebreakers Energy Polls
STEP ONE: SCIENCE OF ENERGY	Primary Energy Infobook* Primary Science of Energy* What is Energy? *	Elementary Energy Infobook* Elementary Science of Energy* Energy Flows EnergyWorks* What is Energy?*	Energy Flows EnergyWorks* Intermediate Energy Infobook* Intermediate Science of Energy*	Energy Flows Secondary Energy Infobook* Secondary Science of Energy* Thermodynamics
STEP TWO: SOURCES OF ENERGY	All About Coal Energy Games and Icebreakers Energy Stories and More Graphing Energy Source Data Offshore Wind Is Energy Oil, Natural Gas, and Their Energy* Primary Energy Infobook* Primary Energy Infobook Activities The Sun and Its Energy* This Mine of Mine Water and Energy* Wind Is Energy*	All About Coal Elementary Energy Infobook* Elementary Energy Infobook Activities Energy Expos Energy Games and Icebreakers Energy in the Balance Energy Live! Energy on Stage Energy Stories and More This Mine of Mine Wind for Schools Wonders of Offshore Wind Wonders of Oil and Natural Gas* Wonders of the Sun* Wonders of Water* Wonders of Wind*	Energy Enigma Energy Expos Energy From Offshore Wind Energy From the Sun* Energy From the Wind* Energy From Uranium Energy Games and Icebreakers Energy Live! Energy of Moving Water* Energy on Public Lands Energy on Stage Exploring Ocean Energy and Resources Exploring Oil and Natural Gas* Floating Offshore Wind Great Energy Debate H_2 Educate* Intermediate Energy Infobook* Intermediate Energy Infobook Activities Schools Going Solar Understanding Coal This Mine of Mine Wind for Schools	Energy Enigma Energy Expos Energy Games and Icebreakers Energy Live! Energy on Stage Exploring Coal Exploring Hydroelectricity* Exploring Marine Hydrokinetics Exploring Nuclear Energy Exploring Ocean Energy and Resources Exploring Offshore Wind Energy Exploring Oil and Natural Gas* Exploring Photovoltaics* Exploring Wind Energy* Floating Offshore Wind Great Energy Debate H_2 Educate* Schools Going Solar Secondary Energy Infobook* Secondary Energy Infobook Activities Wind for Schools

Note: All curriculum is available to download in PDF format from www.NEED.org/shop

* Guides with asterisks (*) are also available in print. Please contact NEED for more information on printed titles and print requests.

	PRIMARY (K-2)	ELEMENTARY (3-5)	INTERMEDIATE (6-8)	SECONDARY (9-12)
STEP THREE: ELECTRICITY AND MAGNETISM	Baseload Balance Energy Games and Icebreakers Energy Stories and More Primary Energy Infobook* Primary Infobook Activities Wonders of Magnets	Baseload Balance ElectroWorks Elementary Energy Infobook* Elementary Infobook Activities Energy Games and Icebreakers Energy Stories and More Reliably Smart Sidekick Circuits The Science of Electricity Wonders of Magnets	Baseload Balance Current Energy Affair ElectroWorks Energy Games and Icebreakers Intermediate Energy Infobook* Intermediate Infobook Activities Reliably Smart Sidekick Circuits The Science of Electricity	Baseload Balance Current Energy Affair Energy Games and Icebreakers Mission Possible Reliably Smart Secondary Energy Infobook* Secondary Infobook Activities Sidekick Circuits The Science of Electricity
STEP FOUR: TRANSPORTATION	Energy Stories and More Hybrid Buses Transportation Exploration	Energy Expos Energy Stories and More Hybrid Buses Transportation Exploration Transportation Fuels Live!	Energy and Our Rivers Energy Expos Energy on the Move Exploring Hybrid Buses H_2 Educate* Transportation Fuels Debate Transportation Fuels Enigma Transportation Fuels Live!	Energy and Our Rivers Energy Expos Energy on the Move Exploring Hybrid Buses H_2 Educate* Transportation Fuels Debate Transportation Fuels Enigma Transportation Fuels Live!
STEP FIVE: EFFICIENCY AND CONSERVATION	All About Trash Blueprint for Student Energy Teams Energy Games and Icebreakers Energy on Stage Primary Energy Infobook* Today in Energy Using and Saving Energy	Blueprint for Student Energy Teams Elementary Energy Infobook* Energy Conservation Contract Energy Expos Energy Games and Icebreakers Energy House Energy on Stage Managing Home Energy Use School Energy Inspectors* Talking Trash Today in Energy	Blueprint for Student Energy Teams Building Science* Energy Conservation Contract Energy Expos Energy Games and Icebreakers Energy House Energy on Stage Intermediate Energy Infobook * Managing Home Energy Use Museum of Solid Waste and Energy Plug Loads School Energy Experts* Today in Energy Understanding Climate Science	Blueprint for Student Energy Teams Carbon, Capture, Utilization, and Storage Chemistry and Energy Efficiency Energy Conservation Contract Energy Expos Energy Games and Icebreakers Energy House Energy on Stage Exploring Climate Science * Managing Home Energy Use Museum of Solid Waste and Energy Plug Loads School Energy Managers* School Energy Survey Secondary Energy Infobook*

Note: All curriculum is available to download in PDF format from **www.NEED.org/shop**
* Guides with asterisks (*) are also available in print. Please contact NEED for more information on printed titles and print requests.

	PRIMARY (K-2)	ELEMENTARY (3-5)	INTERMEDIATE (6-8)	SECONDARY (9-12)
CAREER AND WORKFORCE DEVELOPMENT RESOURCES	Coal, Hydropower, Oil and Natural Gas, and Wind Curriculum My Future Energy Career	Coal, Hydropower, Oil and Natural Gas, and Wind Curriculum Energy Careers Excursion Energy Expos School Energy Curriculum	Building Science Coal, Hydropower, Oil and Natural Gas, Nuclear, and Wind Curriculum Energy Career Enigma Energy Careers Excursion Energy Expos School Energy Curriculum	Building Science Coal, Hydropower, Oil and Natural Gas, Nuclear, and Wind Curriculum Energy Career Enigma Energy Careers Excursion Energy Expos Introduction to Solar Photovoltaics School Energy Curriculum Solar Careers Pathways Your Future in Energy Efficiency and Conservation Your Future in Hydropower Your Future in Marine Hydrokinetics Your Future in Wind Energy
STEP SIX: SYNTHESIS AND REINFORCEMENT	Energy Fair Energy Games and Icebreakers NEED Songbook Primary Energy Carnival	Energy Around the World Energy Carnival Energy Fair Energy Games and Icebreakers Energy in the Balance Energy Jeopardy Energy Live! Energy Math Challenge Energy on Stage Global Trading Game Greek Mythology and The Forms of Energy Mystery World Tour NEED Songbook Primary Energy Carnival Yesterday in Energy	Energy Analysis Energy Around the World Energy Carnival Energy Games and Icebreakers Energy Jeopardy Energy Live! Energy Math Challenge Energy on Stage Global Trading Game Greek Mythology and the Forms of Energy Mystery World Tour NEED Songbook Yesterday in Energy	Energy Analysis Energy Around the World Energy Games and Icebreakers Energy Jeopardy Energy Live! Energy Math Challenge Energy on Stage Global Trading Game NEED Songbook Mission Possible
STEP SEVEN: EVALUATION	Energy Polls Question Bank	Energy Polls Question Bank	Energy Polls Question Bank	Energy Polls Question Bank
STEP EIGHT: LEADERSHIP & OUTREACH	Youth Awards Program Guide	Youth Awards Program Guide	Youth Awards Program Guide	Youth Awards Program Guide

Note: All curriculum is available to download in PDF format from **www.NEED.org/shop**
* Guides with asterisks (*) are also available in print. Please contact NEED for more information on printed titles and print requests.

ADDITIONAL RESOURCES

NEED CURRICULUM

Go to **www.NEED.org/shop** to view the guides by grade level or topic. All NEED guides are available as a free PDF download or viewable as an e-publication. Supplemental resources, posters, and other materials can also be found here.

AWESOME EXTRAS!

Looking for more resources? Our Awesome Extras page contains PowerPoints, energy graphics, Energy At-A-Glance Fact Sheets, coloring pages, and other great resources to complement what you are teaching in your classroom! This page is available under the Educators tab at **www.NEED.org/educators/awesome-extras**.

NEED NEWS

Get the scoop on new curriculum releases, teacher and student news and opportunities, upcoming programs, and more! Visit **www.NEED.org/about-need** and scroll to the "News and Announcements" section. You can also click to join our mailing list to receive our e-newlsetters, event alerts in your area, giveaways, and more!

ONLINE REGISTRATION FOR WORKSHOPS

NEED offers professional development opportunities that energize teachers and remind them of the fun that is possible in the classroom when teaching about energy. These workshops are offered all over the country. View all of our upcoming events and register online at **www.NEED.org/events**.

EVALUATIONS AND ASSESSMENT

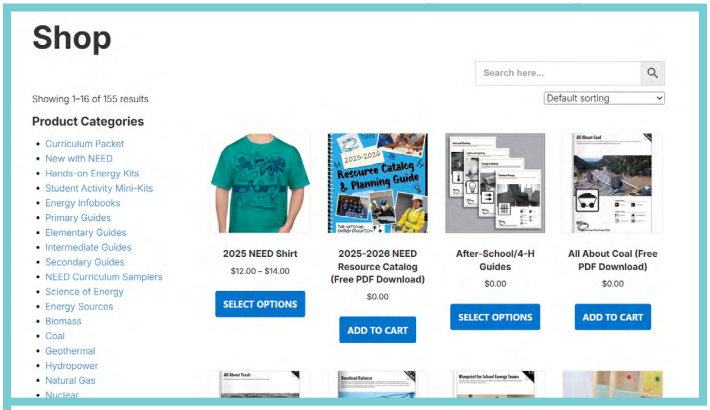
Building an assessment? Searching for standards? Check out our Evaluations page for a question bank, NEED's *Energy Polls*, sample rubrics, links to standards alignment, and more at **www.NEED.org/educators/evaluations-assessment.**

POWERPOINTS AND SUPPLEMENTARY RESOURCES

Bring an energizing presentations right into the classroom with NEED's introductory PowerPoint Presentations for each energy topic. Presentations are highly visual, include presenter notes, and can be edited to fit your classroom needs. Head to **www.NEED.org/resources/powerpoint-presentations**.

NEED ENERGY BOOKLIST

Looking for cross-curricular connections, or extra background reading for your students? NEED's booklist provides an extensive list of fiction and nonfiction titles for all grade levels to support energy units in the science, social studies, or language arts setting. Check it out at **www.NEED.org/booklist**.



ORDER MATERIALS ONLINE!

www.NEED.org/shop

Anemometers and solar cells and light meters—oh my! Getting your kits (or refills) has never been easier! Check out NEED's official online store at **www.NEED.org/shop.**

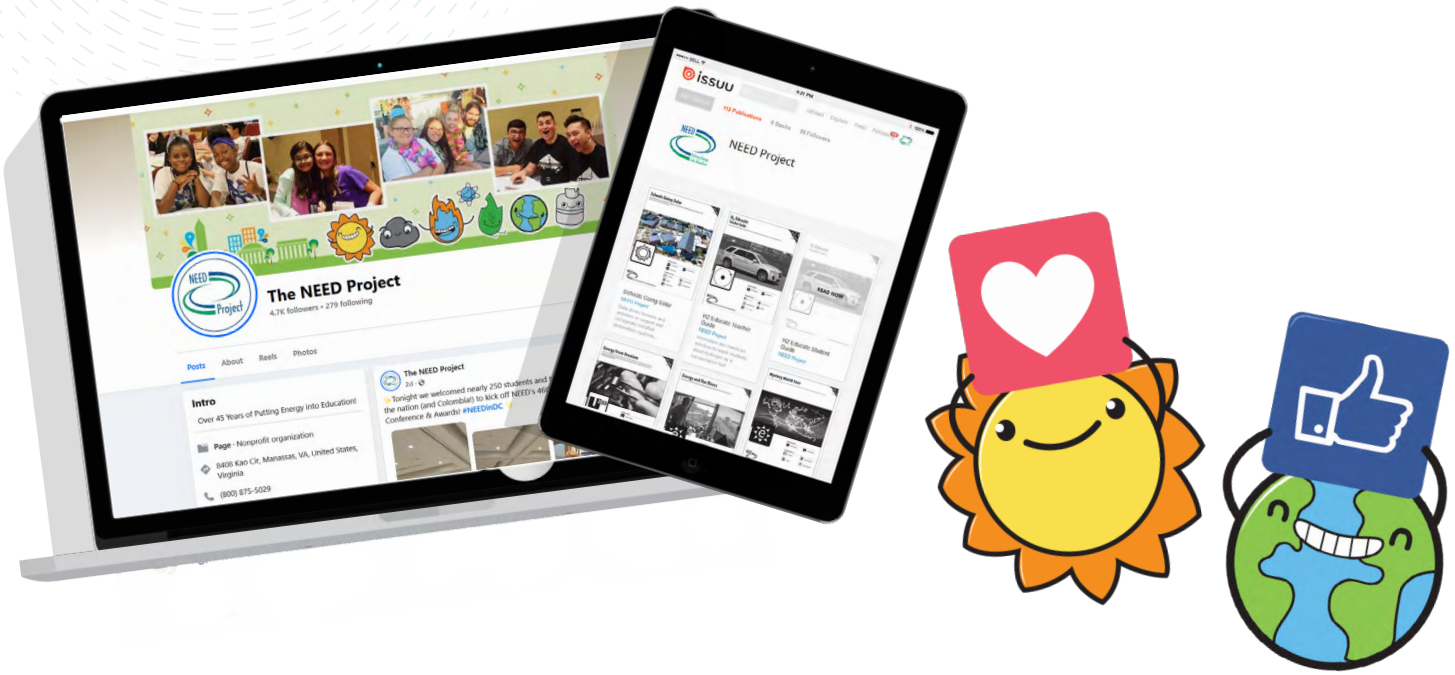
All titles in NEED's library can be downloaded from NEED's online store. PDFs of the guides are available for free PDF download. It's easy as 1 - 2 - 3 - 4.

1. Select "Free PDF Download".
2. Add to your cart.
3. Check out.
4. Check your email for the guide link.

VINTAGE NEED

NEED has been sharing our energy since 1980! And just like fashions and seasons change, curriculum titles come and go as NEED gets older. If you download a book and see this cover color, it means this particular title is an oldie, but a goodie. This guide is no longer on NEED's annual update list, but we don't want to say goodbye just yet! And, while data may not be current, the activities inside are still loads of fun. So, download and enjoy because it's okay to kick it old school!





VIRTUAL AND DIGITAL LEARNING RESOURCES

NEED has curated a collection of resources to assist teachers as they teach energy in person, in a hybrid setting, in a virtual setting, or at a distance—either asynchronously or synchronously. NEED's Digital Learning Resources page includes links to samples of educational technology; games, puzzles, and energy fair activities; easy hands-on favorite activities; YouTube videos; and more. Visit **www.NEED.org/digitallearning** and if you would like to share something from your classroom, please email **info@NEED.org**.

NEED'S SMUGMUG GALLERY

www.need-media.smugmug.com

Visit the NEED SmugMug page to download energy graphics you and your students can use for classroom presentations. You can also view snapshots captured of NEED students and teachers learning and teaching about energy from the classroom, conferences, workshops, events, and more.

NEED'S YOUTUBE CHANNEL

www.youtube.com/user/NEEDproject

Need a refresher on how to use a multimeter or breadboard with your students? Want a visual overview of *Energy House*? Find great videos produced by NEED staff, teachers, students, and career experts teaching about energy, energy-saving tools, careers, and demonstrating fun activities.

CAREER AND TECHNOLOGY EDUCATION RESOURCES

The energy industry employs millions of Americans. Energy industry careers provide many options for students, regardless of the path they take beyond the K-12 environment. NEED has been compiling activities and free units that can help educate your classes on the types of jobs available. Some of our units are geared for the CTE classroom and will even help prepare them for industry specific careers in solar, hydropower, or the electricity generation industries, for example. Check out our Career and Workforce curriculum on **pages 29-30**, or head to **www.NEED.org/shop** to download. Visit **www.need.org/partners/need-career-and-workforce-development-programs** for more information on current programming and becoming a partner.

SOCIAL MEDIA

We're social! Friend, follow, and subscribe to keep updated with all we've got going on!

Friend us on Facebook at **www.facebook.com/NEEDProject**

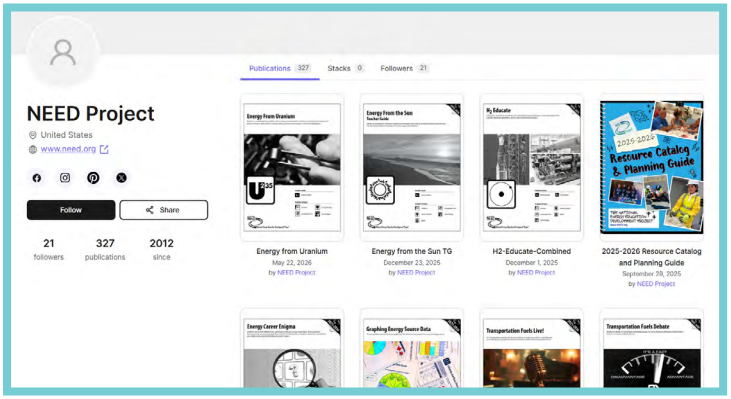
Follow us on X. **@NEED_Project**.

Follow us on Instagram and check out the photos taken at NEED events, **instagram.com/theneedproject**

Follow us on Pinterest and pin ideas to use in your classroom, **Pinterest.com/NeedProject**.

Subscribe to our YouTube channel for access to video lessons, career profiles, and more!
www.youtube.com/user/NEEDproject

Follow us on LinkedIn for NEED news and connections across the energy industry and education community.
linkedin.com/company/needproject



E-PUBLICATIONS

The NEED Project offers e-publication versions of various guides for classroom use. Guides that are currently available as an e-publication can be found at **www.issuu.com/theneedproject**.

STEP 1

SCIENCE OF ENERGY

ENERGY FLOWS

Grades 5-12

This hands-on activity explains the forms of energy and helps students to practice connecting energy transformations. It can be used as a stand-alone activity or a companion activity to the *Science of Energy* Kit.

ENERGY INFOBOOKS

Grades K-12

Energy Infobooks are the text-based resource for many NEED activities and include an introduction to energy, information on all ten primary sources of energy, electricity, hydrogen, energy conservation, climate change, and other energy information. They are available on four reading levels and are revised and updated annually.

Primary Energy Infobook **$5.50**

Elementary Energy Infobook **$5.50**

Class Set of 30 Elementary Energy Infobooks **$55.00**

Intermediate Energy Infobook **$5.50**

Class Set of 30 Intermediate Energy Infobooks **$65.00**

Secondary Energy Infobook **$5.50**

Class Set of 30 Secondary Energy Infobooks **$90.00**









ENERGYWORKS AND KIT

Grades 4-8

The *EnergyWorks* suite includes background information and hands-on experiments that explore motion, light, sound, heat, growth, and powering technology. Teacher demonstrations are also included.

The kit includes a Teacher Guide, one Student Guide, and most of the equipment necessary to conduct the experiments. Replacement parts can be purchased separately so that the kit can be used for many years. Prices and information about replacement items can be obtained by calling 1-800-875-5029.

Teacher and Student Guides **$8.00**

EnergyWorks Kit **$475.00**





SCIENCE OF ENERGY KIT

Primary Guide (Grades K-2)
Elementary Guide (Grades 3-5)
Intermediate Guide (Grades 6-8)
Secondary Guide (Grades 9-12)

The *Science of Energy* Kit works with all four levels of curriculum. The kit includes all four leveled guides (primary, elementary, intermediate, and secondary), which include detailed teacher instructions, student instructions for the six stations, laboratory safety procedures, and the equipment necessary to conduct the experiments. The stations include equipment to teach transformations, focusing on kinetic and potential energy, heat, light, motors, batteries, and electromagnetism.

In the Primary unit, students investigate tangible ways that energy transfers and identify the forms of energy they see, hear, and feel through different phenomena. Each of the six stations includes background information, a scripted teacher demonstration, reading, writing, and phonics support.

The Elementary, Intermediate, and Secondary units provide background information and hands-on experiments to explore the different forms of energy and how energy is transformed from one form to another. Groups of students master six stations, exploring experiments with leveled instructions, guided questions, and data collection. Students demonstrate their station and the knowledge gained by teaching their station to their classmates. Teacher demonstrations and reinforcement activities are also included.

A Class Set of Consumables is also available for purchase. For a list of supplies visit **www.NEED.org/shop**.

Primary, Elementary, Intermediate, or Secondary Guide **$8.00**

Science of Energy Kit..... **$325.00**

Class Set of Consumables..... **$55.00**

THERMODYNAMICS

Grades 9-12

This unit includes hands-on experiments that explore concepts of thermodynamics. The Teacher Guide contains detailed teacher instructions, a list of materials, answer keys for laboratory experiments, and a sample unit exam, while the Student Guide includes background information and student worksheets. Thermal energy topics covered include: molecular structure, conduction, convection, radiation, specific heat, heat of fusion, and heat of vaporization.



WHAT IS ENERGY? AND KIT

Grades K-3

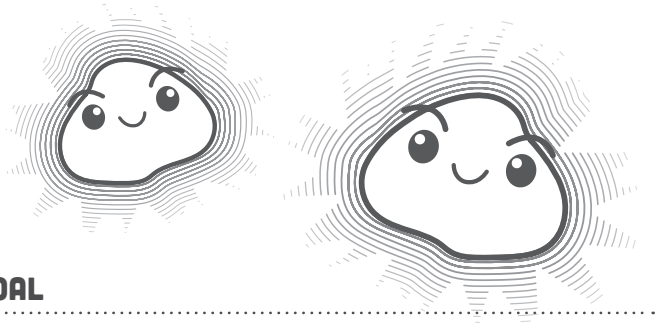
This unit for primary students includes background information and hands-on experiments to explore the fundamental concepts of energy while practicing their science process skills. Students explore the science of motion, heat, sound, and light with a series of simple activities that incorporate both Imperial and metric measurements, using safe student thermometers, balances, rulers, measuring tapes, beakers, and graduated cylinders. Students learn to make observations, measure, record results, compare and contrast, categorize, make predictions, analyze and graph results, and draw conclusions.

The *What is Energy?* Kit includes a comprehensive, step-by-step Teacher Guide with background information on the energy topics covered, instructional masters, and detailed instructions for each activity. The kit also includes one Student Guide and the materials needed for the students to conduct the experiments. Replacement parts can be purchased separately so that the kit can be used for many years. Prices and information about replacement items can be obtained by calling 1-800-875-5029.

Teacher and Student Guides **$8.00**

What is Energy? Kit..... **$300.00**

SOURCES OF ENERGY



COAL

Grades K-12

Through hands-on, multi-disciplinary activities and background reading, students learn about coal formation and chemical properties, coal mining, the uses of coal, its role in electricity generation, environmental impacts, and careers related to coal mining and electricity generation.

All About Coal (K-5)
Understanding Coal (6-8)
Exploring Coal (9-12)

ENERGY ENIGMA

Grades 7-12

This activity asks your energy sleuths to put on their detective hats! In order to solve this mysterious enigma, students will need to research clues, apply their knowledge, and work as a team. Teams use language arts strategies, critical thinking, and organizational skills to conceal the identity of their energy source while trying to guess which energy sources the other teams represent. Teacher instructions and instructional masters are included. A digital file version is available at www.NEED.org/shop.

ENERGY EXPOS – NEW FORMAT

Grades 4-12

Students will work to research and develop a visual exhibit and make presentations to teach others about energy topics. The guide includes a general teacher's guide to setting the stage for the project and presentations in both a paper and digital format. The guide also includes a rubric and/or guided research questions for each student or group to research, design their display, and prepare a presentation. Topics and guided questions cover the energy sources, electricity topics, transportation fuels and technologies, energy storage types, energy efficiency and conservation topics, impactful energy industry scientists, and careers in the energy industry. Energy Expos is a great introduction to any energy topic while reinforcing language arts, creative arts and soft skills, and is the perfect entry into NEED's *Kids Teaching Kids* pedagogy.

ENERGY GAMES AND ICEBREAKERS – NEW ACTIVITIES

Grades K-12

This guide contains entertaining activities to introduce energy content and reinforce the information that has already been presented. Activities make wonderful formative assessment tools for use during any energy unit, and can easily be adapted to fit any content. Check out a few NEW activities for 2026-2027: "Energy Beach Ball" and "Would You Rather".

ENERGY IN THE BALANCE

Grades 3-5

This activity introduces elementary students to the advantages and disadvantages of the primary energy sources through a series of critical thinking, charting, and graphing activities.

ENERGY INFOBOOKS

Grades K-12

Energy Infobooks are a text-based supporting resource for many NEED activities and include an introduction to energy, information on major sources of energy, electricity, hydrogen, energy conservation and efficiency, electricity, climate science, and other energy information. They are available in four reading levels and are revised and updated annually.

See page 13 for pricing.

ENERGY INFOBOOK ACTIVITIES

Grades K-12

These guides contain companion activities to the *Energy Infobooks*. They are available in four reading levels that correspond to the infobooks and include teacher guides and answer keys for general energy information, energy sources, electricity, and conservation. Digital versions of the activities can be accessed by visiting www.NEED.org/need-students/games-puzzles-activities.

ENERGY LIVE!

Grades 4-12

In this amped-up activity, student musical groups write songs and sing about energy sources, electricity, and conservation and efficiency. Audiences learn more from these energy stars as they tell their stories to interviewers out to get the latest energy scoop. Teacher and student instructions are included, along with sample songs and interviews to get students rockin' and rollin'.

ENERGY ON PUBLIC LANDS – VINTAGE NEED

Grades 6-8

Students learn about energy resources found on public lands and how they are managed by the Bureau of Land Management. This guide includes background information and cooperative learning activities for students to teach others.

ENERGY STORIES AND MORE

Grades K-5

This guide contains a series of stories and hands-on activities that can be used to introduce basic energy concepts and energy sources to primary and elementary students.

EXPLORING OCEAN ENERGY AND RESOURCES

Grades 5-12

In this unit, students learn and teach others about the energy and resources found in, under, and near the ocean, such as oil, natural gas, tides, waves, minerals, winds, and ocean currents. Students also explore the processes in which these energy sources are retrieved, how we care for the ocean environment, and how we clean up when accidents happen.

GRAPHING ENERGY SOURCE DATA

Grades K-2

This guide is a math skills-focused unit that provides primary students with an opportunity to read about and analyze energy data while practicing graphing and data collection skills. The activities use hands-on manipulatives, practice worksheets, and NEED's sidekick characters to introduce young learners to the ten sources of energy and data about their use.

GREAT ENERGY DEBATE

Grades 6-12

Students evaluate the advantages and disadvantages of the primary energy sources in a debate format. Each student group represents one of the energy sources and develops arguments on the merits of its energy source over the other energy sources. Teacher instructions and instructional masters are included.

THIS MINE OF MINE

Grades 2-6

This hands-on set of activities allows students to dig deep as they explore the formation, geology, recovery, and uses of coal, as well as reclamation of mine sites.

HYDROGEN CURRICULUM



H_2 EDUCATE AND KIT

Grades 6-12

Intermediate and secondary students are introduced to hydrogen as an important energy carrier — both as a fuel for distributed generation and as a transportation fuel. Students conduct experiments in electrolysis, learn about atomic structure and the periodic table, make molecular models, simulate how a fuel cell works, and explore a hydrogen fuel cell car kit. The kit includes a Teacher Guide, Student Guide, electrolysis apparatus and equipment, sodium sulfate electrolyte, molecular modeling materials, fuel cell simulation materials, and a model hydrogen fuel cell car kit with a detailed manual.

Teacher and Student Guides **$8.00**

H_2 Educate Kit..... **$425.00**

Class Set of Consumables..... **$85.00**

HYDROPOWER CURRICULUM

Written at four levels (primary, elementary, intermediate, and secondary), this curriculum teaches students about the water cycle, kinetic energy transformations, and electricity. The hydropower curriculum includes background information and hands-on, kit-based activities. Guides are included in the kits, but may also be purchased separately.



WATER AND ENERGY AND KIT

Grades K-2

Primary students are introduced to the forms of energy, properties of water as a solid, liquid, and gas, and the concept of moving water as an energy source through language arts and inquiry-based, hands-on activities. The kit includes a Teacher Guide, Student Guide, and the materials necessary to conduct the activities.

Teacher and Student Guides **$8.00**

Water and Energy Kit **$200.00**

Class Set of Consumables **$50.00**



WONDERS OF WATER AND KIT

Grades 3-5

Elementary students learn about the forms of energy, electricity, electrical circuits, properties of water, the water cycle, and how water is used as an energy source through reading, hands-on investigations, and language arts activities. The kit includes a Teacher Guide, Student Guide, and the materials necessary to conduct the activities.

Teacher and Student Guides **$8.00**

Wonders of Water Kit **$200.00**

Class Set of Consumables **$35.00**





ENERGY OF MOVING WATER AND KIT

Grades 6-8

In this unit, intermediate students will develop a comprehensive understanding of energy, electricity generation, hydropower facilities, and emerging ocean energy technologies through inquiry-based activities and background reading. The kit includes a Teacher Guide, Student Guide, and the materials necessary to conduct the activities. The kit also includes the materials needed to build six model hydropower turbines.

Teacher and Student Guides **$8.00**

Energy of Moving Water Kit..... **$500.00**

Class Set of Consumables..... **$105.00**



EXPLORING HYDROELECTRICITY AND KIT

Grades 9-12

These integrated and inquiry-based activities provide secondary students with a comprehensive study of the scientific, economic, environmental, technological, and societal aspects of hydropower. The kit includes a Teacher Guide, Student Guide, and the materials necessary to conduct the activities. The kit also includes the materials needed to build six model hydropower turbine generators.

Teacher and Student Guides **$8.00**

Exploring Hydroelectricity Kit..... **$425.00**

Class Set of Consumables..... **$200.00**

EXPLORING MARINE HYDROKINETICS

Grades 9-12

These integrated and inquiry-based activities provide high school students with a look into the emerging industry of marine energy and hydrokinetics. These activities will help students to learn more about harnessing energy from waves, tides, currents, and more.

YOUR FUTURE IN MARINE HYDROKINETICS

Grades 9-12

NEED worked with the National Laboratory of the Rockies to develop a marine energy unit for Career and Technology classrooms. This unit explores marine hydrokinetics, engineering and design, careers, and more to help prepare students to join this emerging industry!

Check out **pages 29-30** for more information on this and other career and workforce development units.



YOUR FUTURE IN HYDROPOWER

Grades 9-12

NEED worked with the National Laboratory of the Rockies to develop a hydropower unit for Career and Technology classrooms! This unit explores the "nuts and bolts" of everything related to conventional hydropower and takes a deeper dive into career readiness skills.

Teacher and Student Guides **$8.00**

Your Future in Hydropower Kit..... **$650.00**

NUCLEAR CURRICULUM



NUCLEAR ENERGY AND KIT – NEW ACTIVITIES

Grades 6-12

Through background information and hands-on activities, students will learn the chemistry and physics of isotopes, the uranium atom, the process of fission, how a nuclear power plant works to generate electricity, basic radiation science, the history and policy of nuclear energy, and advancements in nuclear generation and nuclear science. The kit includes both leveled guides for intermediate and secondary students with detailed teacher instructions, student worksheets, and necessary masters and manipulatives. The kit also includes a set of materials necessary to conduct the activities in both units.

Energy From Uranium (6-8) **$8.00**

Exploring Nuclear Energy (9-12) **$8.00**

Nuclear Energy Kit **$250.00**



OIL AND NATURAL GAS CURRICULUM



OIL AND NATURAL GAS AND KIT – NEW ACTIVITIES

Grades K-12

Through background reading and hands-on activities, students are introduced to oil and natural gas formation, composition and properties, exploration, production, processing and chemical manufacturing, liquefaction, transportation, marketing, uses, and careers in the oil and natural gas industries. Students will explore sound waves, take core samples, examine physical properties of the rocks that trap oil and natural gas, and practice recovering fluids from various structures. The kit includes all three leveled guides for primary, elementary, and intermediate/secondary students with detailed teacher instructions, student worksheets, and necessary masters and manipulatives. The kit also includes a set of materials necessary to conduct the activities in a station-style format. Looking for NEED's popular "Fossil Fuels to Products" content? Now you can find those activities and more within our Oil and Natural Gas guides!

Oil, Natural Gas, and Their Energy Guide (K-2) **$8.00**

Wonders of Oil and Natural Gas Guide (3-5) **$8.00**

Exploring Oil and Natural Gas Guide (6-12).....**$8.00**

Oil and Natural Gas Kit.....**$250.00**



SOLAR CURRICULUM

Written at four levels (primary, elementary, intermediate, and secondary), this curriculum helps students to learn about solar energy transformations including solar energy to thermal energy and solar energy to electricity. All levels include hands-on investigations and activities. Guides are included in the kits, but may also be purchased separately.



THE SUN AND ITS ENERGY AND KIT

Grades K-2

Primary students are introduced to solar energy with a read-aloud book and classroom-based activities. Students will learn that the sun's energy produces light, which is transformed in heat, powering the water cycle, producing wind, and even generating electricity through solar cells. The kit includes an all-encompassing teacher and student guide and the materials necessary to conduct the activities.

The Sun and Its Energy Guide..... **$8.00**

The Sun and Its Energy Kit..... **$275.00**

Class Set of Consumables..... **$70.00**



WONDERS OF THE SUN AND KIT

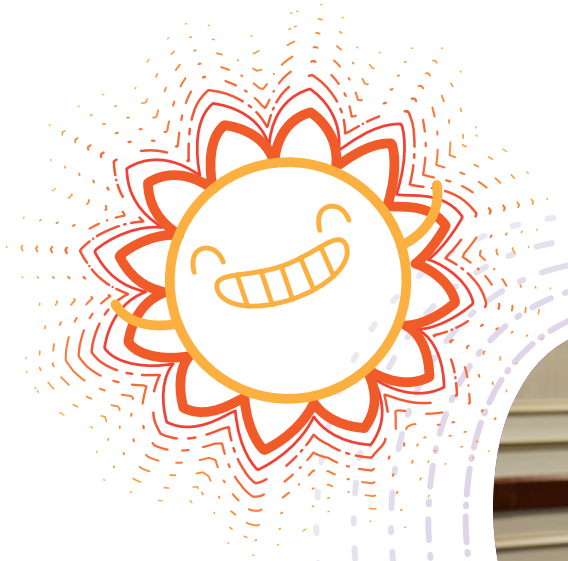
Grades 3-5

Elementary students develop a basic understanding of solar energy through background reading and classroom activities. Hands-on activities demonstrate solar energy transformations into kinetic energy, thermal energy, chemical energy, and electricity. The kit includes a Teacher Guide, a Student Guide, and the materials necessary to conduct the activities.

Teacher and Student Guides **$8.00**

Wonders of the Sun Kit..... **$350.00**

Class Set of Consumables..... **$65.00**







ENERGY FROM THE SUN AND KIT

Grades 6-8

Intermediate students learn about solar energy through investigations that explore radiant energy transforming into thermal energy, kinetic energy, chemical energy, and electricity. The kit includes a Teacher Guide, a Student Guide, and the materials necessary to conduct the activities.

Teacher and Student Guides **$8.00**

Energy From the Sun Kit..... **$375.00**

Class Set of Consumables..... **$50.00**

INTRODUCTION TO SOLAR PHOTOVOLTAICS

Grades 9-12

This curriculum unit was developed in partnership with the Illinois IBEW Renewable Energy Fund and the Chicago Federation of Labor Workforce and Community Initiative. It is designed to provide high school seniors with a one-semester introduction to photovoltaics, from the science of their functioning through the basics of installation.

SCHOOLS GOING SOLAR

Grades 6-12

This guide provides lessons and activities to support and incorporate installed photovoltaic systems and their data into the classroom learning environment. It is an excellent supplement to NEED's solar curriculum.



EXPLORING PHOTOVOLTAICS AND KIT

Grades 9-12

Secondary students learn how solar energy is used to generate electricity. Students are introduced to photovoltaic systems through the use of breadboards and explore the variables affecting electrical output. The kit includes a Teacher Guide, a Student Guide, and the materials necessary to conduct the activities.

Teacher and Student Guides **$8.00**

Exploring Photovoltaics Kit **$350.00**

SOLAR CAREERS PATHWAYS

Grades 9-12 or non-traditional

This unit, created in partnership with the Sacramento Municipal Utilities District (SMUD), introduces participants to career paths directly in or related to solar PV installation. It has been designed to be ten, four-hour sessions for high school seniors, recent graduates, or those seeking a career change. The unit is easily adapted to meet any combination of days to yield a total of 40 hours of training.



WIND CURRICULUM

Written at four levels (primary, elementary, intermediate, and secondary), this curriculum helps students learn about wind formation, the history of wind use, and how wind is used to generate electricity. All levels include multiple hands-on investigations and activities. Guides are included in the kits, but may also be purchased separately.



WIND IS ENERGY AND KIT

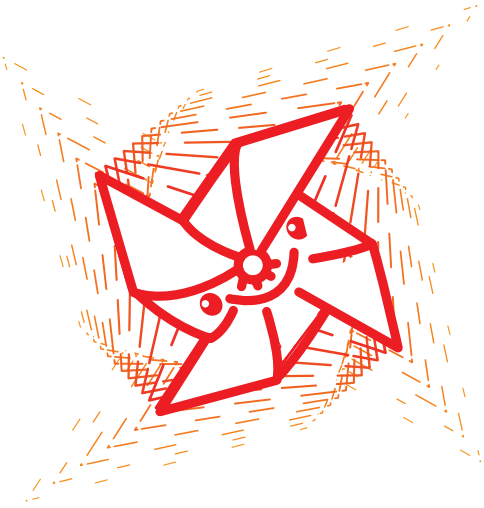
Grades K-2

In this unit, students may begin to develop an understanding of how wind is formed and used as an energy source through hands-on activities and leveled teacher-supported reading. Students will practice measuring wind speed and direction, and investigate how wind can do work. The kit comes with a Teacher Guide, a Student Guide, and the materials necessary to conduct the activities, including two KidWind™ Weightlifter Turbines.

Teacher and Student Guides **$8.00**

Wind is Energy Kit **$325.00**

Class Set of Consumables **$75.00**







WONDERS OF WIND AND KIT

Grades 3-5

Elementary students learn about wind through reading and hands-on activities that focus on observation and inquiry. Students will learn to measure wind speed and direction, and will investigate how wind does work and generates electricity. The kit comes with a Teacher Guide, a Student Guide, and the materials necessary to conduct the activities, including one KidWind™ Weightlifter Turbine and one KidWind™ Geared Turbine.

Teacher and Student Guides **$8.00**

Wonders of Wind Kit **$375.00**

Class Set of Consumables **$55.00**



ENERGY FROM THE WIND AND KIT

Grades 6-8

Intermediate students develop a comprehensive understanding of wind formation, wind energy, and electricity generation from wind through reading, critical thinking activities, hands-on investigations, and engineering challenges. The kit comes with a Teacher Guide, a Student Guide, and the materials necessary to conduct the activities, including two KidWind™ Geared Turbines.

Teacher and Student Guides **$8.00**

Energy From the Wind Kit **$575.00**

Class Set of Consumables **$55.00**



EXPLORING WIND ENERGY AND KIT

Grades 9-12

These hands-on, critical thinking activities help students develop a comprehensive understanding of the scientific, economic, environmental, technological, and societal aspects of wind energy. Students are challenged to design the optimum blades for a turbine and consider the best place to locate a turbine. The kit comes with a Teacher Guide, a Student Guide, and the materials necessary to conduct the activities, including two KidWind™ Geared Turbines.

Teacher and Student Guides **$8.00**

Exploring Wind Energy Kit **$575.00**

Class Set of Consumables **$55.00**

OFFSHORE WIND ENERGY AND KITS

Grades K-12

Through hands-on multidisciplinary activities and background reading, students learn about generating electricity from wind in the offshore setting. This unit, developed in partnership with Dominion Energy Charitable Foundation, is centered around what will become the largest offshore wind development in the U.S., located in coastal Virginia waters. However, the unit is great for exploring this growing industry across the globe, as students take a closer look at fixed bottom foundation wind turbines, and the economics, engineering, careers, and environmental considerations involved with bringing offshore wind energy to the people. The offshore wind curriculum kits are very similar to NEED's standard wind kits featured above, with a few additions and substitutions. A full listing of contents can be found by heading to **www.NEED.org/shop.**

Offshore Wind is Energy (K-2) **$325.00**

Wonders of Offshore Wind (3-5) **$400.00**

Energy from Offshore Wind (6-8) **$600.00**

Exploring Offshore Wind (9-12) **$650.00**

FLOATING OFFSHORE WIND

Grades 6-12

This unit was created in partnership with the U.S. Bureau of Ocean Energy Management (BOEM) and the National Laboratory of the Rockies. This unit provides students with hands-on activities and background information to understand the emerging technology of floating offshore wind turbines and why they might be selected for use in place of fixed-bottom systems. This unit is an excellent supplement to NEED's kit-based wind curriculum.

WIND FOR SCHOOLS

Grades 4-12

This guide provides lessons and data-driven activities to support and incorporate small wind systems into the classroom learning environment. It is an excellent supplement to NEED's wind curriculum.

YOUR FUTURE IN WIND ENERGY

Grades 9-12

NEED worked with the National Laboratory of the Rockies to develop a wind energy unit for Career and Technology classrooms. This unit explores the "nuts and bolts" of everything related to wind energy, both offshore and onshore, as students take a deeper dive into career readiness skills. See **page 30** for more information.

ELECTRICITY AND MAGNETISM

COAL, HYDROGEN, HYDROPOWER, OIL AND NATURAL GAS, NUCLEAR, SOLAR, AND WIND

These sources of energy units each include information on electricity generated from the energy sources that power our nation. The activities and text within each guide address how each source generate electricity, its generation, delivery to customers, technologies available, and even related careers. See descriptions of the curricula and kit inclusions on pages 15-23.

BASELOAD BALANCE

Grades 2-12

This activity set demonstrates how electricity supply is transmitted on the grid to consumers. It encourages students to explore the differences between baseload and peak demand power, and to examine how power companies and grid operators maintain reliable supply. The activity is designed as a simulation for upper-level students, or a demonstration with a double pan balance for younger students.

CURRENT ENERGY AFFAIR

Grades 6-12

This activity is modeled after a television news broadcast, with student-correspondents reporting on seven major areas of electric power generation.

ELECTROWORKS

Grades 4-7

This guide includes background information and hands-on experiments that explore the basic concepts of atomic structure and electricity. Center-based experiments on static electricity, batteries, magnets, electromagnetism, and circuits are included.

ENERGY EXPOS – NEW FORMAT

Grades 4-12

Students work in groups to develop hands-on exhibits and make presentations to teach others. Teacher and student directions for exhibits that focus on electricity and storage are included.

ENERGY GAMES AND ICEBREAKERS – NEW ACTIVITIES

Grades K-12

Energy Games and Icebreakers contains many games and activities that include or can be modified to cover electricity generation and transmission. Be sure to check out "Electric Connections," where students work individually and collaboratively to rank and debate the sources of energy for electricity generation before researching to find out their actual contributions.

ENERGY INFOBOOKS AND INFOBOOK ACTIVITIES

Grades K-12

Energy Infobook Activities contains activities to accompany the electricity factsheets in the four levels of the *Energy Infobooks*. See page 13 for Infobook pricing and availability.

ENERGY STORIES AND MORE

Grades K–5

This guide contains a series of stories and hands-on activities that can be used to introduce basic energy concepts, such as electricity, to primary and elementary students.

MISSION POSSIBLE

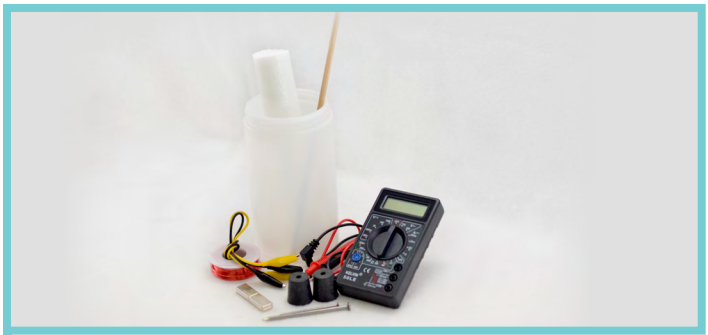
Grades 9-12

Mission Possible is an activity in which students are challenged to develop an energy plan to provide more electricity for a growing country. Students consider the advantages and disadvantages of the energy sources available for them to use so that they can increase electricity production while maintaining environmental quality and quality of life.

RELIABLY SMART

Grades 3-12

Students will learn about today's electric grid in this series of hands-on and multi-disciplinary activities. Developed in partnership with Generac, this guide helps students to explore electricity generation, transmission, storage, microgrids, smart systems and metering, and more!



THE SCIENCE OF ELECTRICITY AND KIT

Grades 5-12

This engineering and design activity tasks students with assembling their own generator model, using magnets, wire, and simple lab items. After assembling the model to specifications and observing its function, students can aim to optimize the design of the model, utilizing fewer or less costly materials to generate a larger amount of electrical output – a real-world challenge for electrical engineers. The *Science of Electricity* can be downloaded individually, but is also found within several of NEED's energy source units including coal, hydropower, and nuclear.

Science of Electricity Model Kit $70.00

WONDERS OF MAGNETS

Grades 1-4

Students explore the basics of magnets and magnetism through hands-on, center-based experiments.

STEP FOUR

TRANSPORTATION

ENERGY AND OUR RIVERS – VINTAGE NEED

Grades 6-12

This module examines how energy sources are transported along the nation's rivers. Hands-on science and social studies activities encourage students to think about the importance of rivers as modes of transportation.

ENERGY EXPOS – NEW FORMAT

Grades 4–12

Students work in groups to develop hands-on exhibits and make presentations to teach others. Teacher and student instructions for exhibits focusing on transportation fuels and other energy topics are included in this guide.

ENERGY STORIES AND MORE

Grades K-5

This guide contains a series of stories and hands-on activities that can be used to introduce basic energy concepts including transportation to primary and elementary students. For example, students learn about the formation of petroleum in "Under The Sea," drilling for oil in "Into Deep Water: Drilling for Oil and Gas," and about the oil embargo of 1973 in "A Car Trip for Carlos." Supplemental activities are included along with each story.

H_2 EDUCATE

Grades 6-12

This intermediate and secondary unit introduces students to hydrogen as an important energy carrier for the future, both as a fuel for distributed electricity generation and as a transportation fuel. See page 16 for kit details and pricing.

HYBRID BUSES – VINTAGE NEED

Grades K–12

These guides teach students about hybrid electric buses and encourage them to evaluate the economic and environmental advantages and disadvantages of such vehicles.

Hybrid Buses (K-5)

Exploring Hybrid Buses (6-12)

TRANSPORTATION

Grades 2-12

Students of all ages take an interest in transportation. In these guides, students will become familiar with modes of transportation, fuels used for transportation, and emerging technologies in transportation. Student backgrounders, vocabulary and math activities, and hands-on lab activities will help students to develop an understanding of the economic, environmental, and societal impacts of using various transportation fuels to move people and goods, and how they can become educated consumers as they choose how they get around.

Transportation Exploration (2-5)

Energy on the Move (6-12)

TRANSPORTATION FUELS DEBATE

Grades 6-12

Students evaluate the advantages and disadvantages of conventional and alternative transportation fuels in a debate format. Teacher instructions and instructional masters are included to help students develop arguments on the merits of each fuel.

TRANSPORTATION FUELS ENIGMA

Grades 7-12

Students put on their detective hats to research clues and uncover energy facts about transportation fuels in this cooperative learning activity. Teams use language arts strategies, critical thinking, and organizational skills to conceal the identity of their transportation fuel while trying to guess which fuels the other teams represent. Teacher instructions and instructional masters are included. A digital file version is available at www.NEED.org/shop.

TRANSPORTATION FUELS LIVE!

Grades 4-12

Student musical groups write songs and sing about transportation fuels in this amped up activity. Audiences learn more from these energy stars as they tell their stories to interviewers out to get the latest scoop. Teacher and student instructions are included, along with sample songs and interviews to get students rockin' and rollin'.

EFFICIENCY, CONSERVATION, AND CLIMATE CURRICULUM



SCHOOL ENERGY INSPECTORS

Grades 3-5

Elementary students are introduced to the basic concepts of energy use and energy efficiency and conservation, using the school setting as the laboratory for developing observations and collecting energy data. Lessons and activities in this unit have been designed in a series to build on one another, providing all the foundations elementary learners need to conduct a guided student energy audit of their classroom learning space. Students are encouraged to teach other classrooms energy saving behaviors and recognize each other for good energy-saving habits. The kit includes a Teacher Guide, a Student Guide, and the tools and materials necessary to measure and observe energy use.

Teacher and Student Guides **$8.00**

School Energy Inspectors Kit **$300.00**



SCHOOL ENERGY EXPERTS

Grades 6-8

Intermediate students are introduced to the concepts of energy, energy consumption, conservation and efficiency, and the economic and environmental effects of consuming energy. Hands-on activities in this unit use the school as a real-world laboratory to measure energy consumption in the school setting, while quantifying costs and impacts to their budget and their local environment. The lessons build upon one another, allowing students to explore heating and cooling, electricity, and lighting, before culminating in a building-wide audit. The kit includes a Teacher Guide, a Student Guide, and the tools and materials necessary to conduct the activities.

Teacher and Student Guides **$8.00**

School Energy Experts Kit..... **$400.00**

Class Set of Consumables..... **$55.00**



SCHOOL ENERGY MANAGERS

Grades 9-12

High school students get a firsthand glimpse at career applications and managing their energy use as they explore efficiency and conservation in this set of hands-on activities. The unit has been designed to reinforce student knowledge about energy sources and efficiency and conservation, while students assume the role of an energy manager to monitor school energy consumption data and change behaviors. *School Energy Managers* serves well as the classroom education component of a total energy management plan for secondary schools. Students will explore thermal energy and insulation, vapor barriers, ventilation, electricity, and lighting as they analyze their building and develop comprehensive management and conservation plans for their buildings. The kit includes a Teacher Guide, Student Guide, and the tools and materials necessary to conduct the activities.

Teacher and Student Guides **$8.00**

School Energy Managers Kit..... **$400.00**

Class Set of Consumables..... **$55.00**



BUILDING SCIENCE AND KIT – NEW ACTIVITIES

Grades 6-12

This unit teaches the science involved with keeping building occupants healthy and comfortable and the buildings energy-efficient. Activities introduce the house as a system as students explore conduction with insulation materials, investigate heat transfer using infrared thermometers, simulate home airflow, and test building performance measures. The kit includes an all-encompassing teacher and student guide, and all of the tools and materials necessary to conduct the activities.

Teacher/Student Guide **$8.00**

Building Science Kit..... **$625.00**

ENERGY CONSERVATION CONTRACT – NEWLY UPDATED

Grades 4-12

In this outreach activity, students learn about energy conservation and ask their families to sign contracts in which they agree to save energy. Students then calculate the energy savings, and re-evaluate their conservation measures.

ENERGY EXPOS – NEW FORMAT

Grades 4-12

Students work in groups to develop hands-on exhibits and make presentations to teach others. Teacher and student directions for exhibits that focus energy conservation are included.

ENERGY GAMES AND ICEBREAKERS – NEW ACTIVITIES

Grades K–12

This guide contains entertaining introductory energy activities and games that also reinforce efficiency and conservation measures. Activities include "Energy Chants," "Energy Bingo," "America's Most Wanted Energy Wasters," "Energy Web Game," and more!

ENERGY HOUSE

Grades 3-12

In this engaging hands-on activity, students work to build, insulate, and efficiently seal a model home's building envelope. Students gain an understanding of efficiency, conservation, and diminishing returns using a variety of insulating materials.

MANAGING HOME ENERGY USE

Grades 3-12

Managing Home Energy Use is an at-home supplement to NEED's School Energy unit. These activities follow the same six-lesson format as the in-school guides, and expand upon the energy efficiency and conservation knowledge gained while using the home as the learning laboratory. Students will work to apply observations from in-school lessons and teach their households about their knowledge gains and energy behavior changes as they conduct a step-by-step audit of their homes. Activities will help homeowners uncover energy and money saving actions right away. For more information on purchasing supplies for home energy use activities, contact NEED.

USING AND SAVING ENERGY

Grades K-2

This guide introduces students to basic concepts of energy use and conservation at home in a read-aloud format and provides suggested activities.

YOUR FUTURE IN ENERGY EFFICIENCY AND CONSERVATION – NEW

NEED worked in partnership with Mass Save Program Administrators to develop an energy efficiency and conservation unit for Career and Technology classrooms. The unit explores the "nuts and bolts" of energy use and energy systems in buildings and prepares students for careers in the industry. See page 30 for more information on this and other career-focused units.

FOR ADMINISTRATORS, FACILITIES STAFF, AND TRAINING

BLUEPRINT FOR SCHOOL ENERGY TEAMS

This guide is an excellent tool for schools seeking to lower energy related expenses by forming a student energy team and adopting school-wide energy policies. School leaders and administrators will find a comprehensive plan for getting started and managing ongoing programs while involving their student body. NEED's building operators and Certified Energy Managers can also lead building staff and students in trainings that help make the best use of energy technologies and behaviors.



CARBON CAPTURE, UTILIZATION, AND STORAGE – NEW ACTIVITIES

Grades 9–12

This guide incorporates informational text and hands-on explorations to teach students about the properties of carbon dioxide. Students also explore existing and developing technologies that allow carbon to be captured from stationary sources, utilized for production, or stored in geologic formations.

CHEMISTRY AND ENERGY EFFICIENCY

Grades 9–12

In this web-based curriculum, teachers and students take an in-depth look at chemistry in daily life, the use of energy by the chemistry industry, life cycles of products and activities, careers in the chemistry industry, and the impact the chemistry industry has on carbon dioxide production and climate change. Chemistry and Energy Efficiency can be viewed at www.NEED.org/Files/chemistry/ChemistryHome.html.

ENERGY INFOBOOKS

Grades K–12

Energy Infobooks are a great supporting resource for many NEED activities and include an introduction to energy, information on sources of energy, new technologies, energy conservation, electricity, climate science, and other energy information. They are available on four reading levels and are revised and updated annually. See page 13 for pricing.

PLUG LOADS – NEWLY UPDATED

Grades 6–12

This unit guides students through an in-depth investigation of electricity consumption by appliances and machines in the school building. Students gather data, calculate energy use and economic and environmental costs over time, and determine ways to reduce consumption. Students also explore phantom or vampire loads and the many operational modes electrical devices employ. Instructional masters are included and digital copies of spreadsheets are available at www.NEED.org/shop.

SOLID WASTE, ENERGY, AND RECYCLING

Grades K–12

Students learn about solid waste, its relationship to natural resources and energy, and options for handling solid waste including recycling, landfilling, waste-to-energy plants, and incineration.

All About Trash (K–2)

Talking Trash (3–5)

Museum of Solid Waste and Energy (6–12)

TODAY IN ENERGY

Grades K–8

These activities introduce students to the economics of energy use. Choices, trade-offs, and costs are explored using math and critical thinking skills.

CLIMATE CURRICULUM



CLIMATE SCIENCE AND KIT

Grades 6–12

Through background information, hands-on and critical thinking activities students will apply chemistry, geography, and earth sciences knowledge to take a closer look at climate science and the changing climate. Activities explore the basics of greenhouse gas molecules, carbon and the carbon cycle, the behaviors of carbon dioxide, the greenhouse effect, land and sea ice, ocean acidification, and energy consumption as it relates to greenhouse gas emissions. The kit includes both leveled guides for intermediate and secondary students with detailed teacher instructions, student worksheets, and necessary masters. The kit also includes a set of materials necessary to conduct the activities in both units.

Teacher/Student Guide **$8.00**

Understanding Climate Science Kit **$275.00**



CAREER AND WORKFORCE DEVELOPMENT RESOURCES

NEED works with partners to provide career-focused content to support energy careers education for traditional and specialized classrooms. Career-focused content can be its own module, focused on preparing workers for a job in a certain field, or the career content can be contained within a standard classroom-style unit to help reinforce content. Some units have associated kit contents available for purchase. For more information about partnering on future curriculum, or developing a training program, please contact NEED.

BUILDING SCIENCE – NEW ACTIVITIES

Grades 9-12

This unit teaches the science involved with keeping building occupants healthy and comfortable and the buildings energy-efficient. Activities introduce the house as a system, explore conduction with insulation materials, investigate heat transfer using infrared thermometers, simulate home airflow, and test building performance measures. A kit is also available for purchase. See page 25 for pricing.

COAL, HYDROPOWER, OIL AND NATURAL GAS, NUCLEAR, AND WIND

These sources of energy units each include career profiles, career activities, and career resources for teachers and students. The secondary level guides will include the more robust content, but careers content is included from the elementary level upward. Check each teacher guide for a listing of activities, and examine the student informational texts for descriptions and career profiles. See descriptions of the curricula and kit inclusions for each topic on pages 14-23.

ENERGY CAREER ENIGMA

Grades 6-12

Students put on their detective hats and research clues to uncover career facts. This cooperative learning activity accesses Language Arts and critical thinking skills, as students attempt to conceal their own career while guessing the opposing teams' careers. Teacher instructions and instructional masters are included for a small set of careers. A digital file version is available at www.NEED.org/shop that can be used for quick game play, or modified to select from a much larger set of careers.

ENERGY CAREERS EXCURSION

Grades 3-12

Introduce students to a variety of careers available within the energy industry and learn how even the most general career paths can be involved in bringing energy and electricity to the world around us. First, students identify and practice their soft skills, role-play different workplace personalities, and team up to staff and complete an engineering and design task. Then, put on critical thinking hard hats to explore energy-related careers during Energy Careers Roundup, the Energy Industry Guess Who game, and Energy Careers in the Round. The activities in this guide make excellent additions to any energy unit and are great for reinforcing soft skills and career-ready skills.

ENERGY EXPOS

Grades 4-12

Students work in groups to develop hands-on exhibits and make presentations to teach others. Teacher and student directions for exhibits that focus on energy careers are included.

ENERGY HOUSE

Grades 3-12

In this engaging hands-on activity, students work to build, insulate, and efficiently seal a model home's building envelope. Students gain an understanding of efficiency, conservation, and diminishing returns using a variety of insulating materials.

INTRODUCTION TO SOLAR PHOTOVOLTAICS

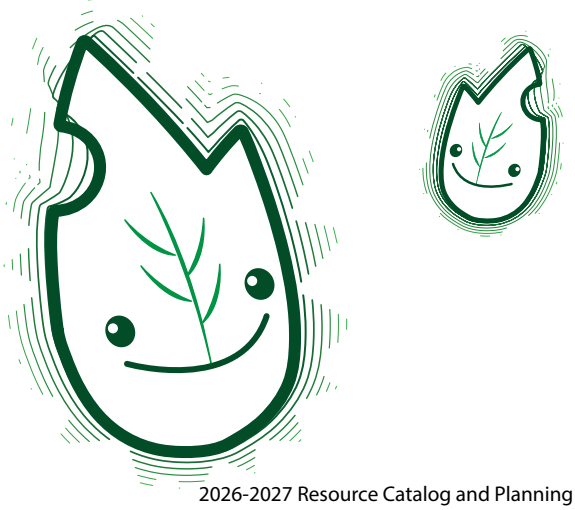
Grades 9-12

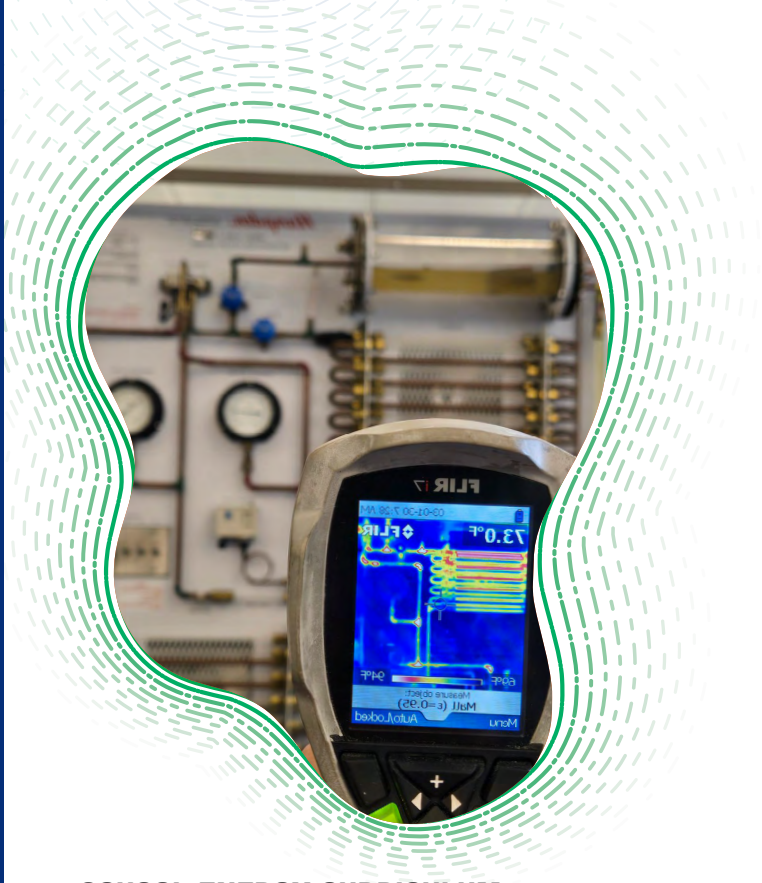
This curriculum unit was developed in partnership with the Illinois IBEW Renewable Energy Fund and the Chicago Federation of Labor Workforce and Community Initiative. It is designed to provide high school seniors with a one-semester introduction to photovoltaics, from the science of their functioning through the basics of installation.

MY FUTURE ENERGY CAREER

Grades K-2

This guide introduces students to a variety of careers that may be found in the energy industry. While learning about each career, students will practice specific job-related skills, practice soft skills needed to succeed in the workforce, and build and practice literacy skills. Each career has its own teacher guide, with suggested nonfiction and picture book titles, teacher demonstrations, graphic organizers, age-appropriate career assessments, and hands-on center ideas that use classroom materials. Choose one activity or try them all! Practice a welder's Arm-Hand Steadiness while building a tower; practice Scale and Proportion, a math skill used by architects, by measuring objects and distances using body parts; or practice an electrician's Finger Dexterity while lacing beads and picking up rice with tweezers. While this guide specifically showcases workers who build the world we live in—welders, green architects, electricians, and energy auditors—the model can be adapted for any career.





SCHOOL ENERGY CURRICULUM

Grades K-12

This efficiency and conservation curriculum for the classroom, gives students some of the actual tools used by energy auditors to measure their energy consumption. *School Energy Managers* for high school students, *School Energy Experts* for intermediate students, and *School Energy Inspectors* geared for elementary students, each give an introduction to energy consumption at the appropriate level as they work through hands-on activities. The unit culminates with students examining their building as a Certified Energy Manager or Auditor might do. See **page 25** for pricing and more details.

SOLAR CAREERS PATHWAYS

Grades 9-12 or non-traditional

This unit, created in partnership with the Sacramento Municipal Utilities District (SMUD), introduces participants to career paths directly in or related to solar PV installation. It has been designed to be ten, four-hour sessions for high school seniors, recent graduates, or those seeking a career change. The unit is easily adapted to meet any combination of days to yield a total of 40 hours of training.

YOUR FUTURE IN ENERGY EFFICIENCY AND CONSERVATION – NEW

NEED worked in partnership with Mass Save Program administrators to develop an energy efficiency and conservation unit for Career and Technology classrooms. The unit explores the "nuts and bolts" of energy use and energy systems in buildings and prepares students for careers in the industry.

YOUR FUTURE IN MARINE HYDROKINETICS

Grades 9-12

NEED worked with the National Laboratory of the Rockies to develop a marine energy unit for Career and Technology classrooms. This unit explores marine hydrokinetics (MHK), engineering and design, careers, and more to help prepare students to join this emerging industry!

YOUR FUTURE IN WIND ENERGY

Grades 9-12

NEED has worked with the National Laboratory of the Rockies to develope a wind energy unit for Career and Technology classrooms. This unit explores the "nuts and bolts" of everything related to wind energy, both offshore and onshore, as students take a deeper dive into career readiness skills.



YOUR FUTURE IN HYDROPOWER

Grades 9-12

This unit, created for use in Career and Technology Education programs and classrooms, contains hands-on activities to explore careers and opportunities within the hydropower industry. Students will get a comprehensive view of the tools, skills, and concepts necessary to prepare for a job in hydropower. Hands on activities in this unit cover everything from choosing the right tools, to gears, to water quality, and generating electricity. The kit includes a Teacher Guide, Student Guide, and tools and materials necessary to conduct most of the activities. Other necessary tools and materials can easily be gathered from the CTE classroom.

Teacher and Student Guides **$8.00**

Your Future in Hydropower Kit **$650.00**

STEP SIX

SYNTHESIS AND REINFORCEMENTS



ENERGY ANALYSIS – VINTAGE NEED

Grades 7-12

This activity emphasizes research and analysis of information in graph format. Activities encourage students to discern energy trends using the Energy Information Administration's raw data and reports and additional graphs within the Teacher Guide. Students will also analyze energy trends based on historical and societal events.

ENERGY AROUND THE WORLD – VINTAGE NEED

Grades 5-12

This guide includes maps and energy information for countries around the globe. Student groups research assigned countries and make presentations to the class that compare the United States' energy use to energy use around the world.

ENERGY CARNIVALS

Grades K-8

NEED's popular carnival games are an excellent way to encourage students and adults to think about energy. *Energy Carnival* contains complete instructions and reproducible masters for carnival games focusing on energy and energy efficiency. *Energy Carnival* is ideal for elementary or middle school students and makes an excellent activity for an energy fair or Earth Day celebration. *Primary Energy Carnival* contains similar games leveled appropriately for students in grades K-3.

Primary Energy Carnival (K-3)

Energy Carnival (4-8)



ENERGY EXPOS – NEW FORMAT

Grades 4-12

Students work in groups to develop hands-on exhibits and make presentations to teach others. Teacher and student directions for exhibits that focus energy conservation are included.

ENERGY FAIR

Grades 1-5

This module is a guide to teaching students experimental design with an emphasis on developing energy-related science fair projects. Sample science projects are also available on the NEED website at www.NEED.org/need-students/science-fair-projects.



ENERGY GAMES AND ICEBREAKERS – NEW ACTIVITIES

Grades K-12

This guide contains entertaining activities to introduce energy, efficiency, and conservation to students, as well as reinforce the information that has already been presented.

ENERGY IN THE BALANCE

Grades 3-5

This activity encourages elementary students to evaluate the advantages and disadvantages of the major energy sources through a series of charting and graphing activities.

ENERGY JEOPARDY

Grades 3-12

NEED's version of the popular television trivia game reviews and reinforces a variety of energy topics, including the science of energy, sources of energy, energy efficiency and conservation, electricity, transportation fuels, and energy careers. Students will buzz with excitement as they work in teams to answer Jeopardy, Double Jeopardy, and Final Jeopardy questions! Whether you play the Energy Sources version, or the General Knowledge version, all instructions and materials to run the game are included in the Teacher Guide. A convenient digital version of the game is available at www.NEED.org/shop.

ENERGY LIVE!

Grades 4-12

In this amped-up activity, student musical groups write songs and sing about energy sources, electricity, and conservation and efficiency. Audiences learn more from these energy stars as they tell their stories to interviewers out to get the latest energy scoops. Teacher and student instructions are included, along with sample songs and interviews to get students rockin' and rollin'.

ENERGY MATH CHALLENGE

Grades 3-12

Energy Math Challenge strengthens students' math and critical thinking skills while increasing their knowledge of energy. Students work individually or in teams to solve energy math problems.

ENERGY ON STAGE

Grades 3-12

Loaded with informative text, the plays in this resource will build and reinforce background knowledge about sources of energy and energy conservation. Each play includes a teacher guide with vocabulary, assessment questions, and extension ideas. Excellent for reader's theater, there are speaking parts for everyone. Join a pirate for an offshore treasure hunt, battle for the sun with Han Solar and Sunblacca, get stinky with Captain Biomass, investigate mysterious carbon footprints, and educate the spooky energy wasters on Elm Street. Get ready to take a bow!











GLOBAL TRADING GAME

Grades 5-12

In this cooperative learning activity developed by the Ohio Energy Project, students become economic advisors, geologists, international traders, and miners as they analyze their assigned country's resources and needs, then trade resources with other countries to enhance their economic position and environmental quality.

GRAPHING ENERGY SOURCE DATA

Grades K-2

This guide is a math skills-focused unit that provides primary students with an opportunity to read about and analyze energy data while practicing graphing and data collection skills. The activities use hands-on manipulatives, practice worksheets, and NEED's sidekick characters to introduce young learners to the ten sources of energy and data about their use.

GREEK MYTHOLOGY AND THE FORMS OF ENERGY

Grades 4-8

This guide provides resource materials and a teacher guide for incorporating Greek mythology into your science curriculum. This innovative interdisciplinary activity focuses on the forms of energy and was developed by Donna Quillen of North Carolina.

MYSTERY WORLD TOUR

Grades 4-8

In this activity, students identify the energy challenges of different countries around the world and compare them to the United States. Students create a proposal and a presentation to share with the class, who will tour and try to identify each mystery nation.

NEED SONGBOOK

Grades K-12

Reinforce energy concepts and sing along to NEED's favorite songs, including "The NEED Clap", "NEED students are High-Minded", "E-N-E-R-G-Y", and "What Do You Do With An Energy Waster?"

YESTERDAY IN ENERGY

Grades 4-8

This activity allows students to travel back in time without leaving the classroom. Students conduct interviews and do research to learn about and create exhibits depicting energy use in the good ol' days.

Evaluation and assessment are important components of any energy unit and should be ongoing. NEED offers many assessment and evaluation tools for teachers to use. Check out NEED's assessments and evaluation page for more information, example rubrics, and other tools: **www.NEED.org/educators/evaluations-assessment**.

ENERGY POLLS

Grades K–12

Use one of NEED's *Energy Polls* prior to beginning your unit and as you close your unit. There are polls on four reading levels—primary, elementary, intermediate, and secondary. Polls can be returned to NEED for analysis. Show us what your students are learning!

Many NEED guides and activities also contain unit exams and suggestions for how to evaluate student performance. Please feel free to modify these suggestions as necessary. Download the basic polls at **www.NEED.org/educators/evaluations-assessment**.

QUESTION BANK

Grades K–12

NEED's online Question Bank gives teachers the ability to customize evaluation tools for their energy units. There are questions at four grade levels: primary, elementary, intermediate, and secondary. At each grade level, the questions are divided into the following topics: Science of Energy and Forms of Energy, Sources of Energy, Electricity, Transportation, and Conservation and Efficiency. Under each topic, knowledge, comprehension, multiple choice, and higher order thinking questions are included. You can access the online Question Bank at **www.NEED.org/educators/evaluations-assessment**.

CURRICULUM CORRELATIONS

NEED has correlated all materials to meet relevant standards for learning. NEED materials support Next Generation Science Standards, Common Core State Standards for English/Language Arts and Mathematics, and individual state science standards, where applicable. Access the correlations files for the relevant standards by visiting NEED's evaluation page or the correlations page, **www.NEED.org/educators/curriculum-correlations**.







STEP EIGHT

STUDENT LEADERSHIP AND OUTREACH

An integral part of NEED's curriculum is the *Kids Teaching Kids* approach. Students are most authentically assessed when they have to share their knowledge with others. Encouraging students to become leaders in the classroom and school also helps ensure that students are empowered to become good stewards for energy awareness in their communities.

ENERGY OUTREACH OVERVIEW

Step One – Focus!

Effective energy outreach projects allow the whole class to get involved. Set your goals as a group. Identify the group(s) you want to reach with your activities. Do you want to focus on just your school, or do you want to include families, other schools, community leaders, senior citizens, or the whole community? It is also important to select the focus for your activities. Would you like to increase energy awareness, institute a school-wide program, do a community demonstration, correct individual problems, or change community policy? Maybe you've identified several focus points or goals. Make a folder or poster for each goal in your project, and assign committees of students to work on each.

Step Two – Plan it Out!

Student committees should meet to create a plan for each goal. Plans should identify the objectives, activities, estimated time, potential costs, materials needed, and who will be involved with helping to accomplish each goal. Ask students to think outside the box – who can they incorporate from the community? All groups should meet and discuss the plans as a whole class to create a master plan. Identify dates for each task to be completed. Mark dates on a calendar or timeline for the whole class.

Step Three – Work it Out!

Group members should sign up for tasks or select tasks to complete. Assist groups to make sure they have enough manpower to complete their projects. Committee members should work together, meet together, and accomplish their goal(s) to make sure the project is completed. Make sure each group is documenting their activities and taking pictures to share with their community and NEED!

Step Four – Take Pride!

Evaluate the progress of the projects at group meetings and as a class. Ask community members or school partners to evaluate your progress and share in your successes. Summarize your efforts for each goal and the overall master plan.

NOW WHAT?

The Youth Awards Program for Energy Achievement rewards students for their outreach efforts. We invite you to learn more about the program in our *Youth Awards Program Guide* and garner inspiration by viewing past winning projects and details on the NEED Youth Awards website **https://youthawards.need.org**.

YOUTH AWARDS PROGRAM OVERVIEW

The Youth Awards Program for Energy Achievement is a central component of NEED's evaluation and recognition, recognizing student leadership, encouraging students to evaluate their knowledge of energy, and providing ideas and programs that may be exchanged with other schools in the NEED program. NEED encourages all schools to participate in Youth Awards by having students document their energy activities and projects, and submit them to NEED for judging.

Students should keep track of their goals, activities, outreach opportunities, and their evaluations of their activities. Students will then create a digital project summarizing their efforts to submit for judging. Students can submit two different types of projects, depending on their engagement in the activities and outreach completed. The deadline for project submissions each year is April 15.

RECOGNITION

NEED's Youth Energy Conference and Awards Program gives students the opportunity to learn about energy and explore energy in STEM (science, technology, engineering, and math) by having students from across the country work in grade-level groups on an Energy Challenge designed to stretch their minds and utilize their energy knowledge and critical-thinking skills.

The Youth Energy Conference is held each June in Washington, D.C. The annual conference culminates with the Youth Awards Ceremony. Winning school groups whose projects fit the criterion for judging are eligible to attend this event. Other projects will also be recognized at the local level for their outstanding efforts in the classroom and community. We hope to see you in June!

YOUTH AWARDS PROGRAM GUIDE

For all the details on project descriptions, guidelines, how to apply, and submit, be sure to check out NEED's *Youth Awards Program Guide*. This guide is your go-to handbook for getting your students involved in energy outreach, leadership, and, of course, fun! It's packed with templates for student work, project ideas and tips, and even the judging rubric. Head over to **https://youthawards.need.org** to download the guide, see photos from past events, check out previous winning projects, and find FAQs.

EXPLORE MORE WITH NEED

CHECK OUT NEED'S CURRICULUM SAMPLERS PAGE

Sometimes NEED teachers and students have an interest in a hot topic or an emerging energy trend, but we don't have enough for a full curriculum guide and kit. NEED has created many "samplers" over the years to test out new activities and content and highlight some of the favorite, oldies-but-goodies in our library. Curriculum samplers are a nice way to cover a topic in a short time frame, and are great for classrooms that are newer to energy in general or a specific topic. Sampler activities are always set up with easy-to-source supplies for the classroom. Head to **www.NEED.org/shop** to find *Electric Vehicles and the Grid, Sidekick Circuits, Energy Escape, Energy House Village*, and many more!



NEED OFFERS MINI-KITS OF SOME OF YOUR FAVORITE SINGLE ACTIVITIES

NEED's student activity mini kits are a selection of favorite, tried-and-true lessons that work well for individuals and large groups. Purchase single, fully assembled sets for activities like *Energy House, Solar Oven, Sidekick Circuits,* and *Wind* or *Water Can Do Work*. Visit **www.NEED.org/shop** to learn more!



SEASONAL FAVORITES

Have some extra time in-class around the holidays? Energy content flows nicely into discussing seasonal events and celebrations like Thanksgiving, or when decorating for a holiday. These activities are fun, hands-on, and encourage students to access some of their math and problem-solving skills. Check out our collection of energy-themed, seasonal guides and activities. All are available for free download in PDF format. Visit **www.NEED.org/shop** and head to Seasonal Favorites to start the celebration.



NEED MERCHANDISE

www.NEED.org/shop



NEED T-SHIRTS

NEED t-shirts with the NEED 2026-2027 design. Shirts are available in adult sizes S-3XL. Call for availability.

T-Shirt (S, M, L, XL) **$12.00**

T-Shirt (2X, 3X) **$15.00**





POLAR BEAR AND FISH BUTTONS

Polar Bear and Fish Buttons for those who can figure out the answers to the fun riddles.

Polar Bear Button **$0.50**

Fish Button **$0.50**

(Riddles can be found online at www.NEED.org)

ORDER MATERIALS ONLINE!

Anemometers and solar cells and light meters—oh my! Getting your kits (or refills) has never been easier! Check out NEED's official online store at **www.NEED.org/shop**.

ADDITIONAL NEED MERCHANDISE

Did you attend a workshop or see a piece of merchandise online, but don't see it listed in the catalog? NEED merchandise varies throughout the year and is not always included in the catalog. For questions about additional merchandise e-mail **info@NEED.org**, or call 1-800-875-5029.



ENERGY LAB FOR KIDS

Prepared by Emily Hawbaker and the expert team at The NEED Project, the lab activities in this book will let you explore almost everything about energy - what it is, how we find it, how we use it, and how we can save it. Written for at-home or classroom energy explorations, this guide works well for all ages, but is geared especially for elementary and middle school students.

Energy Lab for Kids Book **$20.00**



NEED PENS

NEED pens are made from recycled plastic with NEED information imprinted on the shaft.

Pen **$1.50**



NEED PENCILS

NEED pencils demonstrate thermal to chemical energy transformations! It only takes a few seconds for the thermal energy from your hand to change the color of the pencil. NEED information is imprinted in black. Pencil colors vary.

Pencil **$0.50**

THE NEED PROJECT
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