

# Energy Literacy Framework

## A Quick Start Guide for Educators

Energy – it’s everywhere! When you turn on the lights, listen to the radio, heat your home, fuel your car, or use a computer, you are using energy. Energy is crucial to everything we do and experience. Understanding energy can help us make better informed decisions about our homes, communities, and our nation.

If you are new to energy education, then the following answers to questions about Energy Literacy will help you get started. Start thinking and teaching about energy from the natural to the social sciences. In this guide, you will find references to resources for implementing Energy Literacy concepts in your classroom using the links below.

### 1) What is Energy Literacy?

To help guide educators and the public on the big ideas of Energy Literacy, the U.S. Department of Energy published the Energy Literacy: Essential Principles and Fundamental Concepts for Energy Education. This framework provides the essential energy concepts that, if understood and applied,

will help students to make informed energy decisions. To download a copy or order for your school, go to:

<http://energy.gov/eere/education/downloads/get-free-copy-energy-literacy-framework>

### 2) Do I have to teach everything in the Energy Literacy framework?

No! No single person is expected to understand every detail about energy. The Energy Literacy framework helps to clarify key Principles to consider including in lessons. Your instruction is most likely to be effective when it focuses on

a small set of ideas at a time and takes into account what the student may have already learned.

To see the Energy Literacy Principles and Fundamental Concepts, download: [http://energy.gov/sites/prod/files/2014/09/f18/Energy\\_Literacy\\_Low\\_Res\\_3.0.pdf](http://energy.gov/sites/prod/files/2014/09/f18/Energy_Literacy_Low_Res_3.0.pdf)

### 3) Do I have to be a science teacher to teach Energy Literacy concepts?

No! Energy Literacy looks at energy through the lens of natural science as well as social science. Energy issues require an understanding of civics, history, economics, sociology, psychology, and politics in addition to science, technology, engineering and mathematics. Energy issues are inherently interdisciplinary and provide an excellent opportunity for you to create a curriculum that integrates multiple disciplines, is project-based, and connected to

the community – local, state, national and global; critical attributes of a twenty-first century curriculum.

For ideas about lessons that relate Energy Literacy to: Social Studies, go to: <http://go.usa.gov/3aXPT> Mathematics and English/Language Arts, download the “Teachers Guide” link at the bottom of: <http://energy.gov/eere/education/downloads/energy-literacy-videos>

### 4) I must implement my state’s standards. How do I relate the Energy Literacy framework to this requirement?

For most states, standards express the concepts and skills to be performed but leave curricular and instructional decisions to districts, schools, and teachers. The Energy Literacy framework is similar in its presentation and reflects what an Energy Literate student should know.

The fundamental concepts are designed to overlap state educational standards in meaningful and substantive ways. It is recommended that you look for alignment in the

standards you are required to implement and the concepts presented in the framework. For example:

For an alignment of the Energy Literacy Principles with the Next Generation Science Standards, go to: <http://energy.gov/eere/education/downloads/energy-literacy-videos>

At the bottom of the page, under the heading “Wondering how this all fits into the Next Generation Science Standards (NGSS)?,” click on “Energy Literacy Alignment Tools..”

## 5) How do I go about identifying learning experiences for students?

The framework clarifies the expectations of what an Energy Literate student will know. Those can guide the creation of a coherent instructional program that helps students achieve this understanding. After you have aligned your state's standards related to energy to the Fundamental Concepts

in Energy Literacy, you will need to identify the learning activities that will build your students' Energy Literacy.

Recognizing this crucial step, several organizations have developed resources to help you identify instructional activities that match your Energy Literacy objectives.

Three activities that are recommended as possible starting places are:

### **Elementary:** Fun with the Sun — Teacher's Activity Guide for Elementary Grades K-2

<http://energy.gov/eere/education/downloads/fun-sun-teachers-activity-guide-elementary-grades-k-2-1>

### **Middle School:** Energy for Keeps — Electricity and Renewable Energy Teacher Information

<http://energy.gov/eere/education/downloads/energy-keeps-electricity-and-renewable-energy-teacher-information>

### **High School:** Watt Does It Cost To Use It?

<http://energy.gov/eere/education/downloads/watt-does-it-cost-use-it>

These resources, and more, are available by searching the "Education Toolbox Search" at:

<http://energy.gov/education-toolbox/search>

The "Filter by Energy Literacy Principle" option allows you

to search for activities by Essential Principle. You can then filter results further by resource type, topic, and grade level.

You can also find additional resources at the following sites:

#### **CLEAN (Climate Literacy and Energy Awareness Network)**

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

The "Refine the Results" toolbar allows you to search for activities according to "Energy Literacy Principles."

#### **NARA (Northwest Advanced Renewables Alliance)**

[http://energyliteracyprinciples.org/advanced\\_search.aspx](http://energyliteracyprinciples.org/advanced_search.aspx)

The "Advanced Search" option allows you to search for grade level specific activities by Essential Principle or Fundamental Concept.

#### **Watt's Up? The Lowdown on Energy, American Geosciences Institute**

<http://www.agiweb.org/education/energy/index.html>

Provides activities according to energy resource topics. All activities are aligned to Energy Literacy Fundamental Concepts.

## 6) How can I develop my own Energy Literacy?

If you are interested in learning more about Energy Literacy as well as increasing your background knowledge of energy concepts, read the introductory pages of the Energy

Literacy Framework (pp. 1 – 4) at: [http://energy.gov/sites/prod/files/2014/09/f18/Energy\\_Literacy\\_Low\\_Res\\_3.0.pdf](http://energy.gov/sites/prod/files/2014/09/f18/Energy_Literacy_Low_Res_3.0.pdf)

You can also prepare by previewing these materials, all of which are also great resources for students:

#### **Energy Literacy Videos**

<http://energy.gov/eere/education/downloads/energy-literacy-videos>

Provides a series of videos that match the Essential Principles and Fundamental Concepts of the Energy Literacy Framework.

#### **Energy 101**

<https://www.youtube.com/playlist?list=PLACD8E92715335CB2>

A series of short videos that explain the fundamental concepts behind renewable energy sources and energy efficiency.

#### **Switch Energy Education Project**

<http://www.switchenergyproject.com/index.php>

This project works to build a base of understanding about energy, add a practical dimension to energy conversation, and promote energy efficiency.

## 7) What is the most important thing I can do to help students develop their Energy Literacy?

Get started, and enjoy learning with them about the many ways energy affects our lives.