

Careers in Energy and Natural Resources Curriculum



Every effort has been made to trace the ownership of copyrighted material and to make full acknowledgement of its use. If errors or omissions have occurred, they will be corrected in subsequent editions, provided that notification is submitted in writing to the publisher.



© 2025 Realityworks, Inc. All rights reserved.

2709 Mondovi Road
Eau Claire, WI 54701 USA

800.830.1416

+1.715.830.2040

www.realityworks.com

Table of Contents

Table of Contents	3
Curriculum Structure.....	4
Lesson One – Introduction to Energy and Natural Resources	5
FOCUS: Introduction to Resources.....	6
LEARN: Community Resource Evaluation	8
REVIEW: Community Energy Expert Panel	10
Lesson Two – Challenges in Resource Management.....	11
FOCUS: What Is Sustainability?.....	12
LEARN: Sustainability Case Studies.....	13
REVIEW: Case Study Themes	15
Lesson Three – Energy Solutions and Innovations.....	16
FOCUS: Green Technologies	17
LEARN: Exploring Sustainable Solutions.....	18
REVIEW: Solution Applications	20
Lesson Four – Careers in Energy and Natural Resources Management	21
FOCUS: Career Categories	22
LEARN: A Future in Energy and Resource Management	23
REVIEW: Reflection	25

Curriculum Structure

The *Careers in Energy and Natural Resources Curriculum* is composed of the following lessons. Approximate lesson times are included.

Lesson	Title	Approximate Time
One	Introduction to Energy and Natural Resources	60-75 minutes
Two	Challenges in Resource Management	65-85 minutes
Three	Sustainable Energy Solutions and Innovations	55-75 minutes
Four	Careers in Energy and Natural Resources Management	70-85 minutes
	Total	4-6 hours

Lesson Structure

Each lesson begins with a Lesson Overview, Lesson Objectives, and a Lesson at a Glance table, which lists the lesson activities, materials required, suggested preparation steps, and approximate class time.

Lesson Sections

The actual lesson follows the overview, which will contain some of the sections described below.

FOCUS

Every lesson begins with a FOCUS activity intended to capture participants' attention. This may be in the form of a small or large class discussion, game, review of previous lesson information, or demonstration. During this activity, participants are introduced to the topic of the lesson.

LEARN

The LEARN activity in each lesson varies in its presentation mode. It may be a slide presentation, group activity, or demonstration.

REVIEW

The majority of lessons end with a REVIEW activity intended to briefly review the lesson's key messages or main points.

Lesson One – Introduction to Energy and Natural Resources

Lesson Overview

In this lesson, participants will be introduced to renewable and nonrenewable resources systems. Participants will research and explore how these resources are used in their community.

Lesson Objectives

After completing this lesson, participants will be able to:

- Define natural resources and distinguish between renewable and nonrenewable resources
- Understand the global and local importance of energy and resource management

Lesson at a Glance

Activity	Materials	Preparation	Approximate Class Time
FOCUS	• <i>Renewable Versus Nonrenewable Sorting Activity</i>	1. Print/photocopy the <i>Renewable Versus Nonrenewable Sorting Activity</i> (one per small group).	15-20 minutes
LEARN	• Library and internet resources • <i>Community Resource Evaluation</i> worksheet	2. Print/photocopy the <i>Community Resource Evaluation</i> (one per participant).	30-60 minutes
REVIEW	• Questions for panel (optional)	1. Contact 3-5 local professionals who work in community energy production, transmission, installation, distribution, financing, or development and invite them to participate in a panel discussion. 2. Set up the room with panel seating in the front and audience facing the panel.	45-60 minutes

Lesson One – Introduction to Energy and Natural Resources

FOCUS: Introduction to Resources

15-20 minutes

Purpose:

Participants will identify the resources used in their daily lives.

Materials:

- *Renewable Versus Nonrenewable Sorting Activity*

Facilitation Steps:

1. Begin by posing the following questions to the class:
 - a. What is a “resource”?
 - b. What resources do you use from the moment you wake up until you arrive at school?
2. List student answers on the board.
3. Watch: [National Geographic: Natural Resources Overview](#)
4. Add to the discussion with this question: What makes a resource a “natural resource”?

Identify which of the students’ answers are natural resources.

5. Watch: [Video: Renewable vs Nonrenewable Energy from Next Generation Science.](#)
6. Divide students into small groups of two to four.
7. Provide each group with a set of resource cards.
8. Groups should work together to sort the cards into two categories:
 - a. Renewable Resources
 - b. Nonrenewable Resources
9. Discuss: What did your group identify as nonrenewable resources? For each, state why.

Renewable Versus Nonrenewable

Sorting Activity

Make resource cards by cutting along the dotted lines.

Coal

Oil

Wind

Solar

Natural Gas

Water (Hydropower)

Trees

Uranium

Tidal

Geothermal

Lesson One – Introduction to Energy and Natural Resources

LEARN: Community Resource Evaluation

30-60 minutes

Purpose:

Have participants take a closer look at how their community uses different resources. Information learned from the research will be shared with the group via a brief presentation.

Materials:

- Library and internet resources
- *Community Resource Evaluation* worksheet

Facilitation Steps:

1. Divide students into groups of two to four.
2. Assign each group one of the resource types from the FOCUS section's resource cards.
3. Each group should use their digital research skills to complete the *Community Resource Evaluation*.
4. Optional: Have groups choose different communities beyond the immediately local to examine a wider range of resource use.

Name: _____

Date: _____

Community Resource Evaluation

- A. What community are you evaluating?
- B. Satellite imagery of this community shows visual evidence of what types of natural resources? List the 5 most common in the *Resource* column of the Resource Evaluation Grid below.
- C. Research how the community uses each of these 5 resource types by completing the rest of the Resource Evaluation Grid.

RESOURCE EVALUTATION GRID

Resource	Renewable or Nonrenewable?	How is it used in the community?	How much energy does this resource produce for the community?	Rank each resource in its importance to providing energy to the community. #1 is the most important energy source for the community.

Lesson One – Introduction to Energy and Natural Resources

REVIEW: Community Energy Expert Panel

45-60 minutes

Purpose:

Hear from community energy professionals who work in a variety of careers that fall within the local energy systems pathway.

Materials:

- Panel of 3-5 local professionals who work in energy production, transmission, installation, distribution, financing, or development of community energy resources

Facilitation Steps:

1. Contact local energy systems-related businesses and invite employees to attend a panel discussion in your class. Local professionals from a variety of related businesses would provide interesting perspectives.
2. On the day of the panel discussion, set up your space so that there is a table with seating for all panel members at the front of the room. If sound is an issue, have a microphone available.
3. Invite participants in the audience to ask panel members questions. Remind participants ahead of time to keep questions relevant to work. You may ask participants to submit questions in advance if desired.

Lesson Two – Challenges in Resource Management

Lesson Overview

In this lesson, participants will explore major challenges in managing energy and natural resources.

Lesson Objectives

After completing this lesson, participants will be able to:

- Identify major environmental and social challenges in managing energy and natural resources
- Understand sustainability and conservation principles

Lesson at a Glance

Activity	Materials	Preparation	Approximate Class Time
FOCUS	• None	1. Prepare for a class discussion.	5-10 minutes
LEARN	• <i>Resource Management Case Study Guide</i>	1. Print <i>Resource Management Case Study Guide</i> (one per participant).	25 minutes
REVIEW	• None	1. Prepare for a class discussion.	10-15 minutes

Lesson Two – Challenges in Resource Management

FOCUS: What Is Sustainability?

5-10 minutes

Purpose:

Participants gain an overview of what sustainability is.

Materials:

- None

Facilitation Steps:

1. Facilitate a discussion with the class using this prompt, which may be presented or written in the front of the classroom: What happens when a resource runs out?
2. Encourage the conversation by asking students to imagine what the chain reaction of events would be if the most important resources suddenly were no longer available for a community to use.

Lesson Two – Challenges in Resource Management

LEARN: Sustainability Case Studies

25 minutes

Purpose:

Have participants examine how resource management can be a challenging and complex task.

Materials:

- *Resource Management Case Study Guide*

Facilitation Steps:

1. Divide class into groups of two to four.
2. Assign a case study to each group:
 - a. Amazon Deforestation
 - b. Cape Town Water Crisis
 - c. Overfishing in the Pacific
3. Working together in their groups, students should each complete the *Resource Management Case Study Guide*, using their research skills to collaboratively develop an understanding of their assigned case study and record the information needed.

Name: _____ Date: _____

Resource Management Case Study Guide

- A. What case study are you researching? _____
- B. Work with your group to research this case study. Add notes, ideas, statistics, and important points to the chart below to help create a full understanding of the challenge.

Question	Research Findings
What resource is being mismanaged?	
What caused the challenge?	
What are the consequences of this mismanagement? What are the effects on the people and environment?	
What could be done to improve the situation?	
What role do individuals or governments play?	
What barriers stand in the way of addressing this challenge?	

Lesson Two – Challenges in Resource Management

REVIEW: Case Study Themes

10-15 minutes

Purpose:

Participants will develop an understanding of how the different case studies are similar and identify themes in sustainability challenges.

Materials:

- None

Facilitation Steps:

1. Facilitate a class discussion with the goal of building a collective understanding of each case study's important dynamics. Use these prompts, recording student input for all to see:
 - a. What resource is being mismanaged?
 - b. What factors resulted in the mismanagement?
 - c. What needs to happen to address the challenge?
 - d. What barriers stand in the way?
2. Have students answer the questions below on a sheet of paper independently, turning in as an exit slip at the end of class. This could also be facilitated as a class discussion.
 - a. What are two common themes that connect all of these case studies?
 - b. Whose responsibility is it to address these challenges?

Lesson Three – Energy Solutions and Innovations

Lesson Overview

In this lesson, participants will explore innovations in sustainable energy and natural resource management, identifying the positives and negatives of different energy solutions.

Lesson Objectives

After completing this lesson, participants will be able to:

- Identify modern innovations in sustainable energy and natural resource management
- Articulate the benefits and limitations of various technologies

Lesson at a Glance

Activity	Materials	Preparation	Approximate Class Time
FOCUS	• None	1. Prepare for a class brainstorming session.	5-10 minutes
LEARN	• <i>Exploring Sustainable Solutions</i> worksheet	1. Print the <i>Exploring Sustainable Solutions</i> worksheet (one per participant).	30-45 minutes
REVIEW	• Completed worksheets from the LEARN section	1. Prepare for a class discussion.	10-20 minutes

Lesson Three – Energy Solutions and Innovations

FOCUS: Green Technologies

5-10 minutes

Purpose:

Scientists and engineers have been working to develop new ways to produce and conserve energy. Explore what students already know about these “green” technologies.

Materials:

- None

Facilitation Steps:

1. Facilitate a quick brainstorm with the class, recording student contributions for all to review:
 - a. What green technologies have you seen or heard of?
 - b. What does it mean to say a type of technology is green?

Lesson Three – Energy Solutions and Innovations

LEARN: Exploring Sustainable Solutions

30-45 minutes

Purpose:

Have participants build awareness of the benefits and limitations of different sustainability solutions.

Materials:

- *Exploring Sustainable Solutions* worksheet

Facilitation Steps:

1. Divide class into groups of five.
2. Assign each student in a group one of the five sustainable solutions in the worksheet.
3. Give students 15 minutes to research their assigned solution, using their research skills to fill in the table.
4. After 15 minutes, have students share with the rest of their group the research they conducted. As students listen to their group members, they should fill in the research on their own worksheet.

Name: _____ Date: _____

Exploring Sustainable Solutions

What solution are you researching? _____

Sustainable Solutions	How It Works	Positives	Negatives	Real-World Example
Solar Energy				
Wind Energy				
Green Building Design				
Water Conservation				
Urban Farming				
Biomass Fuel Energy				

Lesson Three – Energy Solutions and Innovations

REVIEW: Solution Applications

10-20 minutes

Purpose:

Participants will reflect on what they have learned about different sustainable technologies and evaluate their suitability in the local community.

Materials:

- Already completed *Exploring Sustainable Solutions* worksheet

Facilitation Steps:

1. Facilitate a class discussion using the following prompts:
 - a. Thinking about our community and its natural resources, which of these sustainable solutions would be wise to implement here?
 - b. Rank each sustainable solution by its ability to help our community effectively manage its natural resources. #1 is the most effective, and #6 the least.
2. Have students share their #1 and #6 rankings with the class. Record student's input collectively at the front of the room.
3. Discuss, as a class, the data that was collected:
 - a. Why did so many pick ____ as their first choice?
 - b. Why did so many pick ____ as their last choice?

Lesson Four – Careers in Energy and Natural Resources Management

Lesson Overview

Identify career paths related to energy and natural resource management. Connect educational requirements, needed skills, and the roles of professionals that work to effectively manage a community's resources.

Lesson Objectives

After completing this lesson, participants will be able to:

- Identify career paths related to energy and natural resource management
- Understand the education, skills, and roles of professionals in the sector

Lesson at a Glance

Activity	Materials	Preparation	Approximate Class Time
FOCUS	• None	1. Prepare for a class discussion.	5-10 minutes
LEARN	• <i>Career Opportunities in Energy and Resource Management</i> worksheet	1. Print the <i>Career Opportunities in Energy and Resource Management</i> worksheet (one per participant).	20-30 minutes
REVIEW	• <i>Career Opportunities in Energy and Resource Management</i> from LEARN section	N/A	20 minutes

Lesson Four – Careers in Energy and Natural Resources Management

FOCUS: Career Categories

5-10 minutes

Purpose:

Introduce students to four major categories of careers involved in the energy and natural resources field.

Materials:

- None

Facilitation Steps:

1. Share the following:
 - There are a wide variety of career opportunities available in the Energy and Natural Resources sector
 - We can categorize the different career paths into these 4 categories:
 - Natural Resources Management Careers
 - Energy Production Careers
 - Environmental and Sustainability Careers
 - Policy, Law, and Education Careers
 - Professionals in all 4 categories work together to meet the resource needs of the community they work in
2. Facilitate a discussion with the class to identify possible career titles for each of the four categories.
3. It may be helpful to write the four categories out so the whole class can see.
4. For each category, write out the suggested careers that students state.

Example Careers:

Natural Resources Management Careers

- Forester
- Wildlife biologist
- Conservation scientist
- Environmental consultant
- Park ranger
- Soil and water conservationist

Energy Sector Careers

- Energy engineer
- Renewable energy technician
- Petroleum engineer
- Power plant operator
- Energy analyst

Environmental and Sustainability Careers

- Environmental scientist
- Sustainability specialist
- Climate change analyst
- Urban planner

Policy, Law, and Education Careers

- Environmental policy analyst
- Natural resources lawyer
- Environmental educator
- Community outreach coordinator

Lesson Four – Careers in Energy and Natural Resources Management

LEARN: A Future in Energy and Resource Management

20-30 minutes

Purpose:

Students will choose two careers and research both pathway's roles, needed skills, educational requirements, and employment outlook.

Materials:

- *Career Opportunities in Energy and Resource Management* worksheet

Facilitation Steps:

1. Distribute the *Career Opportunities in Energy and Resource Management* worksheet.
2. Using their research skills, students should answer the questions posed on the worksheet for two careers that they might find interesting in this sector.
3. A trustworthy resource is the [U.S. Bureau of Labor Statistic's Occupational Outlook Handbook](#). Students can easily search the handbook for their career choices.

Notes: Students may need to adjust the title of their career to match the handbook's career titles.

Name: _____ Date: _____

Career Opportunities in Energy and Resource Management

- A. What 2 careers are you researching? *(write them in the cells at the top of each column in the table)*
- B. For each career path, use the [U.S. Bureau of Labor Statistic's Occupational Outlook Handbook](#) to research answers for each of the posted questions.

Career Research Questions	Career A: _____	Career B: _____
What do they do?		
What are specific job titles that exist in this career path?		
How do you become one?		
What is the median wage?		
What is the job outlook? <i>(projected % change)</i>		
What are some similar careers to this?		

Lesson Four – Careers in Energy and Natural Resources Management

REVIEW: Reflection

20 minutes

Purpose:

Participants will share and reflect on the different careers opportunities and identify employment trends that can inform future career decision-making.

Materials:

- *Career Opportunities in Energy and Resource Management* worksheet from the LEARN section

Facilitation Steps:

1. Have participants access the *Career Opportunities in Energy and Resource Management* worksheet.
2. Instruct participants to complete a short reflective essay that summarizes which career choice might be a better fit for them and why.
3. Allow participants to share their thoughts about a career in energy and natural resources before wrapping up this lesson. Specific questions can be:
 - a. What would you find most interesting?
 - b. What would be the most challenging for you?