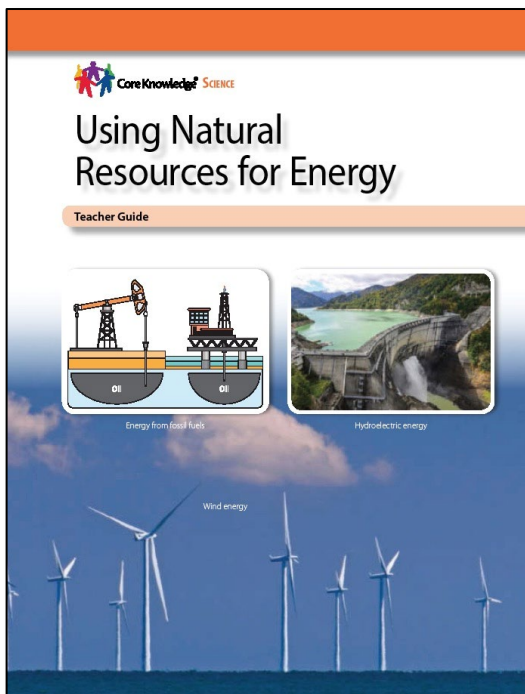


Using Natural Resources for Energy

Click on each lesson to access its online resources. Page numbers refer to pages in the Teacher Guide. Some links provide access to files created by the Core Knowledge Foundation, including PDF documents that you can download and view with the appropriate software (such as [Adobe Reader](#)).

	About This Unit
Part A	Lesson 1
Part B	Lesson 2
	Lesson 3
Part C	Lesson 4
	Lesson 5
	Lesson 6
	Lesson 7
	Lesson 8
Part D	Lesson 9
	Lesson 10
	Lesson 11
	Lesson 12
	Lesson 13
	Lesson 14
	Lesson 15
Part E Problem-Based Learning Project	Unit Capstone
	Teacher Resources



Extend and customize this unit for your students using the [CKSci Additional Activities](#)

About This Unit

Page	Resource Links
1	<p>Note to Teachers and Curriculum Planners</p> <ul style="list-style-type: none"> The learning progressions of Disciplinary Core Idea ESS3.A offers guidance regarding the scope and sequence of learning about Earth and Human Activity in the elementary grades and beyond. Learn more about this core idea and its related content by reading the corresponding section of A Framework for K-12 Science Education. <p>See also the Teachers Resources section of this guide.</p>
2	<p>Note to Core Knowledge Teachers: 2019 Core Knowledge Science Sequence for this unit: Domain—Using Natural Resources for Energy CKSci correlations to the 2010 Core Knowledge Sequence—</p> <ul style="list-style-type: none"> GRADE 3 GRADE 4 GRADE 5
3	<p>This unit has been informed by the following Next Generation Science Standards (NGSS) Performance Expectation:</p> <p>Topic—Reducing Impacts</p> <ul style="list-style-type: none"> 4-ESS3-1
13	Resources for Effective and Safe Classroom Activities
15	Materials Supply List: Grade 4 Unit 5 Using Natural Resources for Energy
18	Pacing Guides for CKSci Grades 3–5

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Part A: Problem-Based Learning Introduction

Lesson 1

Page	Resource Links
21	Performance Expectation: <ul style="list-style-type: none"> • 4-ESS3-1 Evidence Statements for 4-ESS3-1
	Disciplinary Core Idea: <i>ESS3.A Natural Resources</i> <ul style="list-style-type: none"> • From the Framework: Pages 191–192
	Crosscutting Concept: <i>Cause and Effect</i> <ul style="list-style-type: none"> • From the Framework: Pages 87–89
	Science and Engineering Practices: <i>Obtaining, Evaluating, and Communicating Information</i> <ul style="list-style-type: none"> • From the Framework: Pages 74–77

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Part B: Natural Resources: Renewable and Nonrenewable

Lesson 2

Page	Resource Links
28	Performance Expectation: <ul style="list-style-type: none"> • 4-ESS3-1 Evidence Statements for 4-ESS3-1
	Disciplinary Core Idea: <i>ESS3.A Natural Resources</i> <ul style="list-style-type: none"> • From the Framework: Pages 191–192
	Crosscutting Concept: <i>Cause and Effect</i> <ul style="list-style-type: none"> • From the Framework: Pages 87–89
	Science and Engineering Practices: <i>Obtaining, Evaluating, and Communicating Information</i> <ul style="list-style-type: none"> • From the Framework: Pages 74–77
32	[VIDEO OPTIONS] Chernobyl exclusion zone Renewable energy
33	[VIDEO] Fossil fuels

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Lesson 3

Page	Resource Links
36	Performance Expectation: <ul style="list-style-type: none"> • 4-ESS3-1 Evidence Statements for 4-ESS3-1
	Disciplinary Core Idea: <i>ESS3.A Natural Resources</i> <ul style="list-style-type: none"> • From the Framework: Pages 191–192
	Crosscutting Concept: <i>Cause and Effect</i> <ul style="list-style-type: none"> • From the Framework: Pages 87–89
	Science and Engineering Practices: <i>Obtaining, Evaluating, and Communicating Information</i> <ul style="list-style-type: none"> • From the Framework: Pages 74–77
38	[WEBLINK] Real or fake news

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Part C: Using Nonrenewable Resources for Energy Lesson 4

Page	Resource Links
43	Performance Expectation: <ul style="list-style-type: none"> • 4-ESS3-1 Evidence Statements for 4-ESS3-1
	Disciplinary Core Idea: <i>ESS3.A Natural Resources</i> <ul style="list-style-type: none"> • From the Framework: Pages 191–192
	Crosscutting Concept: <i>Cause and Effect</i> <ul style="list-style-type: none"> • From the Framework: Pages 87–89
	Science and Engineering Practices: <i>Obtaining, Evaluating, and Communicating Information</i> <ul style="list-style-type: none"> • From the Framework: Pages 74–77
47	[VIDEO] Fossil fuels

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Lesson 5

Page	Resource Links
49	Performance Expectation: <ul style="list-style-type: none"> • 4-ESS3-1 Evidence Statements for 4-ESS3-1
	Disciplinary Core Idea: ESS3.A <i>Natural Resources</i> <ul style="list-style-type: none"> • From the Framework: Pages 191–192
	Crosscutting Concept: <i>Cause and Effect</i> <ul style="list-style-type: none"> • From the Framework: Pages 87–89
	Science and Engineering Practices: <i>Obtaining, Evaluating, and Communicating Information</i> <ul style="list-style-type: none"> • From the Framework: Pages 74–77
56	[VIDEO OPTIONS] Deepwater Horizon oil rig Oil refinement

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Lesson 6

Page	Resource Links
58	<p>Performance Expectation:</p> <ul style="list-style-type: none"> • 4-ESS3-1 Evidence Statements for 4-ESS3-1 <hr/> <p>Disciplinary Core Idea: ESS3.A <i>Natural Resources</i></p> <ul style="list-style-type: none"> • From the Framework: Pages 191–192 <hr/> <p>Crosscutting Concept: <i>Cause and Effect</i></p> <ul style="list-style-type: none"> • From the Framework: Pages 87–89 <hr/> <p>Science and Engineering Practices: <i>Obtaining, Evaluating, and Communicating Information</i></p> <ul style="list-style-type: none"> • From the Framework: Pages 74–77
61	<p>[WEBLINKS]</p> <p>Research resource 1</p> <p>Research resource 2</p> <p>Research resource 3</p> <p>Research resource 4</p> <p>Research resource 5</p> <p>Research resource 6</p> <p>Research resource 7</p> <p>Research resource 8</p> <p>Research resource 9</p>

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Lesson 7

Page	Resource Links
63	Performance Expectation: <ul style="list-style-type: none"> • 4-ESS3-1 Evidence Statements for 4-ESS3-1
	Disciplinary Core Idea: ESS3.A <i>Natural Resources</i> <ul style="list-style-type: none"> • From the Framework: Pages 191–192
	Crosscutting Concept: <i>Cause and Effect</i> <ul style="list-style-type: none"> • From the Framework: Pages 87–89
	Science and Engineering Practices: <i>Obtaining, Evaluating, and Communicating Information</i> <ul style="list-style-type: none"> • From the Framework: Pages 74–77
66	[WEBLINK] Nuclear power comparison statistics [WEBLINK] State electricity generation
67	[VIDEO] Nuclear power summary

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Lesson 8

Page	Resource Links
68	<p>Performance Expectation:</p> <ul style="list-style-type: none"> • 4-ESS3-1 Evidence Statements for 4-ESS3-1 <p>Disciplinary Core Idea: <i>ESS3.A Natural Resources</i></p> <ul style="list-style-type: none"> • From the Framework: Pages 191–192 <p>Crosscutting Concept: <i>Cause and Effect</i></p> <ul style="list-style-type: none"> • From the Framework: Pages 87–89 <p>Science and Engineering Practices: <i>Obtaining, Evaluating, and Communicating Information</i></p> <ul style="list-style-type: none"> • From the Framework: Pages 74–77
71	<p>[WEBLINKS]</p> <p>Research resource 1</p> <p>Research resource 2</p> <p>Research resource 3</p> <p>Research resource 4</p> <p>Research resource 5</p> <p>Research resource 6</p> <p>Research resource 7</p> <p>Research resource 8</p>

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Part D: Using Renewable Resources for Energy

Lesson 9

Page	Resource Links
75	Performance Expectation: <ul style="list-style-type: none"> • 4-ESS3-1 Evidence Statements for 4-ESS3-1
	Disciplinary Core Idea: ESS3.A <i>Natural Resources</i> <ul style="list-style-type: none"> • From the Framework: Pages 191–192
	Crosscutting Concept: <i>Cause and Effect</i> <ul style="list-style-type: none"> • From the Framework: Pages 87–89
	Science and Engineering Practices: <i>Obtaining, Evaluating, and Communicating Information</i> <ul style="list-style-type: none"> • From the Framework: Pages 74–77
78	[WEBLINK] Nuclear electricity generation stats [WEBLINK] States' electricity generation [VIDEO] Wind power summary

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Lesson 10

Page	Resource Links
80	<p>Performance Expectation:</p> <ul style="list-style-type: none"> • 4-ESS3-1 Evidence Statements for 4-ESS3-1 <p>Disciplinary Core Idea: <i>ESS3.A Natural Resources</i></p> <ul style="list-style-type: none"> • From the Framework: Pages 191–192 <p>Crosscutting Concept: <i>Cause and Effect</i></p> <ul style="list-style-type: none"> • From the Framework: Pages 87–89 <p>Science and Engineering Practices: <i>Obtaining, Evaluating, and Communicating Information</i></p> <ul style="list-style-type: none"> • From the Framework: Pages 74–77
82	<p>[WEBLINK] Turbine design background information</p> <p>[VIDEO] Turbine design background [0:35]</p>
83	<p>[WEBLINKS]</p> <p>Research resource 1</p> <p>Research resource 2</p> <p>Research resource 3</p> <p>Research resource 4</p> <p>Research resource 5</p> <p>Research resource 6</p>

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Lesson 11

Page	Resource Links
85	<p>Performance Expectation:</p> <ul style="list-style-type: none"> • 4-ESS3-1 Evidence Statements for 4-ESS3-1 <p>Disciplinary Core Idea: ESS3.A <i>Natural Resources</i></p> <ul style="list-style-type: none"> • From the Framework: Pages 191-192 <p>Crosscutting Concept: <i>Cause and Effect</i></p> <ul style="list-style-type: none"> • From the Framework: Pages 87-89 <p>Science and Engineering Practices: <i>Obtaining, Evaluating, and Communicating Information</i></p> <ul style="list-style-type: none"> • From the Framework: Pages 74-77
88	<p>[IMAGE] Hydroelectric dam</p> <p>[VIDEO OPTIONS]</p> <p>Fish ladder 1</p> <p>Fish ladder 2</p> <p>Fish ladder 3</p> <p>Tidal movement 1</p> <p>Tidal movement 2</p> <p>Tidal power</p>

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Lesson 12

Page	Resource Links
91	Performance Expectation: <ul style="list-style-type: none"> • 4-ESS3-1 Evidence Statements for 4-ESS3-1
	Disciplinary Core Idea: ESS3.A <i>Natural Resources</i> <ul style="list-style-type: none"> • From the Framework: Pages 191-192
	Crosscutting Concept: <i>Cause and Effect</i> <ul style="list-style-type: none"> • From the Framework: Pages 87-89
	Science and Engineering Practices: <i>Obtaining, Evaluating, and Communicating Information</i> <ul style="list-style-type: none"> • From the Framework: Pages 74-77
94	[WEBLINKS] Research resource 1 Research resource 2 Research resource 3 Research resource 4 Research resource 5 Research resource 6

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Lesson 13

Page	Resource Links
96	<p>Performance Expectation:</p> <ul style="list-style-type: none"> • 4-ESS3-1 Evidence Statements for 4-ESS3-1 <p>Disciplinary Core Idea: ESS3.A <i>Natural Resources</i></p> <ul style="list-style-type: none"> • From the Framework: Pages 191-192 <p>Crosscutting Concept: <i>Cause and Effect</i></p> <ul style="list-style-type: none"> • From the Framework: Pages 87-89 <p>Science and Engineering Practices: <i>Obtaining, Evaluating, and Communicating Information</i></p> <ul style="list-style-type: none"> • From the Framework: Pages 74-77
99	<p>[VIDEO OPTIONS]</p> <ul style="list-style-type: none"> • Concentrated solar power 1 • Concentrated solar power 2 • Solar oven designs

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Lesson 14

Page	Resource Links
101	<p>Performance Expectation:</p> <ul style="list-style-type: none"> • 4-ESS3-1 Evidence Statements for 4-ESS3-1 <p>Disciplinary Core Idea: ESS3.A <i>Natural Resources</i></p> <ul style="list-style-type: none"> • From the Framework: Pages 191-192 <p>Crosscutting Concept: <i>Cause and Effect</i></p> <ul style="list-style-type: none"> • From the Framework: Pages 87-89 <p>Science and Engineering Practices: <i>Obtaining, Evaluating, and Communicating Information</i></p> <ul style="list-style-type: none"> • From the Framework: Pages 74-77
104	<p>[WEBLINKS]</p> <p>Research resource 1</p> <p>Research resource 2</p> <p>Research resource 3</p> <p>Research resource 4</p> <p>Research resource 5</p> <p>Research resource 6</p> <p>Research resource 7</p>

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Lesson 15

Page	Resource Links
106	Performance Expectation: <ul style="list-style-type: none"> • 4-ESS3-1 Evidence Statements for 4-ESS3-1
	Disciplinary Core Idea: ESS3.A <i>Natural Resources</i> <ul style="list-style-type: none"> • From the Framework: Pages 191-192
	Crosscutting Concept: <i>Cause and Effect</i> <ul style="list-style-type: none"> • From the Framework: Pages 87-89
	Science and Engineering Practices: <i>Obtaining, Evaluating, and Communicating Information</i> <ul style="list-style-type: none"> • From the Framework: Pages 74-77
109	[VIDEO] Geothermal energy summary

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Lesson 16

Page	Resource Links
111	<p>Performance Expectation:</p> <ul style="list-style-type: none"> • 4-ESS3-1 Evidence Statements for 4-ESS3-1 <p>Disciplinary Core Idea: ESS3.A <i>Natural Resources</i></p> <ul style="list-style-type: none"> • From the Framework: Pages 191–192 <p>Crosscutting Concept: <i>Cause and Effect</i></p> <ul style="list-style-type: none"> • From the Framework: Pages 87–89 <p>Science and Engineering Practices: <i>Obtaining, Evaluating, and Communicating Information</i></p> <ul style="list-style-type: none"> • From the Framework: Pages 74–77
113	<p>[WEBLINKS]</p> <p>Research resource 1</p> <p>Research resource 2</p> <p>Research resource 3</p> <p>Research resource 4</p> <p>Research resource 5</p>

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Lesson 17

Page	Resource Links
115	Performance Expectation: <ul style="list-style-type: none"> • 4-ESS3-1 Evidence Statements for 4-ESS3-1
	Disciplinary Core Idea: <i>ESS3.A Natural Resources</i> <ul style="list-style-type: none"> • From the Framework: Pages 191–192
	Crosscutting Concept: <i>Cause and Effect</i> <ul style="list-style-type: none"> • From the Framework: Pages 87–89
	Science and Engineering Practices: <i>Obtaining, Evaluating, and Communicating Information</i> <ul style="list-style-type: none"> • From the Framework: Pages 74–77
118	[VIDEO] Hybrid vehicle

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 [Unit Capstone →](#)

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Online Resources

Problem-Based Learning Project Unit Capstone: Analysis Report

Page	Resource Links
122	Performance Expectation: <ul style="list-style-type: none">• 4-ESS3-1 Evidence Statements for 4-ESS3-1
	Disciplinary Core Idea: <i>ESS3.A Natural Resources</i> <ul style="list-style-type: none">• From the Framework: Pages 191–192
	Crosscutting Concept: <i>Cause and Effect</i> <ul style="list-style-type: none">• From the Framework: Pages 87–89
	Science and Engineering Practices: <i>Obtaining, Evaluating, and Communicating Information</i> <ul style="list-style-type: none">• From the Framework: Pages 74–77
	[WEBLINK] Classroom website building resources

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[Teacher Resources](#) →

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Teacher Resources

Page	Resource Links
13	Resources for Effective & Safe Classroom Activities (<i>also, see below re: page 164</i>)
15	Materials Supply List: Grade 4 Unit 5 Using Natural Resources for Energy
156	Activity Pages Answer Key
164	Safety in the Science Classroom: <ul style="list-style-type: none"> • NSTA Safety Resources • Safety Resources for Elementary Teachers
	Teacher Guide Appendices: <ul style="list-style-type: none"> • Appendix A – Glossary • Appendix B – Safety for Activities • Appendix C – Strategies for Acquiring Materials • Appendix D – Advance Preparation • Appendix E – Unexpected Activity Results

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