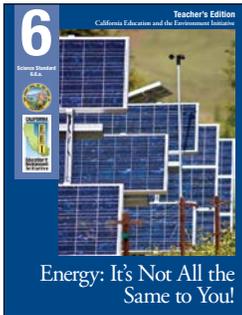




TEACH COMMON CORE STANDARDS WITH THE EEI CURRICULUM

Created with your needs in mind, this document shows the correlation between the EEI Curriculum and the California Common Core State Standards. By teaching the EEI unit lessons in your classroom, you will be simultaneously addressing the Common Core standards depicted in this guide.

6.6.a.—Energy: It’s Not All the Same to You!



In this unit, students learn about the eight energy sources, each with its own costs and benefits. This unit engages students with in-depth examination of these varied energy sources. They learn that conversion is a necessary step in the energy use process. In conducting a cost/benefit analysis, students learn to consider not only the byproducts involved in extracting, tapping, and harnessing the natural energy resources, but also the byproducts created in the conversions necessary to produce useful energy—electricity—from these natural energy resources.

		RI.6.1 and RST.6–8.1	RI.6.2 and RST.6–8.2	RI.6.3 and RST.6–8.3	RI.6.4 and RST.6–8.4	RI.6.5 and RST.6–8.5	RI.6.7 and RST.6–8.7	RI.6.9 and RST.6–8.9	RI.6.10 and RST.6–8.10	W.6.1 and WHST.6–8.1	W.6.2 and WHST.6–8.2	W.6.4 and WHST.6–8.4	W.6.8 and WHST.6–8.8	W.6.9 and WHST.6–8.9	SL.6.1	SL.6.2	SL.6.4	SL.6.5	L.6.4	L.6.5	L.6.6
LESSONS	California Connections		✓		✓	✓					✓									✓	
	1				✓		✓	✓	✓		✓				✓	✓				✓	
	2		✓		✓			✓							✓	✓				✓	✓
	3	✓	✓	✓	✓						✓		✓			✓				✓	
	4	✓		✓	✓					✓	✓				✓	✓	✓			✓	
	5	✓		✓	✓					✓	✓			✓		✓	✓			✓	
	Traditional Assessment										✓		✓							✓	
Alternative Assessment							✓			✓		✓						✓			
		COMMON CORE STANDARDS																			

Note: For your reference, the list of California Common Core State Standards abbreviations is on the following page.

Using the EEI-Common Core Correlation Matrix

The matrix on the front page identifies a number of Common Core standards that are supported by this EEI unit. However, the check marks in the matrix do not necessarily signify that the Common Core standards checked will be taught to mastery by using this EEI unit alone. Teachers are encouraged to select which Common Core standards they wish to emphasize, rather than teaching to every indicated standard. By spending more time on selected standards, students will move toward greater Common Core proficiency in comprehension, critical thinking and making reasoned arguments from evidence. Teaching this EEI unit will provide opportunities for teachers to implement the shift in instructional practice necessary for full Common Core implementation.

California Common Core State Standards Abbreviations

- **CCSS:** California Common Core State Standards
- **L:** Language Standards
- **RI:** Reading Standards for Informational Text
- **RST:** Reading Literacy Standards in Science and Technical Subjects
- **SL:** Speaking and Listening Standards
- **W:** Writing Standards
- **WHST:** Writing Standards for Literacy in History/Social Studies, Science, and Technical Subjects

Note: Since each Common Core standard includes a breadth of skills, in this correlation, the portion of the standard description that is featured in the Common Core Standards Applications is cited, using “...” to indicate omitted phrases. For a list of the complete standard descriptions, please see the Common Core Reference Pages located on pages 18–20 of this document.

Where English Language Arts Standards and Literacy Standards are combined, verbiage from the standard that most specifically matches the activity is used to represent both standards, since usually both differ only slightly. Where the standards have significant differences in how they apply to the lesson activity, they are listed separately.

A Note about Speaking and Listening Common Core Standards

Many of the EEI units provide various learning structures, materials, and groupings that lead toward students working in pairs or small groups to discuss concepts and ideas. This supports the skill in Speaking and Listening Standard 1 “Participate effectively in a range of collaborative discussions (one-on-one, groups...) with diverse partners.” With prior instruction in collaborative discussion techniques, students can be placed in pairs or small groups to discuss the lesson topics. To aid in teacher planning, the lessons are listed below along with their learning structures for whole class, pairs/partners, and/or small groups:

- **Lesson 1:** Whole class, partners
- **Lesson 2:** Whole class, partners, 8 groups
- **Lesson 3:** Whole class, 8 groups (same as previous)
- **Lesson 4:** Whole class, small groups
- **Lesson 5:** Whole class, 8 groups (same as previous)

National Geographic Resources

- **Energy Resources** wall map (Lessons 1 and 4)
- **Natural Regions** wall map (Lesson 4)

Unit Assessment Options

Assessments	Common Core Standards Applications
Traditional Assessment	
<p>Students answer multiple-choice and short-answer questions including a table that notes the cost and benefit of using each of the noted energy sources.</p>	<p>L.6.4: Determine or clarify the meaning of unknown... words...</p> <p>L.6.6: ...use accurately grade-appropriate general academic and domain-specific words and phrases...</p> <p>W.6.1b and WHST.6–8.1b: Support claim(s) with clear reasons and relevant evidence,...demonstrating an understanding of the topic or text.</p> <p>W.6.4 and WHST.6–8.4: Produce clear and coherent writing in which the development, organization, and style are appropriate to task, purpose, and audience.</p>
Alternative Assessment	
<p>Students create a booklet describing different energy sources. <i>Tip: Booklets can be done digitally or manually.</i></p>	<p>RI.6.7 and RST.6–8.7: Integrate information presented in different media or formats (e.g., visually, quantitatively) as well as in words to develop a coherent understanding of a topic or issue.</p> <p>SL.6.5: Include multimedia components...and visual displays in presentations to clarify information.</p> <p>W.6.1b and WHST.6–8.1b: Support claim(s) with clear reasons and relevant evidence,...demonstrating an understanding of the topic or text.</p> <p>W.6.4 and WHST.6–8.4: Produce clear and coherent writing in which the development, organization, and style are appropriate to task, purpose, and audience.</p>

Lesson 1: Energy Sources and Resources

Students watch a video on electricity generation in California and consider how their community uses energy. They graph the energy sources used to generate electricity and compare California’s “power mix” to that of the United States.



National Geographic Resources

- Energy Resources wall map

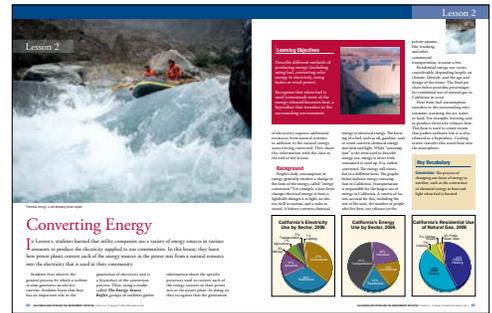
Use this correlation in conjunction with the **Procedures** located on pages 36–37 of the Teacher’s Edition. Only procedure steps with a Common Core correlation are included in the table below.

Student Tasks	Common Core Standards Applications
<p>Vocabulary Development: For depth of understanding, vocabulary may be featured within the context of the unit instead of or in addition to the beginning of the lesson.</p> <p><i>Tip: If Dictionary Workbooks need to be reused from year to year, students should not write in them.</i></p>	<p>L.6.4c: Consult reference materials... to...determine...[a word’s] meaning...</p> <p>RI.6.4 and RST.6–8.4: Determine the meaning of...key terms, and other domain-specific words and phrases as they are used in a specific scientific... context...</p>
<p>Step 1: While discussing the information presented in this step, students should paraphrase and/or summarize given details to enhance comprehension.</p>	<p>RI.6.7 and RST.6–8.7: Integrate information presented in different media or formats (e.g., visually, quantitatively) as well as in words to develop a coherent understanding of a topic or issue.</p>
<p>Steps 2 and 3: Students read <i>California Connections: Powered by Electricity</i> and watch the video <i>You’ve Got the Power</i>.</p> <p>After students have watched the video, ask them to add to the “Uses” and “Sources” lists on the board, using information they gathered from <i>You’ve Got the Power</i>.</p> <p>Explain that the power mix may vary from one service area in California to another. Ask students why they think that might be true. (<i>Some sources are not available in all areas of the state, so the utility company uses the sources that are available.</i>)</p> <p>Suggestion: Refer to the <i>Reading California Connections Using a Common Core Reading and Writing Focus</i> on pages 12–17 to view specific suggestions for integrating Common Core standards while reading this selection not only for content, but for text structure as well.</p> <p><i>In addition to providing support for Reading Literacy standards, the California Connections selection provides a writing model for the Writing Literacy standards. As students read for content, explicitly point out the text structures the author uses to convey the information. Once familiar with the process, students can identify these structural elements as they read independently.</i></p>	<p>RI.6.7 and RST.6–8.7: Integrate information presented in different media or formats...as well as in words to develop a coherent understanding of a topic or issue.</p> <p>RI.6.9 and RST.6–8.9: Compare and contrast one author’s presentation of events with that of another...</p> <p>RI.6.10 and RST.6–8.10: ...read and comprehend science/technical texts in the grades 6–8 text complexity band independently and proficiently.</p>

Student Tasks	Common Core Standards Applications
<p>Steps 4 and 5: Students review Energy Sources and Mixes Study Guide (Student Workbook, pages 2–4) and color in a circle graph showing the state’s and nation’s average power mix. When students have completed the pie charts from both power mixes, discuss the similarities and differences.</p> <p>This step can be done in pairs, or small groups.</p> <p>Tip: If Student Workbooks need to be reused from year to year, students should not write in them. Some strategies teachers use to preserve the workbooks are:</p> <ul style="list-style-type: none"> ■ Have students use binder paper or other lined or unlined paper. ■ Have students use a sheet protector over the page and write with a whiteboard marker. ■ Do together as a class on a projector or chart paper. ■ Project the digital fill-in version and do together as a class. ■ Students use digital devices to fill in the digital version found on the website. ■ Make student copies when necessary. 	<p>SL.6.1: Engage effectively in a range of collaborative discussions (one-on-one, in groups, and teacher-led) with diverse partners on <i>grade 6 topics, texts, and issues</i>, building on others’ ideas and expressing their own clearly.</p> <p>c) Pose and respond to specific questions with elaboration and detail by making comments that contribute to the topic, text, or issue under discussion.</p> <p>d) Review the key ideas expressed and demonstrate understanding of multiple perspectives through reflection and paraphrasing.</p> <p>SL.6.2: Interpret information presented in diverse media and formats (e.g., visually, quantitatively, orally) and explain how it contributes to a topic, text, or issue under study.</p>
<p>Step 6: While teaching the information in this step, be sure to ask students to summarize the information with partners to increase comprehension. This lesson requires students to use their listening skills for the next step.</p>	<p>SL.6.1d: Review the key ideas expressed and demonstrate understanding of multiple perspectives through reflection and paraphrasing.</p>
<p>Step 7: Before students complete Energy Sources and Mixes Study Guide questions, review expectations for the questions.</p> <ul style="list-style-type: none"> ■ Students should use specific details in answering Questions 2–4. 	<p>W.6.2b and WHST.6–8.2b: Develop the topic with relevant facts definitions, concrete details...or other information and examples.</p>

Lesson 2: Converting Energy

Students observe how a power plant generates electricity. They read about the specifics of electricity generation using the energy sources tapped by California's utility companies. They share their findings with the class and summarize the byproducts of energy conversions.

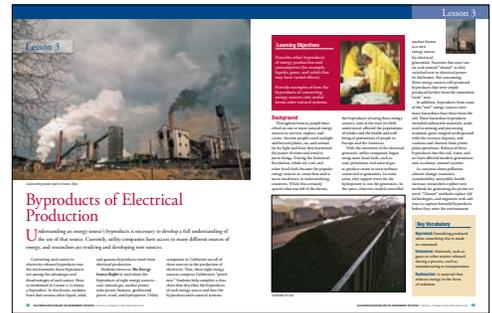


Use this correlation in conjunction with the **Procedures** located on pages 48–49 of the Teacher's Edition. Only procedure steps with a Common Core correlation are included in the table below.

Student Tasks	Common Core Standards Applications
<p>Vocabulary Development: For depth of understanding, vocabulary may be featured within the context of the unit instead of or in addition to the beginning of the lesson.</p>	<p>L.6.4c: Consult reference materials... to...determine...[a word's] meaning...</p> <p>RI.6.4 and RST.6–8.4: Determine the meaning of...key terms, and other domain-specific words and phrases as they are used in a specific scientific... context...</p>
<p>Step 2: As students are filling out Inside the Power Plant (Student Workbook, page 5) have them summarize the steps involved in generating electricity, in order to better support understanding of the visual aid.</p>	<p>L.6.6: Acquire and use accurately grade-appropriate general academic and domain-specific words and phrases; gather vocabulary knowledge when considering a word or phrase important to comprehension or expression.</p> <p>SL.6.1d: Review the key ideas expressed...through...paraphrasing.</p>
<p>Steps 3–5: Each group of students will be assigned a specific energy source for which they will research how that energy source converts the source to heat to make steam. They will then share that information with the other groups with different energy sources.</p> <p>Tip: You may want to have students do an expert jigsaw activity rather than sharing to the whole class.</p> <p>After all of the sources have been shared, the class will fill in a Venn Diagram comparing and contrasting the different conversions.</p>	<p>RI.6.2 and RST.6–8.2: Determine a central idea of a text and how it is conveyed through particular details; provide a summary of the text distinct from personal opinions or judgments.</p> <p>RI.6.9 and RST.6–8.9: Compare and contrast one...presentation of events with that of another...</p> <p>SL.6.2: Interpret information presented in diverse media and formats (e.g., visually, quantitatively, orally) and explain how it contributes to a topic, text, or issue under study.</p>
<p>Step 6: In addition to discussing the questions in the Procedures for this step, have students summarize the main idea and supporting points of the text. They can turn to partners and share specific points, or do it as a whole class discussion.</p>	<p>RI.6.9 and RST.6–8.9: Compare and contrast one...presentation of events with that of another...</p> <p>SL.6.2: Interpret information presented in diverse media and formats (e.g., visually, quantitatively, orally) and explain how it contributes to a topic, text, or issue under study.</p>

Lesson 3: Byproducts of Electrical Production

Students gather information about a specific energy source and contribute to a class chart describing the byproducts of generating electricity using each energy source in the current California “power mix.”

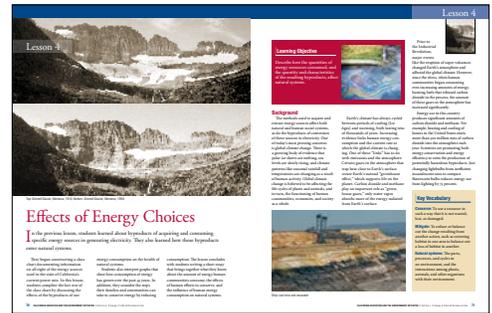


Use this correlation in conjunction with the **Procedures** located on pages 62–63 of the Teacher’s Edition. Only procedure steps with a Common Core correlation are included in the table below.

Student Tasks	Common Core Standards Applications
<p>Vocabulary Development: For depth of understanding, vocabulary may be featured within the context of the unit instead of or in addition to the beginning of the lesson.</p>	<p>L.6.4c: Consult reference materials... to...determine...[a word’s] meaning...</p> <p>RI.6.4 and RST.6–8.4: Determine the meaning of...key terms, and other domain-specific words and phrases as they are used in a specific scientific... context...</p>
<p>Step 1: After reviewing the information presented in Lesson 2, discuss the meaning of the word “byproduct.” Break the word into the prefixes by- and pro- and the root -duct. Give similar words made from these word parts.</p>	<p>L.6.4b: Use common, grade-appropriate Greek or Latin affixes and roots as clues to the meaning of a word...</p>
<p>Steps 3–5: Students work with the same groups as in Lesson 2. In their groups, they read information about the byproducts of the energy source they have been assigned, while taking notes. Students discuss their answers together as a group and share each energy source’s byproducts with the class.</p> <p>Note: Group sharing can be done as an expert jigsaw rather than to the whole class.</p>	<p>RI.6.2 and RST.6–8.2: Determine a central idea of a text and how it is conveyed through particular details; provide a summary of the text distinct from personal opinions or judgments.</p> <p>SL.6.2: Interpret information presented in diverse media and formats (e.g., visually, quantitatively, orally) and explain how it contributes to a topic, text, or issue under study.</p>
<p>Step 6: Refer students to the information in The Energy Source Buffet and the Energy Sources Chart on the board to complete their answers on the quiz.</p>	<p>RI.6.1 and RST.6–8.1: Cite textual evidence to support analysis of what the text says explicitly as well as inferences drawn from the text.</p> <p>RI.6.3 and RST.6–8.3: Analyze in detail how a key individual, event, or idea is introduced, illustrated, and elaborated in a text (e.g., through examples or anecdotes).</p> <p>W.6.2d and WHST.6–8.2d: Use precise language and domain-specific vocabulary to inform about or explain the topic.</p> <p>W.6.8 and WHST.6–8.8: Gather relevant information from multiple print and digital sources;...quote or paraphrase the data...</p>

Lesson 4: Effects of Energy Choices

Students complete a class chart on energy sources used in the state of California to generate electricity. They analyze energy consumption in the state over the past 100 years, including efforts to conserve energy, and discuss how energy consumption affects natural systems.



National Geographic Resources

- **Energy Resources** wall map
- **Natural Regions** wall map

Use this correlation in conjunction with the **Procedures** located on pages 74–76 of the Teacher’s Edition. Only procedure steps with a Common Core correlation are included in the table below.

Student Tasks	Common Core Standards Applications
<p>Vocabulary Development: For depth of understanding, vocabulary may be featured within the context of the unit instead of or in addition to the beginning of the lesson.</p>	<p>L.6.4c: Consult reference materials... to...determine...[a word’s] meaning...</p> <p>RI.6.4 and RST.6–8.4: Determine the meaning of...key terms, and other domain-specific words and phrases as they are used in a specific scientific... context...</p>
<p>Step 2: As students continue to fill out each section of their Energy Sources Chart, connect information that you are discussing now to the previous lessons’ information.</p> <p>Suggestion: <i>To increase discussion within this step, have students pair-share answers in the chart and/or review what has been given.</i></p> <p><i>When projecting Nuclear Power Plant Cooling Canals (Visual Aid #6), ask students for hypotheses about how these canals might affect natural systems.</i></p> <p>Suggestion: <i>This lesson lends itself to a thesis essay, developing the use of support claims and phrases that clarify reasons and evidence for supporting the thesis.</i></p>	<p>RI.6.1 and RST.6–8.1: Cite textual evidence to support analysis of what the text says explicitly as well as inferences drawn from the text.</p> <p>RI.6.3 and RST.6–8.3: Analyze in detail how a key individual, event, or idea is introduced, illustrated, and elaborated in a text (e.g., through examples or anecdotes).</p> <p>SL.6.2: Interpret information presented in diverse media and formats (e.g., visually, quantitatively, orally) and explain how it contributes to a topic, text, or issue under study.</p>

Student Tasks	Common Core Standards Applications
<p>Step 2 (Continued):</p>	<p>W.6.1 and WHST.6–8.1: Write arguments to support claims with clear reasons and relevant evidence.</p> <ul style="list-style-type: none"> a) Introduce claim(s) and organize the reasons and evidence clearly. b) Support claim(s) with clear reasons and relevant evidence, using credible sources and demonstrating an understanding of the topic or text. c) Use words, phrases, and clauses to clarify the relationships among claim(s) and reasons. d) Establish and maintain a formal style. e) Provide a concluding statement or section that follows from the argument presented.
<p>Steps 4 and 5: Students read and interpret information from multiple graphs while answering questions presented by the teacher.</p>	<p>SL.6.2: Interpret information presented in diverse media and formats (e.g., visually, quantitatively, orally) and explain how it contributes to a topic, text, or issue under study.</p>
<p>Step 6: In small groups, using California Connections: Powered by Electricity, students brainstorm ways to conserve energy.</p> <p>Suggestion: <i>In addition, students can connect their energy saving method to which detrimental effect on nature they are reducing. For example, carpooling will help burn less fossil fuel, resulting in less pollution in our air.</i></p>	<p>RI.6.1 and RST.6–8.1: Cite textual evidence to support analysis of what the text says explicitly as well as inferences drawn from the text.</p> <p>SL.6.1: Engage effectively in a range of collaborative discussions (one-on-one, in groups, and teacher-led) with diverse partners on <i>grade 6 topics, texts, and issues</i>, building on others' ideas and expressing their own clearly.</p> <p>SL.6.4: Present claims and findings...</p>
<p>Step 7: Ask students what natural features of their region influence the kinds of energy sources their communities use. Students use the wall maps, California Connections: Powered by Electricity, and their Energy Sources Chart to determine their answers.</p> <p>Tip: <i>Students can work with partners or independently to determine the answers to the question presented.</i></p>	<p>SL.6.1c: Pose and respond to specific questions with elaboration and detail by making comments that contribute to the topic, text, or issue under discussion.</p> <p>SL.6.4: Present claims and findings...</p>
<p>Step 8: Students construct a multiple-paragraph essay outline, including key vocabulary in their descriptions.</p>	<p>W.6.2: Write informative/explanatory texts to examine a topic and convey ideas, concepts, and information through the selection, organization, and analysis of relevant content.</p> <ul style="list-style-type: none"> b) Develop the topic with relevant facts, definitions, concrete details, quotations, or other information and examples. d) Use precise language and domain-specific vocabulary to inform about or explain the topic.

Lesson 5: Energy Choices—No Free Lunch

After learning about the California Public Utilities Commission, students work in teams to weigh the costs and benefits of one energy source. The class holds a “town hall meeting” to discuss the benefits and costs of energy source options for their community.



Use this correlation in conjunction with the **Procedures** located on pages 90–91 of the Teacher’s Edition. Only procedure steps with a Common Core correlation are included in the table below.

Student Tasks	Common Core Standards Applications
<p>Vocabulary Development: For depth of understanding, vocabulary may be featured within the context of the unit instead of or in addition to the beginning of the lesson.</p>	<p>L.6.4c: Consult reference materials... to...determine...[a word’s] meaning...</p> <p>RI.6.4 and RST.6–8.4: Determine the meaning of...key terms, and other domain-specific words and phrases as they are used in a specific scientific... context...</p>
<p>Steps 3–5: After reading through the procedure steps, assign groups the same energy source as in Lessons 2 and 3. Students determine costs and benefits of that particular power source. They will then share their findings with the class.</p> <p>Note: <i>Students can share their finding with other groups in an expert jigsaw rather than to the whole class.</i></p>	<p>RI.6.1 and RST.6–8.1: Cite textual evidence to support analysis of what the text says explicitly as well as inferences drawn from the text.</p> <p>RI.6.3 and RST.6–8.3: Analyze in detail how a key...idea is...illustrated, and elaborated in a text (e.g., through examples or anecdotes).</p> <p>W.6.2d and WHST.6–8.2d: Use precise language and domain-specific vocabulary to inform about or explain the topic.</p> <p>W.6.9 and WHST.6–8.9: Draw evidence from...informational texts to support analysis,...and research.</p>
<p>Step 6: Students present their findings on the costs and benefits of the various resources in a “town hall meeting” format, in which they decide the best energy source for their town.</p> <p>Suggestion: <i>This lesson lends itself to a persuasive writing or presentation assignment that students can prepare prior to giving their speech. Including this enhancement would require more than one day.</i></p> <p>Tip: <i>Students use their listening skills to answer questions in the next step.</i></p>	<p>SL.6.4: Present claims and findings... sequencing ideas logically and using pertinent descriptions, facts, and details and nonverbal elements to accentuate main ideas or themes; use appropriate eye contact, adequate volume, and clear pronunciation. CA</p>

Student Tasks	Common Core Standards Applications
<p>Step 6 (Continued):</p>	<p>W.6.1 and WHST.6–8.1: Write arguments to support claims with clear reasons and relevant evidence.</p> <ul style="list-style-type: none"> a) Introduce claim(s) and organize the reasons and evidence clearly. b) Support claim(s) with clear reasons and relevant evidence, using credible sources and demonstrating an understanding of the topic or text. c) Use words, phrases, and clauses to clarify the relationships among claim(s) and reasons. d) Establish and maintain a formal style. e) Provide a concluding statement or section that follows from the argument presented.
<p>Step 7: After groups have presented, have the class answer the questions given in the Procedures.</p>	<p>SL.6.2: Interpret information presented...and explain how it contributes to a topic, text, or issue under study.</p>
<p>Step 8: To demonstrate what they have learned, students complete a chart and provide a written response to a question.</p>	<p>W.6.1b and WHST.6–8.1b: Support claim(s) with clear reasons and relevant evidence, using credible sources and demonstrating an understanding of the topic or text.</p>

Unit Assessment

Refer to the introduction pages at the front of this document for information regarding the Traditional and Alternative Assessments for this unit and their Common Core correlations.

Reading *California Connections* using a Common Core Reading and Writing Focus

Reading

Science teachers can further enhance the teaching of Common Core Reading Literacy Standards by noting the suggestions below and in the following pages while reading the **California Connections** selection for content. Explicitly teach students to pay attention to the structure of the text by noting the following:

- Note how the author cites evidence to support main points and analysis. **(RST.6–8.1)**
- Note how the author sets up the central ideas or conclusions; provide an accurate summary of the text distinct from prior knowledge or opinions. **(RST.6–8.2)**
- Analyze how the author describes a scientific process or a multi-step procedure. **(RST.6–8.3)**
- Note how the author explains the meaning of key terms, symbols, domain specific words, and phrases. **(RST.6–8.4)**
- Analyze the structure the author uses to organize the text, including how the major sections contribute to the whole and to an understanding of the topic. **(RST.6–8.5)**
- Analyze the author’s purpose in providing an explanation or describing a procedure. **(RST.6–8.6)**
- Note how the information in the California Connections text integrates with information provided visually throughout the unit in diverse formats, including tables, charts, graphs, diagrams, maps, and quantitative data. **(RST.6–8.7)**
- Distinguish among facts, reasoned judgment based on research findings, and speculation in a text, noting the reasoning and evidence used to support the author’s claim. **(RST.6–8.8)**
- When other documents or media sources are included, compare and contrast the information presented in the various formats and resources with that from the text, noting how the information contributes to a coherent understanding. **(RST.6–8.9)**
- Note comprehension strategies for understanding the text. **(RST.6–8.10)**

Note: Standard descriptions from the Reading Standards for Literacy in Science and Technical Subjects are paraphrased and combined, using terminology that applies to reading a **California Connections** selection.

Writing

Many **California Connections** selections can be used as a model for future student writing tasks applying the Writing Literacy Standards by noting how the author structures the text, organizes the ideas, and provides well-chosen relevant and sufficient facts, extended definitions, concrete details, quotations, or other information and examples.

Using the *California Connections* Selection

The following pages note specific places where the **California Connections** selection provides examples for specific Writing Literacy Standards for Science and Technical Subjects, using this selection as a writing model. They also provide suggestions for teaching students to analyze text structure using the Reading Literacy Standards for Science and Technical Subjects. Teachers can incorporate more suggestions from the list above. In addition, for teachers of self-contained classrooms, ELA standards are included.

Attention Grabber: Note how the author begins the selection and how students can carefully craft how they begin their own writing assignments.

California Connections: Powered by Electricity
Lesson 1 | page 1 of 5

Powered by Electricity



Imagine a state without electricity. Would you want to live there? There would be no TV. No video games. No computer. No microwave to heat up snacks and no ice cream in the freezer. And no way to charge your cell phone or MP3 player.

So you've decided not to live without electricity. But how much do you understand about electricity? What exactly is electricity? How does a power plant work? What is "green energy"? If we use renewable sources, why do we need to think about conserving electricity?

Electricity Contains Energy
Energy is all around us. In fact, our world would not exist without energy. Some kinds of energy you can see—such as Sun and moving water. Others you can feel, like heat, wind, and sound. Some forms of energy are invisible—electricity is one of them. Without energy, there would be no plants, no animals, and no life. Your body needs energy, too; your "fuel" comes from food. A power plant works like your



Wind turbine

2 CALIFORNIA EDUCATION AND THE ENVIRONMENT INITIATIVE | Unit 6.6.a. | Energy: It's Not All the Same to You! | Student Edition

RST.6–8.5: Analyze the structure an author uses to organize a text, including how the major sections contribute to the whole and to an understanding of the topic.

L.6.5a: Interpret figures of speech...in context.

WHST.6–8.2a: ...include... graphics...when useful to aiding comprehension.

- *Why did the author select each graphic? How do they support the text?*

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Old Faithful Geyser, Yellowstone National Park, Wyoming

body because it turns fuel into usable energy. People don't actually make energy like electricity. They take one form of energy and convert it into another. Picture a pinwheel spinning. Imagine that you are blowing on it to make it turn. How else could you make it turn? Could you use other forms of energy, like steam from a teapot or water from a hose? If you hooked up a whole bunch of pinwheels spinning together, you could create electricity. All you would need to do is harness

the energy in their motion. You would not create much electricity, but it could happen. Let's look inside a power plant to see how it makes electricity.

Inside a Power Plant
A power plant is like the pinwheels, just on a bigger scale. The power plant generates electricity by spinning a turbine. The turbine is like a huge pinwheel—water or steam pushes the turbine's blades. Moving turbines are used to generate just about every form of electric power.

The turbine is connected to a generator. The spinning within the generator converts to an electric current. Wires then carry the electric current to homes, businesses, schools, and other facilities. People can also get steam from natural sources. When geothermal activities heat groundwater beneath Earth's surface, it can shoot out as steam through broken rock and vents (natural openings in Earth). This is called a geyser. Power plants can harness the steam to turn a generator and create electricity. The largest natural steam power plant in the world, The Geysers, is in Northern California. The Geysers takes steam directly from the ground and uses it to create electricity. You can still create steam without a natural geyser. Many power plants use natural gas, like the gas that powers the stoves in many people's homes. The plant burns gas to heat water, creating steam. This steam then turns the turbine. Coal, oil, natural gas, or even trash can serve as the fuel to create this steam. Actually, anything that burns can be used to make steam.

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WHST.6–8.2b: Develop the topic with relevant, well-chosen facts...

WHST.6–8.2d: Use precise language and domain-specific vocabulary...

RST.6–8.4: Determine the meaning of...key terms, and other domain-specific words and phrases...

- turbine
- geothermal
- geyser
- energy

RST.6–8.2: Determine the central ideas or conclusions of a text; provide an accurate summary of the text...

Suggestion: While reading the text, pause to have students pair-share a summary of the previous information, and explain the central idea of each section.

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Some power plants use nuclear reactions to convert steam. Large nuclear power plants provide electricity to our homes; small nuclear reactors power submarines and aircraft carriers.

Green Energy

Most energy used to create electricity comes from fossil fuels. Fossil fuels—coal, oil, and natural gas—formed from living organisms that died millions of years ago. These fuels are not renewable. Once burned, they are gone. Other sources of energy, such as wind, solar energy, water power, and bioenergy are

renewable. People call these “green energy” because their sources are clean and renewable.

A wind turbine is like a giant pinwheel. But, a wind turbine is a bit more reliable. The wind spins the large blades and turns all this motion into electricity. Another example of green energy is solar power. Large panels made of photovoltaic cells capture sunlight. These cells are like small power plants. They turn sunlight, or solar energy, into electricity. The chemical process used to create electricity from sunlight is renewable. Water can generate electricity, too.

The Shasta Dam in Northern California is an example of a plant that supplies electricity by hydropower. “Large” hydropower plants require dams to be built that cause large areas of land to be covered with water. “Small” hydropower plants generate electricity from moving water without the use of dams. Because of this, California law only considers small hydropower to be classified as a renewable resource. Using green energy produces less pollution than burning fossil fuels. Californians are creative about using renewable resources. They use wind,



Shasta hydroelectric dam, California

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WHST.6–8.2c: Use appropriate and varied transitions...

WHST.6–8.2b: Develop the topic with...concrete details...

WHST.6–8.2f: Provide a concluding statement... that follows from and supports the information or explanation presented.

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Power plant cooling towers near Clay Station, California

A Smart Power Supply Is a Stable Power Supply

Simple choices made by millions of people can strain the power supply. For example, on very hot days everyone uses air conditioners at the same time. We can all make smarter choices—even in our own homes! Just because we have power does not mean we have to use it. Decreasing our use of power is called “conservation.”

You can help conserve power by turning off lights. You can keep the refrigerator door closed while you think about what to eat. Long, hot showers also use electricity. In fact, as much as one-third of the energy going into homes goes to heating water. This water is often pumped from

solar, geothermal, hydro, and biomass energy. Since the start of the California Solar Initiative in 2007, our state has led the nation in using renewable sources of energy.

From the power plant, electricity flows through long wires like water through a hose. These wires are called transmission lines. The current flows first to substations which reduce the voltage to smaller, usable levels. From there, the electricity flows to homes, businesses, schools, and other facilities. Finally, smaller wires carry the power to all the outlets you see in walls. The wires carrying electricity form a large grid. That grid feeds the entire state, and country, with power. The system is

impressive. It is usually very reliable. But sometimes there are problems. Storms and wildfires can bring down power lines. Car accidents can bring down poles. People’s use of too much power on hot days can place a huge strain on the grid. But there are simple things you can do to help keep our power supply stable.



Thermostat set to 78 degrees

L.6.5a: Interpret figures of speech...in context.

WHST.6–8.2b: Develop the topic with relevant, well-chosen facts, definitions, concrete details, quotations, or other information and examples.

Suggestion: Analyze the text, determining how the author uses examples to support facts. Students can use this format when creating their own writing.

Energy Source	Percent of Total
Natural Gas	45.2%
Coal	16.6%
Nuclear	14.8%
Large Hydro	11.7%
Renewable Sources	
Geothermal	4.5%
Small Hydro	2.8%
Wind	2.3%
Biomass	2.1%
Solar	0.2%
Total	100%

Table 1: California Energy Sources—2007
Source: California Energy Commission

up to 400 miles away. Saving water saves electricity. On a hot day, set the thermostat a few degrees higher, to 78, for example. Your air conditioner will not have to work as hard.

Another way to conserve energy is by buying products that use less electricity. Using less energy to do a job is called energy efficiency. New compact fluorescent lightbulbs use 75% less energy than

old-fashioned incandescent lightbulbs. Newer models of kitchen appliances are also energy efficient. They carry the Energy Star label that indicates that the product uses less energy, saves money, and helps the environment. An Energy Star refrigerator uses less energy than an older model the same size.

Our state uses many of the available energy sources to produce the electricity we need. Renewable sources of energy create less pollution and are plentiful in our state. Our state is working to increase the use of renewable sources of energy. We can keep our energy supply stable by making better everyday choices. We can turn off lights, take shorter showers, use the air conditioner less, and choose more efficient products.



Sheets drying on a clothesline

Energy Source	Percent of Total
Coal	48.3%
Natural Gas	21.3%
Nuclear	19.2%
Hydropower	6.9%
Renewable Sources	2.7%
Other Nonrenewable	1.6%
Total	100%

Table 2: U.S. Energy Sources (Electricity)—2007. Source: U.S. Energy Information Administration

The less energy we use, the fewer byproducts produced. This gives us the benefit of a healthier environment, with less air pollution. Also, there will be fewer power plants built, and lots of money saved.

WHST.6–8.2c: Use appropriate and varied transitions...

WHST.6–8.2a: ...include... graphics...when useful to aiding comprehension.

- *Why did the author select each graphic? How do they support the text?*

WHST.6–8.2f: Provide a concluding statement... that follows from and supports the information or explanation presented.

California Common Core State Standards Descriptions

Language Standards

- **L.6.4:** Determine or clarify the meaning of unknown and multiple-meaning words and phrases based on *grade 6 reading and content*, choosing flexibly from a range of strategies.
 - b) Use common, grade-appropriate Greek or Latin affixes and roots as clues to the meaning of a word (e.g., *audience, auditory, audible*).
 - c) Consult reference materials (e.g., dictionaries, glossaries, thesauruses), both print and digital, to find the pronunciation of a word or determine or clarify its precise meaning or its part of speech.
- **L.6.5:** Demonstrate understanding of figurative language, word relationships, and nuances in word meanings.
 - a) Interpret figures of speech (e.g., personification) in context.
- **L.6.6:** Acquire and use accurately grade-appropriate general academic and domain-specific words and phrases; gather vocabulary knowledge when considering a word or phrase important to comprehension or expression.

Reading Standards for Informational Text

- **RI.6.1:** Cite textual evidence to support analysis of what the text says explicitly as well as inferences drawn from the text.
- **RI.6.2:** Determine a central idea of a text and how it is conveyed through particular details; provide a summary of the text distinct from personal opinions or judgments.
- **RI.6.3:** Analyze in detail how a key individual, event, or idea is introduced, illustrated, and elaborated in a text (e.g., through examples or anecdotes).
- **RI.6.4:** Determine the meaning of words and phrases as they are used in a text, including figurative, connotative, and technical meanings. **(See grade 6 Language standards 4–6 for additional expectations.) CA**
- **RI.6.5:** Analyze how a particular sentence, paragraph, chapter, or section fits into the overall structure of a text and contributes to the development of the ideas. **Analyze the use of text features (e.g., graphics, headers, captions) in popular media. CA**
- **RI.6.7:** Integrate information presented in different media or formats (e.g., visually, quantitatively) as well as in words to develop a coherent understanding of a topic or issue.
- **RI.6.9:** Compare and contrast one author’s presentation of events with that of another (e.g., a memoir written by and a biography on the same person).
- **RI.6.10:** By the end of the year, read and comprehend literary nonfiction in the grades 6–8 text complexity band proficiently, with scaffolding as needed at the high end of the range.

Speaking and Listening Standards

- **SL.6.1:** Engage effectively in a range of collaborative discussions (one-on-one, in groups, and teacher-led) with diverse partners on *grade 6 topics, texts, and issues*, building on others’ ideas and expressing their own clearly.
 - c) Pose and respond to specific questions with elaboration and detail by making comments that contribute to the topic, text, or issue under discussion.
 - d) Review the key ideas expressed and demonstrate understanding of multiple perspectives through reflection and paraphrasing.
- **SL.6.2:** Interpret information presented in diverse media and formats (e.g., visually, quantitatively, orally) and explain how it contributes to a topic, text, or issue under study.
- **SL.6.4:** Present claims and findings **(e.g., argument, narrative, informative, response to literature presentations)**, sequencing ideas logically and using pertinent descriptions, facts, and details **and nonverbal elements** to accentuate main ideas or themes; use appropriate eye contact, adequate volume, and clear pronunciation. **CA**
- **SL.6.5:** Include multimedia components (e.g., graphics, images, music, sound) and visual displays in presentations to clarify information.

Writing Standards

- **W.6.1:** Write arguments to support claims with clear reasons and relevant evidence.
 - a) Introduce claim(s) and organize the reasons and evidence clearly.
 - b) Support claim(s) with clear reasons and relevant evidence, using credible sources and demonstrating an understanding of the topic or text.
 - c) Use words, phrases, and clauses to clarify the relationships among claim(s) and reasons.
 - d) Establish and maintain a formal style.
 - e) Provide a concluding statement or section that follows from the argument presented.
- **W.6.2:** Write informative/explanatory texts to examine a topic and convey ideas, concepts, and information through the selection, organization, and analysis of relevant content.
 - a) Introduce a topic **or thesis statement**; organize ideas, concepts, and information, using strategies such as definition, classification, comparison/contrast, and cause/effect; include formatting (e.g., headings), graphics (e.g., charts, tables), and multimedia when useful to aiding comprehension. **CA**
 - b) Develop the topic with relevant facts, definitions, concrete details, quotations, or other information and examples.
 - c) Use appropriate transitions to clarify the relationships among ideas and concepts.
 - d) Use precise language and domain-specific vocabulary to inform about or explain the topic.
 - f) Provide a concluding statement or section that follows from the information or explanation presented.
- **W.6.4:** Produce clear and coherent writing in which the development, organization, and style are appropriate to task, purpose, and audience. (Grade-specific expectations for writing types are defined in standards 1–3 above.)
- **W.6.8:** Gather relevant information from multiple print and digital sources; assess the credibility of each source; and quote or paraphrase the data and conclusions of others while avoiding plagiarism and providing basic bibliographic information for sources.
- **W.6.9:** Draw evidence from literary or informational texts to support analysis, reflection, and research.

Reading Literacy Standards in Science and Technology Subjects

- **RST.6–8.1:** Cite specific textual evidence to support analysis of science and technical texts.
- **RST.6–8.2:** Determine the central ideas or conclusions of a text; provide an accurate summary of the text distinct from prior knowledge or opinions.
- **RST.6–8.3:** Follow precisely a multistep procedure when carrying out experiments, taking measurements, or performing technical tasks.
- **RST.6–8.4:** Determine the meaning of symbols, key terms, and other domain-specific words and phrases as they are used in a specific scientific or technical context relevant to *grades 6–8 texts and topics*.
- **RST.6–8.5:** Analyze the structure an author uses to organize a text, including how the major sections contribute to the whole and to an understanding of the topic.
- **RST.6–8.7:** Integrate quantitative or technical information expressed in words in a text with a version of that information expressed visually (e.g., in a flowchart, diagram, model, graph, or table).
- **RST.6–8.9:** Compare and contrast the information gained from experiments, simulations, video, or multimedia sources with that gained from reading a text on the same topic.
- **RST.6–8.10:** By the end of grade 8, read and comprehend science/technical texts in the grades 6–8 text complexity band independently and proficiently.

Writing Standards for Literacy in History/Social Studies, Science, and Technical Subjects

- **WHST.6–8.1:** Write arguments focused on *discipline-specific content*.
 - a) Introduce claim(s) about a topic or issue, acknowledge and distinguish the claim(s) from alternate or opposing claims, and organize the reasons and evidence logically.
 - b) Support claim(s) with logical reasoning and relevant, accurate data and evidence that demonstrate an understanding of the topic or text, using credible sources.
 - c) Use words, phrases, and clauses to create cohesion and clarify the relationships among claim(s), counterclaims, reasons, and evidence.
 - d) Establish and maintain a formal style.
 - e) Provide a concluding statement or section that follows from and supports the argument presented.
- **WHST.6–8.2:** Write informative/explanatory texts, including the narration of historical events, scientific procedures/ experiments, or technical processes.
 - a) Introduce a topic clearly, previewing what is to follow; organize ideas, concepts, and information into broader categories as appropriate to achieving purpose; include formatting (e.g., headings), graphics (e.g., charts, tables), and multimedia when useful to aiding comprehension.
 - b) Develop the topic with relevant, well-chosen facts, definitions, concrete details, quotations, or other information and examples.
 - c) Use appropriate and varied transitions to create cohesion and clarify the relationships among ideas and concepts.
 - d) Use precise language and domain-specific vocabulary to inform about or explain the topic.
 - f) Provide a concluding statement or section that follows from and supports the information or explanation presented.
- **WHST.6–8.4:** Produce clear and coherent writing in which the development, organization, and style are appropriate to task, purpose, and audience.
- **WHST.6–8.8:** Gather relevant information from multiple print and digital sources (**primary and secondary**), using search terms effectively; assess the credibility and accuracy of each source; and quote or paraphrase the data and conclusions of others while avoiding plagiarism and following a standard format for citation. **CA**
- **WHST.6–8.9:** Draw evidence from informational texts to support analysis, reflection, and research.