

Global Warming and the West

<p>Duration, Class, Grade Level, Number of Students:</p>	<ul style="list-style-type: none"> • 9th and 10th Grade: English 9 and English 10 • 80 students: Students from the 9th grade English Class and 10th Grade English class will be working on this unit in each class and together as a group. • Students adhere to the A/B block schedule; every class is 2 hours in duration. • 10 days
<p>Location:</p>	<p>Center(s) of student learning and discover: Classroom, Library computer-media center, and Regent Hall.</p>
<p>Key Vocabulary:</p>	<p>Carbon Farming: "The process of restoring the soil's biological life" (Bates 75). Climate Change: "A change of climate which is attributed directly or indirectly to human activity that alters the composition of the global atmosphere and which is in addition to natural climate variability observed over comparable time periods" (Intergovernmental Panel on Climate Change 4). Impact: "Effects on natural and human systems" (Intergovernmental Panel on Climate Change 4). Adaptation: "The process of adjustment to actual or expected climate and its effects" (Intergovernmental Panel on Climate Change 5). Transformation: "A change in the fundamental attributes of natural and human systems" (Intergovernmental Panel on Climate Change 5).</p>
<p>Instructional Materials:</p>	<ul style="list-style-type: none"> • Barclay, Eliza. "Rooftop Farming Is Getting Off The Ground." <i>NPR</i>. NPR, 25 Sept. 2013. Web. 31 Mar. 2014. http://www.npr.org/blogs/thesalt/2013/09/24/225745012/why-aren-t-there-more-rooftop-farms. • Bates, Albert K. <i>The Biochar Solution: Carbon Farming and Climate Change</i>. Gabriola Island, B.C.: New Society, 2010. Internet Resource. • Brumfiel, Geoff. "Researchers Detail How Climate Change Will Alter Our Lives." <i>NPR</i>. NPR, 31 Mar. 2014. Web. 31 Mar. 2014. http://www.npr.org/2014/03/31/297076402/global-researchers-detail-howclimate-change-will-alter-our-lives. • Charles, Dan. "Iowa Farmers Look to Trap Carbon in Soil." <i>NPR</i>. NPR, 15 Jan. 2007. Web. 31 Mar. 2014. http://www.npr.org/templates/story/story.php?storyId=11951725. • Charles, Dan. "Will a Warmer World Have Enough Food?" <i>NPR</i>. NPR, 29 Oct. 2007. Web. 31 Mar. 2014. http://www.npr.org/templates/story/story.php?storyId=15737145. • Cornish, Audie. "Portable Potables: How To Fight Drought By Reusing Water." <i>NPR</i>. NPR, 28 Feb. 2014. Web. 31 Mar. 2014. http://www.npr.org/2014/02/26/283066675/poable-potables-how-to-fight-drought-by-reusing-water • Flatow, Ira. "US Cities Quench Growing Thirst with Saltwater." <i>NPR</i>. NPR, 13 Sept.

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- Gleick, Peter H. "War On Tap: America's Obsession With Bottled Water." *NPR*. NPR, 16 May 2010. Web. 31 Mar. 2014. <<http://www.npr.org/templates/story/story.php?storyId=126833795>>.
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- Work Cited List for Group Investigation

Rubrics:

- Interdisciplinary Essay Rubric: Public Policy Paper
- Interdisciplinary Project Rubric
- Web Site Resource Checklist

Enduring

Rationale: Climate is regulated by complex interactions among components of the Earth

<p>Understanding (Big Idea):</p>	<p>system. Life on Earth depends on, is shaped by, and affects climate.</p> <p>Purpose: This unit’s purpose is to build awareness within teenagers to understand how climate change affects all living beings in a global “butterfly effect,” to assess current green technological solutions for healing the soil and conserving and preserving clean water sources, in order to reduce world poverty through 21st century green technology; therefore, engaging in a communal effort to feed the world through eco-friendly resources of shared animals. By educating students on the realities of climate change and the continued legacy of abject poverty around the globe, students will apply their knowledge of green technology created and implemented in the North American West that holds the capability to assist and transform peoples’ lives. Through community awareness, by creating policy papers that shed light on our collective carbon footprints, producing volunteerism within the nonprofit organization Heifer International, students will profit from engaging in viable solutions to both climate change and world poverty. As educators, it is our desire to provide units of study that offer students insight into 21st century environmental realities so that they may understand our shared communal responsibility both in climate change as it affects our future use of environmental resources, and global hunger as it affects poverty-stricken families in dire straits.</p>
<p>Essential Questions:</p>	<p>How does climate change affect our world? How could climate change affect human society? What can we do to address climate change? How have America’s progressive Western states advanced green technology and carbon farming to promote clean water and organic food capability?</p>
<p>Learning Objectives:</p>	<ul style="list-style-type: none"> • Students will investigate the many ways in which the warming climate may affect biodiversity. Students will research progressive green alternatives already in place stemming from Western States in the U.S., focusing on California in particular. • Students will create public policy papers focusing on our collective carbon footprints- what is our responsibility in regard to global warming, and how can we at the grass roots level create viable change? • Students will culminate with an interactive exhibit displaying their papers, supported with student reflections beginning with their initial investigations of climate change, carrying through green technology seen in the Western states of the United States, ending with concrete actions taken through partnerships with heifer.org, a non-profit organization that matches impoverished families with animals to support and sustain a healthier quality of life.
<p>Standards:</p>	<p>National Standards for World History Content Standards Era 9: The 20th Century Since 1945: Promises and Paradoxes: <i>Standard 3A: Major global trends since World War II.</i> Grade level 9-12:</p> <ul style="list-style-type: none"> • Analyze causes of economic imbalances and social inequalities among the world’s peoples and assess efforts made to close these gaps. <p>World History Across the Eras: Standard 1: Long-term changes and recurring patterns in world history. Grade level 5-12:</p> <ul style="list-style-type: none"> • Analyze ways in which human action has contributed to long-term changes in the natural environment in particular regions or worldwide. <p>US History Content Standards: United States Era 10: Contemporary United States (1968</p>

to the present):

Standard 2: Economic, social, and cultural developments in contemporary United States:

Standard 2A: The student understands economic patterns since 1968:

Grade level 5-12:

- Evaluate how scientific advances and technological changes such as robotics and the computer revolution affect the economy and the nature of work.

Historical Thinking Standard 1: The student thinks chronologically: Therefore, the student is able to:

- Distinguish between the past, present, and future time.
- Identify the temporal structure of a historical narrative or story: its beginning, middle, and end.
- Establish temporal order in constructing their own historical narratives: working forward from some beginning through its development, to some end or outcome; working backward from some issue, problem, or event to explain its origins and its development over time.
- Interpret data presented in time lines and create time lines by designating appropriate equidistant intervals of time and recording events according to the temporal order in which they occurred.
- Reconstruct patterns of historical succession and duration in which historical developments have unfolded, and apply them to explain historical continuity and change.

Historical Thinking Standard 4:

- Formulate historical questions from encounters with historical documents, eyewitness accounts, letters, diaries, artifacts, photos, historical sites, art, architecture, and other records from the past.
- Obtain historical data from a variety of sources, including: library and museum collections, historic sites, historical photos, journals, diaries, eyewitness accounts, newspapers and the like; documentary films, oral testimony from living witnesses, censuses, tax records, city directories, statistical compilations, and economic indicators.
- Interrogate historical data by uncovering the social, political, and economic context in which it was created; testing the data source for its credibility, authority, authenticity, internal consistency and completeness; and detecting and evaluating bias, distortion, and propaganda by omission, suppression, or invention of facts.
- Identify the gaps in the available records and marshal contextual knowledge and perspectives of the time and place in order to elaborate imaginatively upon the evidence, fill in the gaps deductively, and construct a sound historical interpretation.
- Employ quantitative analysis in order to explore such topics as changes in family size and composition, migration patterns, wealth distribution, and changes in the economy.
- Support interpretations with historical evidence in order to construct closely reasoned arguments rather than facile opinions.

California State History-Social Studies Content Standards:

World History: 10.11: Students analyze the integration of countries into the world economy and the information, technological, and communications revolutions (e.g., television, satellites, computers).

California State History-Social Studies Content Standards: United States History: 11.11: Students analyze the major social problems and domestic policy issues in contemporary American society.

5. Trace the impact of, need for, and controversies associated with environmental conservation, expansion of the national park system, and the development of environmental protection laws, with particular attention to the interaction between environmental protection advocates and property rights advocates.

Common Core Standards:

Reading Standards for Literacy in History/Social Studies:

Grades 9-10 Students:

1. Cite specific textual evidence to support analysis of primary and secondary sources, attending to such features as the date and origin of the information.
2. Determine the central ideas or information of a primary or secondary source; provide an accurate summary of how key events or ideas develop over the course of the text.
3. Analyze in detail a series of events described in a text; determine whether earlier events caused later one or simply preceded them.
4. Determine the meaning of words and phrases as they are used in a text, including vocabulary describing political, social, or economic aspects of history/social science.
5. Analyze how a text uses structure to emphasize key points or advance an explanation or analysis.
6. Compare the point of view of two or more authors for how they treat the same or similar topics, including which details they include and emphasize in their respective accounts.
7. Integrate quantitative or technical analysis (e.g., charts, research data) with qualitative analysis in print or digital text.
8. Assess the extent to which the reasoning and evidence in a text support the author's claims.
9. Compare and contrast treatments of the same topic in several primary and secondary sources.

Writing Standards for (both) Literacy in History/Social Studies and for English Language Arts: Grades 9-10 Students:

1. Write arguments focused on discipline-specific content.
 - a. Introduce precise claims, and create an organization that establishes clear relationships among the claim(s), counterclaims, reasons, and evidence.
 - b. Develop claim(s) and counterclaims fairly, supplying data and evidence for each while pointing out the strengths and limitations of both claim(s) and counterclaims in a discipline-appropriate form and in a manner that anticipates the audience's knowledge level and concerns.
 - c. Use words, phrases, and clauses to link the major sections of the text, create cohesion, and clarify the relationships between claim(s) and

- reasons, between reasons and evidence, and between claim(s) and counterclaims.
- d. Establish and maintain a formal style and objective tone while attending to the norms and conventions of the discipline in which they are writing.
 - e. Provide a concluding statement or section that follows from or supports the argument presented.
2. Write informative/explanatory texts, including the narration of historical events, scientific procedures/experiments, or technical processes.
 - a. Introduce a topic and organize ideas, concepts, and information to make important connections and distinctions; include formatting (e.g., headings), graphics (e.g., figures, tables), and multimedia when useful to aiding comprehension.
 - b. Develop the topic with well-chosen, relevant, and sufficient facts, extended definitions, concrete details, quotations, or other information and examples appropriate to the audience's knowledge of the topic.
 - c. Use varied transitions and sentence structures to link the major sections of the text, create cohesion, and clarify the relationships among ideas and concepts.
 - d. Use precise language and domain-specific vocabulary to manage the complexity of the topic and convey a style appropriate to the discipline and context as well as to the expertise of likely readers.
 - e. Establish and maintain a formal style and objective tone while attending to the norms and conventions of the discipline in which they are writing.
 - f. Provide a concluding statement or section that follows from supports the information or explanation presented (e.g., articulating implications or the significance of the topic).
 4. Produce clear and coherent writing in which the development, organization, and style are appropriate to task, purpose, and audience.
 6. Use technology, including the Internet, to produce, publish and update individual or shared writing products, taking advantage of technology's capacity to link other information and to display information flexibility and dynamically.
 7. Conduct short as well as more sustained research projects to answer a question or solve a problem; narrow or broaden the inquiry when appropriate; synthesize multiple sources on the subject, demonstrating understanding of the subject under investigation.
 8. Gather relevant information from multiple authoritative print and digital sources, using advance searches effectively; assess the usefulness of each source in answering the research question; integrate information into the text selectively to maintain the flow of ideas, avoiding plagiarism and following a standard format for citation.
 9. Draw evidence from informational texts to support analysis reflection, and research.

English Language Reading Standards for Information Text: Grade 9-10 Students:

1. Cite strong and thorough textual evidence to support analysis of what the text says explicitly as well as inference drawn from the text.
2. Determine a central idea of a text and analyze its development over the

	<p>course of the text, including how it emerges and is shaped and refined by specific details, provide an objective summary of the text.</p> <p>7. Analyze various accounts of a subject told in different mediums, determining which details are emphasized in each account.</p>
<p>Background:</p>	<p>What does the teacher need to know about this topic before introducing the lesson?</p> <ul style="list-style-type: none"> • Background knowledge of global warming, carbon farming, and current trends for addressing the problems inherent within global warming • District policy on film screening in class and student release forms for filming and photographic media. • Knowledge and understanding of Prezi as a presentation tool: http://prezi.com (You can use PowerPoint instead of Prezi if you prefer). <p>What do students need to know prior to this lesson being introduced (or, what does the lesson build upon a previous enduring understanding?</p> <ul style="list-style-type: none"> • Students should read the novel <i>The World We Made</i> prior to the start of this unit.
<p>Suggested Procedure:</p>	<p>Both 9th and 10th grade classes will follow the same specified procedure as listed below:</p> <p><i>Prior to Day One, students have been actively reading The World We Made to access prior knowledge regarding global warming.</i></p> <p>Day One</p> <ul style="list-style-type: none"> • Write on board- <i>Climate is regulated by complex interactions among components of the Earth system. Life on Earth depends on, is shaped by, and affects climate.</i> • Begin with slide show (Spector) shock value- our changing landscape through global warming. <ul style="list-style-type: none"> ○ Students take notes during slide show, pair share, generate interpretive questions and share out with whole group. ○ From this generic knowledge base, students create KWLs on their knowledge of global warming. ○ Display Prezi on climate change. ○ Students compose initial academic arguments citing the credibility of climate change and its effect upon our future, while producing a counterargument to determine why the topic is controversial. • Students watch the first half of <i>The Next Frontier: Engineering the Golden Age of Green</i>, pausing after eight examples of green solutions scientists and engineers are currently working on. <ul style="list-style-type: none"> ○ Students will address advantages and disadvantages to each green solution as the video progresses. ○ In groups, students assess three viable solutions to global warming from the list of eight. • Students finish with Carl Sagan’s “The Cosmic Calendar,” exploring Sagan’s calendar effect of human history and our responsibility to the next “calendar” year. • Homework: students read through their notes, research another online source that compliments the topic of climate change, and bring in their findings with a one page MLA paper, one paragraph summarizing the source content, one paragraph analyzing the connection to either the slide show, the Prezi, or the video.

Day Two

- Discuss homework findings in groups; share out. What are the benefits of multiple resources/ multiple perspectives on climate change?
- Finish the video, *The Next Frontier: Engineering the Golden Age of Green*, which deals with energy efficiency- better services through less energy.
- Students segue into carbon capture and storage through reading Ch. 1, “Where Did All the Carbon Go?” from *The Soil Will Save Us*.
 - Students will follow the dialectical journal format as they read, clarifying new terms and discussing their findings in pairs.
- **Homework:** students read Ch.4, “Letting Nature Do Its Job” from *The Soil Will Save Us*, composing a one page MLA paper summarizing the source content and determining the credibility of the author’s argument through current book reviews.

Day Three

- Students utilize the library to read the eBook *The Biochar Solution: Carbon Farming and Climate Change*.
 - After all students read the introduction, students in groups break down the short chapters to read individually in order to report back to the group.
 - Students take notes by summarizing the content, and determining strengths and weaknesses of each chapter as viable solutions to work with global warming.
 - Students explore the cause and effect of their daily choices (their carbon print) including their habits, energy, food, and water consumption patterns.
- **Homework:** students research the Heifer International website to begin formulating an action plan combating world poverty through healing the soil, energy efficiency and sharing animals as viable resources, as well as spending time watching the website’s 9 minute video *A Night in the Global Village*.

Day Four

- Students in groups share their initial research from the website Heifer International.
- Students conclude their findings choosing to read either Edgar Allen Poe’s “Sonnet-To Science” or Walt Whitman’s “When I Heard the Learn’d Astronomer” and address multiple perspectives regarding climate change.
 - What is the relationship between science and nature, and why is climate change still a hard sell?
- Students read Barbara Kingsolver’s excerpt from *Flight Behavior* that addresses why people are uncomfortable with the issue of climate change and in fact, refuse to believe climate change is happening.
- **Homework:** students respond to Kingsolver’s argument by informally interviewing their immediate family members and peers on their beliefs regarding climate change and tallying the results to validate her argument.

Day Five- Six

- Global warming is changing peoples’ living spaces. Students in groups will

research how the Western states of North America are proactive through both energy renewal and food growth alternatives that are eco-friendly.

- Given a list of resources, students will identify a problem to study, gather information, examine solutions, and develop their own public policy with an action plan leading to Heifer International.
- **On Day Five**, students in groups research sites and gather information on their issue, building a shared annotated bibliography that assesses the credibility and strength of their sources leading to a public policy paper.
 - Students will also complete a Four Worlds chart based upon the information they learn about their chosen problem of study.
 - **Homework:** students determine which sources to pursue, and share the responsibility of researching sources.
- **On Day Six**, students gather their information and examine solutions, developing a “One Slide” presentation for the entire class consisting of: a one sentence summary of the issue, a paragraph outlining the proposal, and a visual that captures the context of the issue.
 - **Homework:** finish one slide, with works cited attached.

Day Seven- Eight

- Students present their slides to the class, to discuss their findings thus far and to get whole class feedback.
- Students follow the Climate Change public policy prompt to create their public policy papers, demonstrating knowledge and understanding of the environment and the circumstances and conditions affecting it, balancing facts and evidence with multiple perspectives, leading to viable solutions through Heifer International.
 - As they begin to write, they follow the public policy overview from the *Project Citizen* website.
 - Students peer review, checking sources and identifying fallacious reasoning. Students document their pathway to their public policy and action plan, sharing insights and reflections along the way.
 - **Homework:** edit, revise and publish paper.

Day Nine –Ten

Work on integration of policy paper and exhibit.

Evaluations
(Assessment):

Culminating project for both English courses

Interdisciplinary Essay: (Public Policy Paper):

According to Heifer International, every five seconds a child dies from causes related to hunger and poverty. By providing access to sanitation, safe water, protein, crops and good hygiene, Heifer International believes that people can transform hunger and poverty into hope and prosperity. How can the current green technologies developed in the North American West raise awareness for global warming solutions that benefit both our communities in the Greater Los Angeles area and poverty- stricken communities across the globe, battling climate changes resulting in desertification, water scarcity and soil erosion?

In a public policy paper addressed to the local community, investigate one issue in which the warming climate may affect biodiversity. Global warming is changing

peoples' living spaces. What is the status of the environment and the circumstances and conditions affecting it, particularly as it relates to such topics as air, climate, land, food, energy, water and ecosystems? Gather information and examine solutions already in place or awaiting development in the foreseeable future, generated from progressive policies in the North American West.

Considering the West's proactive response to climate change, how can these policies be viably replicated for a student from the Greater Los Angeles to make sustainable change in a global community suffering from deprivation of food and clean water? Utilizing the philosophy in that teaching someone to fish allows them to eat for a lifetime, write an action plan that incorporates community involvement with Heifer International, whereby people together can focus on one or more of the *12 Cornerstones for Just and Sustainable Development*, along with partnering up to buy animals for a poverty-stricken family that will add protein to their diet, fertilizer for the soil, ultimately creating a small business venture to foster viable health and create sustainable wealth both for themselves and their community.

Regent Hall Exhibit:

Students will create and display four interactive exhibits. The four exhibits are the following: How climate change affects the globe, visual and interactive models of carbon farming and benefits of carbon farming, viable solutions for change through organizations such as heifer.org, and their policy papers proposing their solutions to the current climate change issue.

Students will create and display with 3-D models, photographs, prezi, and videos, an interactive exhibit depicting earth's climate change, complete with student docents explaining the complexities and processes of this phenomenon.

Students will create and display with 3-D models, photographs, prezi, videos, an interactive exhibit depicting the methods and process of carbon farming, the benefits of carbon farming, and the challenges of carbon farming, complete with student docents explaining the complexities and process of this viable solution to the problem of global warming.

Students will create and display with photographs, videos and personal letters and testimonials from the people supported by these organizations, timelines, maps of the who are supported and positively affected, history of these developing regions, process of positive change, and representatives from these agencies to explain the purpose and affirmative outcomes resulting from student support.

Students will create and display with policy papers, photographs and videos documenting their journey of the project from beginning to completion as a means to educate the audience of the legislation, political and social issues pertaining to climate change, and viable solutions to address the problem.

The Regent Hall exhibit will be open to visitors comprised of administration, faculty, visiting middle school students, parents of students who attend Reseda High school, local grassroots organizations dealing with climate change, and the student population of the high school to experience the exhibit: to tour and view the four interactive exhibits, blog at computer stations set up within Regent Hall, and post their questions and comments on the far wall using post-it notes. Students use the visitor responses and blogs to assess the four exhibits' effectiveness of community awareness on climate change in the West, and awareness of the viable alternatives to address the problems of climate change. Students will also utilize visitor responses from the blogs

	<p>and post-it notes to pose their own discussion questions and facilitate further conversations in formalized class discussions via shared inquiry and online blogs.</p>
	<p>What kind of activities can be suggested should a teacher wish to develop the essential understanding in greater depth?</p> <ul style="list-style-type: none"> • Students will utilize visitor responses from the blogs and post-it response wall to pose their own discussion questions and facilitate further conversation in formalized class discussions via shared inquiry and online blogs.
<p>Resources:</p>	<p style="text-align: center;">Works Cited</p> <ul style="list-style-type: none"> • Barclay, Eliza. "Rooftop Farming Is Getting Off The Ground." <i>NPR</i>. NPR, 25 Sept. 2013. Web. 31 Mar. 2014. <http://www.npr.org/blogs/thesalt/2013/09/24/225745012/why-aren-t-there-more-rooftop-farms>. • Bates, Albert K. <i>The Biochar Solution: Carbon Farming and Climate Change</i>. Gabriola Island, B.C.: New Society, 2010. Internet Resource. • Brumfiel, Geoff. "Researchers Detail How Climate Change Will Alter Our Lives." <i>NPR</i>. NPR, 31 Mar. 2014. Web. 31 Mar. 2014. <http://www.npr.org/2014/03/31/297076402/global-researchers-detail-how-climate-change-will-alter-our-lives>. • Charles, Dan. "Iowa Farmers Look to Trap Carbon in Soil." <i>NPR</i>. NPR, 15 Jan. 2007. Web. 31 Mar. 2014. <http://www.npr.org/templates/story/story.php?storyId=11951725>. • Charles, Dan. "Will a Warmer World Have Enough Food?" <i>NPR</i>. NPR, 29 Oct. 2007. Web. 31 Mar. 2014. <http://www.npr.org/templates/story/story.php?storyId=15737145>. • Cornish, Audie. "Portable Potables: How To Fight Drought By Reusing Water." <i>NPR</i>. NPR, 28 Feb. 2014. Web. 31 Mar. 2014. <http://www.npr.org/2014/02/26/283066675/poable-potables-how-to-fight-drought-by-reusing-water> • Flatow, Ira. "US Cities Quench Growing Thirst with Saltwater." <i>NPR</i>. NPR, 13 Sept. 2013. Web. 31 Mar. 2014. <http://www.npr.org/2013/09/13/222101254/us-cities-quench-growing-thirst-with-saltwater>. • "FOR EDUCATORS." <i>Global Climate Change</i>. NASA, n.d. Web. 31 Mar. 2014. <http://climate.nasa.gov/education/pbs_modules/standards2>. • Fulton, April. "Of Goats And Gardens: Making Sense Of Urban Agriculture In LA." <i>NPR</i>. NPR, 04 Oct. 2013. Web. 31 Mar. 2014. <http://www.npr.org/blogs/thesalt/2013/10/04/229220958/of-goats-and-gardens-making-sense-of-la-s-urban-agriculture-maze>.

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