Unit 10

Ka ‘Aha Mua - Future Resource Management
Ka Hana ‘Imi Na‘auao –
A Science Careers Curriculum Resource
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Note: This curriculum may be printed in here grayscale.
Color versions of all documents are available on the disk
found in the curriculum package, and can also be
accessed online (see above).
## UNIT 10: Ka ‘Aha Mua - Future Resource Management

### CONTENT:
- Hawaiian
- Science
- Careers & College

### MATERIALS:
- Student Handout /Reading
- Teacher’s Notes
- Lesson

### ACTIVITIES:
- Hands On
- Discussion
- Huaka‘i (Explore)
- Web
- Video/Powerpt.

### ASSESSMENT:
- Formative
- Summative

### TYPE:
- Individual
- Group

<table>
<thead>
<tr>
<th>Part</th>
<th>Content &amp; Activity</th>
<th>Assessment</th>
</tr>
</thead>
<tbody>
<tr>
<td>A. p.714-731</td>
<td>Students get …</td>
<td>Teacher gets …</td>
</tr>
<tr>
<td></td>
<td><strong>He ‘Ohana Honua (An Earth Community)</strong></td>
<td>Relates to HCPS III</td>
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<td></td>
<td>Pre-Test/Knowledge Survey: Ka ‘Aha Mua (Future Resource Management) with Post-Test &amp; Answer Key attached (4 pgs)</td>
<td>SC.PH.3.5, 3.7; SC.PS.6.2, 6.4; SC.ENV.3.1, 3.4, 5.6; SC.MS.3.1, 3.8; SC.ES.8.4, 8.5, 8.7</td>
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<td></td>
<td>Video: Hawaii’s Climate Crisis (see DVD or: <a href="http://current.com/people/go_green_hawaii">http://current.com/people/go_green_hawaii</a>) No teacher’s notes or handout included</td>
<td>SC.MS.3.8; SC.ENV.3.1, 5.6; SC.ES.8.4, 8.7</td>
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<td></td>
<td>Lecture &amp; Video: Vulnerable Species &amp; 350.org w/ questions &amp; Web site exploration (2 pg handout &amp; 2 pgs of teacher’s notes)</td>
<td>SC.PH.3.5, 3.7; SC.PS.6.2, 6.4; SC.ENV.3.4, 5.6</td>
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<td></td>
<td>Readings (2): What is the Hawai‘i 2050 Plan? handout &amp; Hawai‘i – The Alternative State (an intro reading &amp; four 1-page readings for groups to share)</td>
<td>SC.PH.3.5, 3.7; SC.PS.6.2, 6.4; SC.ENV.3.4, 5.6; SC.CH.3.5, 3.6, 5.3</td>
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<td></td>
<td>Reading &amp; Discussion: “Empire to ‘Aha” &amp; “Reading Reaction: More about Earth Communities” small group discussion</td>
<td>SC.PH.3.5, 3.7; SC.PS.6.2, 6.4; SC.ENV.3.4, 5.6;</td>
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<td>Optional Field Trip: Observe &amp; enjoy local area of natural beauty to inspire student interest in Unit 10 tasks (no materials given)</td>
<td>SC.PH.3.5, 3.7; SC.PS.6.2, 6.4; SC.ENV.3.1, 3.4, 5.6; SC.MS.3.1, 3.8; SC.ES.8.4, 8.5, 8.7</td>
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<tr>
<th>B. p.732-753</th>
<th>Students get …</th>
<th>Teacher gets …</th>
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<tbody>
<tr>
<td></td>
<td><strong>Makana O Kuleana (Gift of Responsibility)</strong></td>
<td>Relates to HCPS III</td>
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<tr>
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<td>Video: Ka ‘Aha Mua (see DVD)</td>
<td>CTE.9-12.2.2</td>
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<td></td>
<td>Video Activity: The Story of Stuff video &amp; website exploration with small group activity, Fact Sheet, plus Story of Stuff Homework task (2 documents)</td>
<td>SC.ENV.5.2, 5.3; WL.IIIS.Y5.1.1</td>
</tr>
<tr>
<td><strong>C. p.754-721</strong></td>
<td>Students get …</td>
<td><strong>Ho‘ike (Community Action &amp; Presentation)</strong></td>
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<tr>
<td>Video Research: Green Hawai‘i Videos for project research &amp;/or discussion (1 pg)</td>
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<tr>
<td>Reading &amp; Activity: My Personal Go Green Checklist &amp; Contest (10 pages, see also Green Tips Wallet Size in Unit 10 Appendix on compact disk)</td>
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<td><strong>Optional Guest Speaker (Business or college staff involved in sustainable efforts; volunteers working in conservation, activism, etc.)</strong></td>
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<tr>
<td>Lesson &amp; Activity: Legislative Testimony with Internet Research, Green Jobs Online Video, Role Playing &amp; Writing practice</td>
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<tr>
<td>Reading &amp; Writing: 4 pgs on How to Give Legislative Testimony (tracking, preparing, writing, public hearing, testimony outline &amp; example)</td>
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<tr>
<td>Reading: example Bright Idea – Service with a Statement handout</td>
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C. p.754-721 Students get … **Ho‘ike (Community Action & Presentation)**

Lesson: 3 pgs document Introduces the Project & materials below & includes: online local newscast about the Hawai‘i 2050 Plan; & ‘green collar’ job Internet websites (extension activity)

Project: Community Action PSA Project with Proposal, Evaluator’s handout, Internet Exploration & Storyboard worksheet (5 pgs)

Video (4 minutes): How to Make a PSA (see on compact disk not DVD included with curriculum; Lesson Plan is in Unit 10 Appendix) Note: JumpCut.com is no longer functional – materials refer to JayCut.com which is similar to this example)

Reading: Copyright Facts handout (2 pgs)

Example Project, Videos & Fundraiser: Fair Trade Chocolate – Action Plan (see Unit 10 Appendix on CD) & online videos at: www.globalexchange.org/campaigns/fairtrade/cocoa/

Ka Hana ‘Imi Na‘auao – A Science Careers Curriculum Resource Project Available at: www.cds.hawaii.edu/kahana
<table>
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<tr>
<th>Lesson: Ho 'ike/Presentations of Community Action Projects with audience evaluations</th>
<th>SS.9PD.5.2, 5.5; SS.PSG.3.1</th>
</tr>
</thead>
<tbody>
<tr>
<td>Survey &amp; Discussion: Hawaii’s Future ‘Aha</td>
<td>SC.ENV.5.2</td>
</tr>
<tr>
<td>Post-Test: Knowledge Survey/Conceptual Learning &amp; Alternate Assessment – Ka ‘Aha Mua (Future Resource Management)</td>
<td>SC.PH.3.5, 3.7; SC.PS.6.2, 6.4; SC.ENV.3.1, 3.4, 5.6; SC.MS.3.1, 3.8; SC.ES.8.4, 8.5, 8.7</td>
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**X. Students get …**

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<thead>
<tr>
<th><strong>Appendix (see compact disk)</strong></th>
<th>Teacher gets …</th>
<th>Relates to HCPS III</th>
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<tbody>
<tr>
<td>Readings (2): Hawai‘i 2050 Issue Book &amp; Summary</td>
<td>SS.9PD.5.2, 5.5; SS.PSG.3.1</td>
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<tr>
<td>Activities &amp; More: Resources for Coral &amp; Food Webs</td>
<td>SC.MS.4.3</td>
<td></td>
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<tr>
<td>Lessons (4): Future ‘Aha &amp; Field Trip; Future ‘Aha/Story of Stuff &amp; Meditation; PSA Science Project (2 versions)</td>
<td>SC.ENV.5.2, 5.3; WL.IIIS.Y5.1.1; SS.9PD.5.2, 5.5; SS.PSG.3.1</td>
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<tr>
<td>Resources: Advocacy &amp; Activism in Hawai‘i</td>
<td>SS.9PD.5.2, 5.5; SS.PSG.3.1</td>
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<td>Story of Stuff Resources (4): 10 Things You Can Do; Facts; Footnoted Script; Glossary</td>
<td>SC.ENV.5.2, 5.3; WL.IIIS.Y5.1.1</td>
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<tr>
<td>Reading: Voter Owned Hawai‘i</td>
<td>SS.9PD.5.2, 5.5; SS.PSG.3.1</td>
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<tr>
<td>Reading Activity: Community Action Project Ideas with Hawaii 2050 Plan</td>
<td>SS.9PD.5.2, 5.5; SS.PSG.3.1</td>
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<td>Unit: Fair Trade Action Pack 2 &amp; Fair Trade Action Plan</td>
<td>SS.9PD.5.2, 5.5; SS.PSG.3.1</td>
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**Y. Students get …**

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<tr>
<th><strong>Suggested Field Trip &amp; Guest Speakers</strong></th>
<th>Teacher gets …</th>
<th>Relates to HCPS III</th>
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</thead>
<tbody>
<tr>
<td>Any Island: Observe &amp; enjoy local area of natural beauty to inspire student interest in Unit 10 assignments and future sustainable behavior</td>
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<td>SC.ENV.5.2</td>
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<tr>
<td>Guest Speaker – business or college staff involved in sustainable efforts; volunteers working in conservation, activism, etc.</td>
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<td>SC.ENV.5.2 SS.9PD.5.2, 5.5; SS.PSG.3.1</td>
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This unit addresses the following:

Standards/HCPS III addressed or related to this item:

**SC.MS.3 Standard 3:** OCEANOGRAPHY — Understand the physical features of the ocean and its influences on weather and climate: **SC.MS.3.1** Explain how El Niño influences global weather patterns; **SC.MS.3.8** Explain how the ocean influences weather and climate;

**SC.ENV.3:** EARTH SCIENCE — Understand the physical systems of the earth: **SC.ENV.3.1** Judge the effects of ocean currents on climate; **SC.ENV.3.4** Compare different methods of generating electricity (e.g., fossil fuels, nuclear); **SC.PH.3:** MATTER AND ENERGY CONSERVATION — Understand the nature of momentum and energy transformations:

**SC.PH.3.4** Describe ways that energy can be transformed from one form to another (e.g., potential energy to kinetic energy); **SC.PH.3.5** Use the equations for changes in kinetic energy \( KE = \frac{1}{2} mv^2 \) and gravitational potential energy \( PE = mgh \) to calculate changes in energy; **SC.PH.3.7** Use the conservation of energy law to solve problems involving an energy transformation; **SC.CH.3:** PROPERTIES OF MATTER — Understand different states of matter: **SC.CH.3.5** Apply gas laws to relationships between pressure, volume, and temperature of any amount of an ideal gas or any mixture of ideal gases using \( PV = Nrt \);

**SC.ENV.4 Standard 4:** LIFE SCIENCE—Understand the interconnections of living systems: **SC.ENV.4.5** Explain the relationship between the carbon cycle and fossil fuels

**SC.ENV.5 Standard 5:** INTERDEPENDENCE OF THE ENVIRONMENT AND HUMAN SOCIETIES—Understand the interdependence between environmental systems and human societies: **SC.ENV.5.2** Assess the effect of human actions on an environmental system; **SC.ENV.5.3** Explain how population growth and natural resource consumption affect global sustainability; **SC.ENV.5.6** Explain why recycling and conservation of resources are important; **SC.CH.5 CHEMICAL REACTIONS:**— Understand the nature of chemical interactions and solutions: **SC.CH.5.2** Calculate the number of moles needed to produce a given gas, volume, mass, and/or number of moles of a product given a chemical equation

**SC.PS.6. Standard 6:** Physical, Earth and Space Science: NATURE OF MATTER AND ENERGY: Understand the nature of matter and energy, forms of energy (including waves) and energy transformations, and their significance in understanding the structure of the universe: **SC.PS.6.2** Explain how the law of conservation of energy is applied to various systems; **SC.PS.6.4** Explain that changes in thermal energy can lead to a phase change of matter;

**SC.ES.8 Standard 8:** Physical, Earth, and Space Sciences: EARTH AND SPACE SCIENCE: Understand the Earth and its processes, the solar system, and the universe and its contents:
### SC.ES.8 Standard 8

**SC.ES.8.4** Describe how heat and energy transfer into and out of the atmosphere and their involvement in global climate; **SC.ES.8.5** Describe the major internal and external sources of energy on Earth; **SC.ES.8.7** Describe climate and weather patterns associated with certain geographic locations and features

**Source:** See Introduction section or go to: [http://standardstoolkit.k12.hi.us/index.html](http://standardstoolkit.k12.hi.us/index.html)

### Career/Technology Education, Language Arts, Social Studies & World Languages Standards/HCPS III related to this item

- **CTE.9-12.2** Standard 2: CAREER PLANNING: Explore and understand educational and career options in order to develop and implement personal, educational, and career goals; **CTE.9-12.2.1** Analyze annual individual education and career goals; **CTE.9-12.2.2** Evaluate potential career choices in relation to personal interests, strengths, and values; **CTE.9-12.2.3** Apply appropriate and safe behaviors and practices in the school, community, and workplace; **CTE.9-12.2.4** Assess career portfolio that documents evidence of progress toward the attainment of personal, educational, and career goals; **CTE.9-12.2.5** Analyze the demographic, geographic, and technological trends that affect work opportunities; **CTE.9-12.2.6** Gather and prepare documents related to job-seeking; **CTE.9-12.2.7** Prepare for the job interview process; **CTE.9-12.2.8** Assess the compensation, lifestyle, and other benefits associated with careers of interest

- **LA.EWI.1. Standard 1:** Conventions and Skills- Use the writing process and conventions of language and research to construct meaning and communicate effectively for a variety of purposes and audiences using a range of forms: **LA.EWI.1.18** Use a prescribed documentation style (e.g., APA, MLA) to adhere to fair use and copyright guidelines for citing grade-appropriate sources in text, notes, and bibliographies

- **SS.9.PD.5** Standard 5: Political Science/Civics: PARTICIPATION AND CITIZENSHIP- Understand roles, rights (personal, economic, political), and responsibilities of American citizens and exercise them in civic action: **SS.9.PD.5.2** Investigate how citizens can monitor and advocate for a local, state, or national issue; **SS.9P.D.5.5** Demonstrate the role of a citizen in civic action by selecting a problem, gathering information, proposing a solution, creating an action plan, and showing evidence of implementation

- **SS.PSG.3** Standard 3: Understand the political party system and the roles, rights, and responsibilities of American citizens: **SS.PSG.3.1** Identify ways to be an active citizen (e.g., through volunteerism, activism, voting, socially responsible actions) who affects positive change in the community, state, nation, or world; **SS.PSG.3.4** Compare the positions of political parties on contemporary issues based on their differing ideologies

- **WL.IIIS.Y5.1 Standard 1:** INTERPERSONAL: Use target language to engage in conversations, provide and obtain information, express feelings and emotions, and exchange opinions: **WL.IIIS.Y5.1.1** Exchange ideas about issues or problems and their possible solutions

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Ka Hana ‘Imi Na‘auao – A Science Careers Curriculum Resource Project
Available at: [www.cds.hawaii.edu/kahana](http://www.cds.hawaii.edu/kahana)
Unit 10 Pre-/Post-Test
Ka ‘Aha Mua (Future Resource Management)
Knowledge Survey Questions

DIRECTIONS: Write the letter of the correct answer in the blank on the RIGHT. Use capital letters only (e.g. ‘A’ not ‘a’). 1 point given for each correct answer.

1. Humans and coral are similarly at risk because ...

   a) They cannot survive in temperatures above 32 degrees Celsius
   b) They cannot survive if world CO$_2$ levels remain above 350 ppm
   c) They live in over-populated communities that burden ecosystems
   d) All of the above

2. To give testimony to a legislative committee a student must ...

   a) Send them a letter regarding a bill and prepare for a public hearing
   b) Track a bill online and sign up for automatic emails about it
   c) Draft a letter with an introduction, position statement and closing
   d) Wait until she or he is 18 and is allowed to give testimony

3. A closed loop system is better for our planet than a linear system because it ...

   a) reduces waste of finite natural resources
   b) guarantees freedom of speech to all people
   c) cuts corporations’ and governments’ profits
   d) increases corporations’ and governments’ profits

4. Proof that we might fix the current environmental crisis is the fact ...

   a) Climate change is natural and can be solved with technology
   b) People can use mindful awareness to collectively solve problems
   c) People are taking action against bad corporations and governments
   d) People are learning how to make linear systems work

5. Hawaiian concepts of ‘aha and ahupua’a are important because ...

   a) Weaving ‘aha makes people appreciate their ahupua’a
   b) Modern ‘aha councils could protect resources in ancient ahupua’a
   c) These concepts cannot help us in this century
   d) These concepts are sustainable and can guide us away from the linear system
Unit 10 Post-Test

Ka ‘Aha Mua (Future Resource Management)
Conceptual Learning & Alternate Assessment

Page 2

DIRECTIONS: Write, speak or perform your answers as directed below.

6. On another sheet of paper imagine and draw your future home in the year 2050 in Hawai‘i (take between 5 and 15 minutes to do this). Label items and/or actions of stick figures in the house to show several examples of how your future lifestyle meets the goals of the Hawai‘i 2050 Plan.

When done, describe your drawing to your teacher, if necessary, and/or write a paragraph to explain additional knowledge you have about the Hawai‘i 2050 Plan and your vision of how it will effect our future in this state.

7. With a partner, discuss several examples of community actions students could initiate in a town that is experiencing one of these problems (pick just one – you may also write brief notes on another page if you wish):
   a) The town water supply is low and diminishing each year
   b) The town landfill will be full in 5 years
   c) There are no “green collar” jobs in town

When ready, tell your answer to your teacher and two other students.
Vulnerable Species (Student Handout)

Polyps & People

- Corals tolerate a narrow temperature range between 25 degrees Celsius and 29 degrees Celsius depending on location. Corals bleach in response to prolonged temperature change and not due to rapidly fluctuating temperatures. Lab experiments show that corals bleach when water reaches a constant 32 degrees Celsius.

- Humans are luckier and have proven we can live in a temperature range from -45 degrees to +45 degrees Celsius (this is about -50 to 110+ Fahrenheit) and even a little beyond these extremes due to our technological advances.

- However, there is something in the atmosphere that is effecting temperatures and threatens corals, humans and every other living thing on Earth: CO₂

View Video & Discuss: “350”

- 350 is the number leading scientists say is the safe upper limit for carbon dioxide – measured in “Parts Per Million” or “ppm” – in our atmosphere. 350 ppm is the number humanity needs to get CO₂ (carbon dioxide) levels back to as soon as possible to avoid runaway climate change.

- View the 90 second film at: [http://www.350.org/en/animation](http://www.350.org/en/animation) or: [http://www.youtube.com/watch?v=s5kg1oO9tY&feature=player_embedded](http://www.youtube.com/watch?v=s5kg1oO9tY&feature=player_embedded)
Questions:
1. What problem does this video identify?

2. What solution to the problem does this video suggest?

3. What is the current level of CO₂ in Earth’s atmosphere now? Does this mean we’re all doomed?

4. Explore this website to learn more about what people around the world must do and are doing to solve this problem. Go to: www.350.org/understanding-350#3; www.350.org/about/science; www.350.org/friends; or www.350.org/map. Choose one item you find interesting and describe it below, then share this with the class.
Teacher’s Notes for Unit 10: Vulnerable Species

Lecture Notes: Polyps & People

• Corals tolerate a narrow temperature range between 25 degrees Celsius and 29 degrees Celsius depending on location. Corals bleach in response to prolonged temperature change and not due to rapidly fluctuating temperatures. Lab experiments show that corals bleach when water reaches a constant 32 degrees Celsius.

• Humans are luckier and have proven we can live in a temperature range from -45 degrees to +45 degrees Celsius (this is about -50 to 110+ Fahrenheit) and even a little beyond these extremes due to our technological advances.

• However, there is something in the atmosphere that is effecting temperatures and threatens corals, humans and every other living thing on Earth: CO₂ (carbon dioxide)

Video & Discussion: 350 ppm

• 350 is the number leading scientists say is the safe upper limit for carbon dioxide – measured in "Parts Per Million" or “ppm” – in our atmosphere. 350 ppm is the number humanity needs to get CO₂ levels back to as soon as possible to avoid runaway climate change.

➢ View the 90 second film for speakers of any language at: http://www.350.org/en/animation and to see more. You can also view this video at: http://www.youtube.com/watch?v=s5kg1oOq9tY&eurl=http%3A%2F%2Fwww%2E350%2Eorg%2Fwww%2E350%2Eorg%2F&feature=player_embedded

OR

➢ Have a student draw the graphic on the next page on the board.
After reviewing the short video &/or graphic above:

➤ Ask students: What does problem does this video identify? (answer: Too much CO₂ is going into our air & putting us all at risk)

➤ Ask: What solution to the problem does this video suggest? (answer: If we tell everyone to take action against this, we’ll reduce the risk to our climate, ourselves and our environment)

➤ Ask: What is the current level of CO₂ in Earth’s atmosphere now? (387 ppm!) Does this mean we’re all doomed? (Not yet, but nearly!)

Lecture Notes: 350

• [www.350.org](http://www.350.org) tells us: “We’re like the patient that goes to the doctor and learns he’s overweight, or has high cholesterol. He doesn’t die immediately—but until he changes his lifestyle and gets back down to the safe zone, he’s at risk for heart attack or stroke. The planet is in its danger zone because we’ve poured too much carbon into the atmosphere, and we’re starting to see trouble signs: melting ice caps, spreading drought. We need to scramble back as quickly as we can to safety.”

• Read more about what people around the world must do and are doing to solve this problem at: [http://www.350.org/understanding-350#3](http://www.350.org/understanding-350#3)
What is the Hawai‘i 2050 Plan About?

In 2007, the Hawai‘i 2050 Sustainability Plan premiered at a Sustainability Summit in Waikiki. Hundreds of people attended and listened to experts from businesses, environmental groups and politicians as well as a Teen Panel. Information was shared about concerns for Hawaii’s future, a statewide poll of people’s attitudes toward sustainability, and how the task force hopes to proceed. (See more at: www.hawaii2050.org) This is their main goal:

The Triple Bottom Line Approach:
Where economic, community and environmental goals are in balance.

Then, in 2008 the Hawai‘i 2050 Sustainability Task Force sent an 85 page report to the Hawai‘i State Legislature called “Hawai‘i 2050 Sustainability Plan – Charting a Course for Hawai‘i’s Sustainable Future” hoping legislators would vote to approve the Plan and begin to make very important changes in our state. These are the Priority Actions listed in the Plan:

Priority actions: Intermediate steps for the year 2020

Once this planning and community engagement process was complete, the Task Force recognized that while the community respected the vision of 2050, residents also wanted a sense of urgency. People desire tangible targets and benchmarks. In response, the Task Force established priority actions for the year 2020 in these areas:

1. Increase affordable housing opportunities for households up to 140% of median income
2. Strengthen public education
3. Reduce reliance on fossil (carbon-based) fuels
4. Increase recycling, reuse and waste reduction strategies
5. Develop a more diverse and resilient economy
6. Create a sustainability ethic
7. Increase production and consumption of local foods and products, particularly agriculture
8. Provide access to long-term care and elderly housing
9. Preserve and perpetuate our Kanaka Maoli and island cultural values
“Hawaii the Alternative State”
By JIM CARLTON  Wall Street Journal June 30, 2008; Page R12

Hawaii has become an incubator for all sorts of renewable-energy projects

HONOLULU — A state better known for sun and fun is quietly morphing into one of the world’s leading incubators of alternative energy.

- Royal Dutch Shell PLC is heading up a test venture in Hawaii to turn oil-rich algae into fuel. If the process is found commercially viable, the Anglo-Dutch conglomerate could build algae-processing plants elsewhere.

- Ever-Green Energy LLC of St. Paul, Minn., plans to build a plant in Honolulu that uses seawater to cool office buildings; if successful, the project will be expanded to other states. A start-up company, meanwhile, is deploying miniature solar-thermal collectors on Oahu to help generate more power for the local electricity grid. This set-up, too, if successful, will be reproduced elsewhere.

The reason for all the interest: location, location, location.
“Hawaii is the only place in the world where you have access to every form of renewable energy, and you are on the dollar and the U.S. legal system,” says Joelle Simonpietri, a former venture capitalist who now heads an algae-to-fuel firm called Kuehnle AgroSystems Inc.

Hawaii is trying to convert to clean energy as fast as it can. Petroleum imports make up about 80% of the energy supply for Hawaii’s main utility, leaving the state among those hardest hit by the run-up in oil prices. Electricity rates have gone through the roof. The average residential rate on Oahu, where most of Hawaii’s 1.2 million residents live, had doubled to 25.50 cents a kilowatt hour — the highest in the U.S. — from 12.74 cents in 1999, according to Hawaiian Electric Co., the state’s major utility.

So, in January, Gov. Linda Lingle announced plans under a state-federal partnership for Hawaii to derive 70% of its energy from renewable sources by 2030 — one of the most ambitious targets in the world.

➢ The state has gotten a head start toward this goal in some places. On Maui, for example, wind farms power 11,000 homes, or about 10% of that island’s energy, while on the Big Island, which is Hawaii itself, geothermal power from volcanic vents accounts for about a fifth of the energy there.

➢ On Oahu, Hawaiian Electric is building a new power plant that will generate 110 megawatts — enough power for about 30,000 homes — and will run completely on biodiesel fuel. The $160 million plant, expected to open next year, will initially get its fuel from imported palm oil.

“Everything is possible as oil prices rise,” says Henry Montgomery, chief executive of MontPac Outsourcing, a finance and accounting consultancy in Honolulu.

Not all the technologies are problem free. Environmentalists want to make sure, that Hawaiian Electric doesn’t import any of its palm oil from endangered rainforests in Asia. Utility officials say their palm oil will come from sustainable sources, and over time the plant will rely more on Hawaii-grown crops.

There’s also a question of whether the sources of energy can overcome technical hurdles, among other challenges. Gov. Lingle says Hawaii is counting on a multitude of the clean-energy technologies to succeed — not any particular one. “If our experience with petroleum has taught us anything, it is not to get reliant on any one source of energy,” the governor said in a recent interview.
Hawaii the Alternative State: Group Reading Activity

DIRECTIONS: In your group, take turns reading aloud – and reading along quietly and patiently! – about the alternative energy being explored in our state, then answer the questions below and share your responses with the class.

GROUP 1: SOLAR
One of Hawaii’s most abundant resources is its sunshine. But like many places, solar power used to cost so much more than conventional power it largely wasn’t economical — until oil prices got so high.

Now, several solar companies in Hawaii are trying to cash in on the boom in clean-energy demand. Hoku Scientific Inc. until last year specialized in making fuel cells. Now the Honolulu company makes silicon for photovoltaic solar cells at a factory in Idaho, while in Hawaii it installs solar panels for mostly corporate customers including the Bank of Hawaii and Hawaiian Electric. “Obviously, with the high electric rates, Hawaii is a great place to sell alternative energy,” says Darryl Nakamoto, Hoku’s chief financial officer.

Another company, Sopogy Inc., is augmenting local power with solar-thermal energy, a technology that uses mirrors and lenses to concentrate the sun’s rays on fluids, creating steam that turns turbines to generate electricity. Spun off last year from a technology company called Energy Industries, Sopogy has created a miniature version of the giant solar collectors found in places like the California desert. “Micro” collectors weigh about 100 pounds, measure 12 feet by five feet, and can be deployed on building rooftops, Sopogy officials say. Also, unlike many technologies that tap the sun, Sopogy has designed its system so it can store solar energy.

Last year, Sopogy got $10 million in state revenue bonds to set up a one-megawatt demonstration farm on Hawaii. In May, the state Legislature approved $35 million in bonds to help Sopogy build a solar plant on Oahu that will generate 10 megawatts, or enough power for about 3,000 homes, for Hawaiian Electric. Privately held Sopogy has raised more than $10 million in other money too, including from Kolohala Ventures, a Honolulu venture-capital firm.

If successful, Sopogy hopes to expand its micro solar plants around the world. “We want to see our revenues at $1 billion in five years,” says Darren Kimura, president and chief executive of Sopogy, and founder of Energy Industries.

QUESTIONS to discuss & share with the class:
1. What kind of alternative energy did you read about?
2. How can this information help us make future career choices or get jobs?
3. Do you think this venture will succeed? Can it help Hawaii in the future?
Hawaii the Alternative State: Group Reading Activity

DIRECTIONS: In your group, take turns reading aloud – and reading along quietly and patiently! – about the alternative energies being explored in our state, then answer the questions below and share your responses with the class.

GROUP 2: ALGAE & …
One of the holy grails in alternative energy is a system that can extrude oil from algae on a grand, and economical, scale. Scientists say oil represents as much as half the body weight of algae, compared with about 20% for corn, one of the most widely used biofuel crops. Algae also grows as much as 10 times faster than corn, and can be processed for oil without disrupting food supplies.

RENEWABLE SOURCES
A seawater cooling project for downtown Honolulu would be similar to an Enwave Energy project in Toronto (top left); Ormat Technologies’ geothermal plant in Puna (top right); Darren Kimura, president and CEO of Sopogy, a solar-thermal energy firm; and a diagram of a deep-water cooling system. However, the technical challenges have proven large in the past. For example, studies have shown algae strains that can produce the most energy often need to be starved of nutrients, which stunts their growth. Indeed, some previous efforts in the U.S. and Japan over the past 30 years have been dropped, in part, because costs were exorbitant.

But now that oil is so high, several companies are turning to algae again. One of the more closely watched is Cellana, a Shell-led venture with a University of Hawaii spin-off, HR Biopetroleum. The companies announced in November 2007 that the venture would build a pilot facility on the Big Island’s Kona coast. Since then, researchers have been busy planting various strains of algae in test tubes that sit in the warm sea water on the Kona coast. One of the tasks facing them is to find algae that both contains the highest amounts of oil and can grow in warm water. “We’re in the process of whittling down the top super bugs from hundreds to 10,” says Susan Brown, a University of Hawaii researcher who collects specimens for the project on scuba dives around local waters.

QUESTIONS to discuss & share with the class:
1. What kind of alternative energy did you read about?
2. How can this information help us make future career choices or get jobs?
3. Do you think these ventures will succeed? Can it help Hawaii’s future?
Hawaii the Alternative State: Group Reading Activity

DIRECTIONS: In your group, take turns reading aloud – and reading along quietly and patiently! – about the alternative energies being explored in our state, then answer the questions below and share your responses with the class

GROUP 3: SEAWATER

One of the simplest clean-energy concepts is to take cool water from the ocean or a lake and use it to help air-condition buildings in nearby cities. The technique has been used in places like Amsterdam and Toronto, with significant power savings. But piping water to where it needs to go requires more capital investment than many places were willing to make when oil was cheaper. Until recent years, there were also limitations on how deep pipes could be put to suck up the colder water.

In 2003, David Rezachek — a former manager of Hawaii’s alternative energy program — held a workshop in Honolulu to revive local interest in seawater air-conditioning. Even then, Hawaii’s electric rates were the highest in the country. “I said, ‘It’s time to quit talking about it, let’s do this thing,’” Mr. Rezachek recalls.

He helped get Ever-Green Energy to set up a subsidiary called Honolulu Seawater Air Conditioning. The company invested about $3.5 million, while $10.8 million has been raised from mainland and Hawaiian investors, including Kolohala Ventures, says Mr. Rezachek. The state Legislature also authorized $100 million in tax-exempt revenue bonds for a seawater cooling project.

The venture proposed in late 2003 a seawater cooling project be built for downtown Honolulu. Although ocean temperatures on the beaches around Oahu hover in the mid 70s, they drop to 45 degrees at 1,600 feet deep a few miles offshore. So Honolulu Seawater proposed to run a pipe from 1,600 feet deep to a cooling plant onshore, four miles away. The cold seawater would pass through a heat exchanger where it would cool fresh water from separate pipes used to chill nearby office towers downtown.

Designed to cool 12.5 million square feet of office space — or the equivalent of almost five Empire State Buildings — the Honolulu system is projected to save as much as 15 megawatts of conventional power, while at the same time cutting greenhouse gas emissions by 84,000 tons a year. The venture expects to secure permitting by early next year, and be in operation in 2010 at a cost of about $165 million.

QUESTIONS to discuss & share with the class:
1. What kind of alternative energy did you read about?
2. How can this information help us make future career choices or get jobs?
3. Do you think these ventures will succeed? Can it help Hawaii’s future?
Hawaii the Alternative State: Group Reading Activity

DIRECTIONS: In your group, take turns reading aloud – and reading along quietly and patiently! – about the alternative energies being explored in our state, then answer the questions below and share your responses with the class.

GROUP 4: GEOTHERMAL

Few places in the world have as much geothermal energy potential as Hawaii’s Big Island, where the Kilauea volcano has been erupting since 1983. As long ago as 1881, Hawaiian King David Kalakaua met with inventor Thomas Edison to discuss harnessing the power of Hawaii’s volcanoes.

In the 1970s, a public-private partnership dug the first geothermal well in Puna on the windy east side of the island. Over time, enough hot water and steam was taken out of the ground to fuel a 30-megawatt power plant. The plant, owned by Reno, Nev.-based Ormat Technologies Inc., provides power to about 10,000 homes, or 18% of the Big Island’s total supply, according to Hawaiian Electric.

Conceivably, the Kilauea volcano could provide enough power to meet all of Hawaii’s needs, state utility officials say. But there are several limitations. One is the Big Island’s isolation from the other Hawaiian islands. For example, the ocean is so deep between it and the next closest island, Maui, that officials in the state abandoned a past plan to try and lay an underwater cable between the islands to transfer the geothermal energy.

Another issue: opposition to significant expansion of geothermal by some native Hawaiians, on grounds the volcano is sacred, says Robert Alm, a spokesman for Hawaiian Electric.

QUESTIONS to discuss & share with the class:
1. What kind of alternative energy did you read about?
2. How can this information help us make future career choices or get jobs?
3. Do you think these ventures will succeed? Can it help Hawaii’s future?
### Key Science Idea:

**Nature**
- the physical world; life in general; not man-made or supernatural*

*English/American definition

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<th>Nature Goddesses &amp; Gods</th>
<th>Ancient Hawaiian Beliefs About Nature</th>
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| **Kāne** - the Hawaiian god who represents the sun. All men embody his spirit. | **Herb Kane teaches us:** “In the beginning there was only darkness ... but within that void brooded an intelligence. The Earth Mother, Papa, was created in the darkness. Light was created, the Sky Father, Wākea. In their union was created a universe of opposites. “

| **Hina** – the Hawaiian Goddess, created the world. She was the Moon and the first woman. All women embody her spirit. | “The great spirits were born. Tane was the spirit of creation, of sunlight, fresh water, and forests, and the male ancestor of all living things, including The People. Tangaroa of the Ocean, Tu, patron of the works of men, and Rongo, patron of agriculture and healing were the male ancestors of all things in nature, the sources of all power, or *mana* ... their names would change to Kāne, Kanaloa, Ku, and Lono. “

| **Heitiki** – this Maori pendant represents an embryo (& Hina’s son, Maui). It gives mana (power) to women. | “Also born was the supreme female spirit, known as Hina and as Haumea. Heir to the power of creation, patroness of women’s works, she is mother of many spirits. As La’ila’i (tranquility), Haumea was mother of the first humans. As Hina, she is associated with darkness ... of the soil, the egg, or the womb. “

|                               | “These greatest of spirits were ancestors of the people and of all life, and in this way the people were related to all other living things.” – H. K. |

Similar beliefs were held by diverse cultures around the world, but changed at different times worldwide.
Differing Beliefs about Nature in History

Europeans in 1800
- universe is 2 separate spheres, natural & supernatural (spiritual)
- one supernatural male spirit, God the Creator, is above humans
- humans are below God but above nature & may rule it as they choose

Hawaiians in 1800
- universe is single sphere (natural & supernatural are combined)
- original creative spirits (gods) are ancestors of all things in nature; kalo, our older brother, is above humans
- conquest of nature is patricidal & wrong

Hawai’i Today?
- citizens of diverse cultures understand the universe based on past beliefs & discoveries
- many seek a future of ‘aha & ahupua’a systems to care for us all

Timeline of human beliefs ...
- Before 5,000 bc - around the world small tribal nations see themselves as a part of nature, worshipping fertility & nature goddesses & sometimes gods; humans must cooperate to survive
- 5,000 bc to present - dominant humans control many aspects of nature & each other; war gods are worshipped, then many empires turn to one male God; empires conquer tribes & nations; people revere those in power, fearing destruction & death; empires value nature for its resources
- 21st century to future - global climate change asserts nature’s dominance over humans; empires struggle with religious diversity & fight over dwindling natural resources; many groups seek cooperation & sustainability to survive

A Time to Choose Our Beliefs

David Korten teaches us: “Today we face a defining choice between two contrasting models for organizing human affairs: Empire or Earth Community.”
We can ...
1. allow Empires (e.g. Roman, Asian, European, American, corporations) to organize & dominate us
Or we can ...
2. work towards an Earth Community, to organize ourselves by partnership, creative co-operation & resource sharing for the good of all.

“Supporting evidence for the possibilities of Earth Community comes from the findings of quantum physics, evolutionary biology, developmental psychology, anthropology, archaeology, religion & mysticism. It was the human way before Empire; we must make a choice to re-learn how to live by its principles again.” – D.K.
Reading Reaction: More about Earth Communities

WHAT DO YOU THINK?
Here are more quotes by David Korten. In a small group, talk about your reaction to the quote(s) assigned to you.

1. The Earth Charter states:
"We stand at a critical moment in Earth's history, a time when humanity must choose its future."

2. “Our most immediate and obvious task to achieve regime change in America and to get on the path to a just, sustainable, and compassionate world is unlikely to be done by America’s corporate CEOs or politicians. It will come — if at all — from “We the people”... there is no one else.”

3. “60 years ago we created the United Nations to try resolve our differences by talking, rather than war. In the last 10 yrs communication technologies (Internet, etc.) have made it possible for almost any human on the planet to talk to anyone else at any time for almost no cost. This technology has created a global society for millions of people.”

4. “Many of us engaged in the struggles to create an Earth Community think of ourselves as representing an alternative fringe. It is self-defeating - we represent the majority values of the people in America and beyond.”

NOW SHARE WITH THE CLASS: What are your beliefs &/or concerns about the future? What good can our class discussions do?

Silenced by Empires: Delphi was inhabited since 1400 B.C. by people who worshipped the Mother Earth deity. Early goddess worship at Delphi gave way to the Greek worship of Apollo. In 191 B.C. the sanctuary fell to the Roman Empire.

Photo by Ben van der Zee. Illustration by Tracy Loeffelholz Dunn
1. READ the facts from “The Story of Stuff” website on page 2 below before watching the video (do this aloud as a class or silently on your own as directed)

2. WATCH the 3 minute Intro segment of “The Story of Stuff” with the class at: www.storyofstuff.com. Your kumu (teacher) will show it using a projector and then stop the video before the next segment begins.

3. THINK: Do you have a lot of stuff? Do you want more? Do you think your having or wanting stuff is part of a world wide crisis? SHARE your thoughts with the class.

4. WATCH WITH 3 PARTNERS: Your kumu will assign your team 1 of these middle 5 segments (chapters) of “The Story of Stuff” to watch:
   • Extraction
   • Production
   • Distribution
   • Consumption
   • Disposal

   If it takes too long for the video to buffer (upload) on your laptop, review these documents for your segment (chapter) assigned above at www.storyofstuff.com/resources.html (you can do 1 each):
   • Annie Leonard’s Script (what she says in the video)
   • Story of Stuff Glossary (what all the words and phrases she uses mean)
   • 10 Things You Can Do (another way we can live to solve these problems)

5. PREPARE TO SHARE: After reviewing your video segment, complete these tasks:
   ➢ Write down one important new vocabulary word or phrase for this segment. Example from the Intro segment:
     Linear System – a system that moves in a straight line
   • Pose a question for the class to consider (this can be Annie’s question or one of your own for this segment). Example from the Intro segment:
     Where does stuff come from & go to?
   • Try figure out the main point for this segment. Example from the Intro segment:
     People & the limits of the planet are not shown in linear system!

6. TELL THE CLASS your vocabulary, question(s) & main points for your segment.

7. WATCH the last segment “Another Way” with the whole class. DISCUSS how any of us can help solve the problem consumerism creates
Facts from
*The Story of Stuff*

• In the past three decades, **one-third** of the planet’s natural resources base have been consumed.¹

• In the United States, we have **less than 4%** of our original forests left.²

• Forty percent of waterways in the US have become **undrinkable**.³

• The U.S. has 5% of the world’s population but consumes 30% of the world’s resources⁴ and creates 30% of the world’s waste.⁵

• If everybody consumed at U.S. rates, **we would need 3 to 5 planets**.

• There are over **100,000 synthetic chemicals** in commerce today.⁶

• Only a handful of synthetic chemicals have even been tested for human health impacts and **NONE have been tested** for synergistic health impacts.⁷

• In the U.S., industry admits to releasing over **4 billion pounds of toxic chemicals** a year.⁸

• The average U.S. person now **consumes twice as much** as they did 50 years ago.⁹

• We each see more advertisements in one year than a people 50 years ago saw in a **lifetime**.¹⁰

• In the U.S. our **national happiness peaked** sometime in the 1950s.¹¹

• In the U.S., we spend **3–4 times as many hours shopping** as our counterparts in Europe do.¹²

• Average U.S. **house size has doubled** since the 1970s.¹³

• Each person in the United States makes **4 1/2 pounds of garbage** a day.¹⁴ That is twice what we each made thirty years ago.¹⁵

• For every one garbage can of waste you put out on the curb, **70 garbage cans of waste** were made upstream to make the junk in that one garbage can you put out on the curb.¹⁶

**Note:** **Synergistic health impacts:** the combined effects of exposure to multiple chemicals at the same time. Each chemical will not only cause its specific health impact, but the combination of chemicals may have unknown or unanticipated impacts. This is important because, with the world polluted as it is today, none of us is ever exposed to only one chemical at a time—we are always exposed to synergistic health impacts, the cumulative impact of which simply isn’t known.
The Story of Stuff: Homework

1. Watch the 20 minute video “The Story of Stuff” online at: www.storyofstuff.com then create 3-5 discussion point ideas. Write them down in the space below and on the back of the page if you need more room. Your discussion points should make it clear if you agreed or disagreed with the film, or parts of the film. Feel free to disagree with the video, but be prepared to defend your ideas. If you need help on this, take the time to explore the Web site more – there’s lots of “stuff” there.

2. Environmentalism is nothing without advocacy. Show the video to someone, preferably your ‘ohana (it’s a good idea to watch the video with them). Talk with them. Do they think it’s got some good points or is it a load of rubbish? Either way is fine. Write down what they, as adults in the world, think about this. Is their perspective different from your own?

3. Whomever you watched the video with, ask them nicely to sign the paper

Signature: _________________________________

Relationship to you: _______________________________
‘Green’ Films for Hawai‘i & Ka Honua (The World)

Teachers and students can go to the website at: http://current.com/green/ to browse thousands of current videos and readings when researching issues related to sustainability and environmental science.

The website has films related specifically to Hawai‘i and “going green” - see the list below of great videos to begin with. Also, many “Green” films show efforts around the world that link directly with our interests in the Islands. Type any topic key words into the search box, click the ‘video' box if you only want videos, and see what comes up!

**Ted Obringer’s Series: Go Green Hawai‘i!**

- The complete Go Green Hawai‘i Series by Ted Obringer can be seen on OC16 TV. Obringer is writer/director/producer of this series & Hawaii’s Climate Crisis which can be viewed in segments here, too, at: http://current.com/people/go_green_hawaii

**Go Green Show – Cycle City**

- **Sustainable Construction** This is a segment shows how Cycle City uses recycled materials in the construction of their building. View at: http://current.com/items/77155022_go_green_show
- **Biodiesel** This is a segment shows how Cycle City uses waste grease from the Wendy's restaurant next door to power their service area. View at: http://current.com/items/77165012_go_green_biodiesel
- **Water Savings** This is a segment shows how Cycle City conserves water to wash their bikes and vehicles. The water is also used to irrigate the property. View 5 minutes of this film at: http://current.com/items/77150312_go_green_water_savings

**Pacific Gyre Garbage Island**

- **Ocean's toxic plastic soup** At twice the size of Texas, Garbage Island is a collection of plastic at the center of a great pacific current to the south east of Hawai‘i. Shown here is a 6½ minute video, part 1 of 12. (Warning: some coarse language) See the rest at: www.vbs.tv. View at: http://current.com/items/89403705_oceans-toxic-plastic-soup.htm

**Big Island Biodiesel**

- **Debate: Ranchers & Land Issues** This 2 minute clip from KGMB 9 covers both sides of the biodiesel debate on the Big Island. View at: http://kgmb9.com/main/content/view/11474/40/

**All Islands’ Invasive Wasp**

- **Wasp vs. wasp!** This 2½ minute clip from KGMB 9 covers the Eurytoma Erythrinae which will lay eggs on the leaves of the endangered tree. When they hatch, they'll feed on the larvae of the gall wasp, the wiliwili’s enemy. Other remedies for invasives are described. View at: http://kgmb9.com/main/content/view/11825/40/
My Personal ‘Go Green’ Checklist & Contest

At last! Here is it all in one place! You can ‘go green’ one step at a time at school and at home, and even ask your kumu (teacher) to let you organize a contest in class, or with other classes, so you win a prize for doing it!

Just choose one topic below and find the page that lists all the green tips for this area of your life in which you could try act more sustainably.

Check off the tips that you already do, jot down new personal goals for a few sustainable things you want to begin doing more often, and get your family to start doing these with you. (You might want to put your goals on your frig or bedroom door.)

At the end of the quarter term or semester, tell the class how you and your family did, or compare your class results with other classes, and let kumu award a prize to those who made the best effort to go green! You can even help your kumu get prize donations, make prizes or think up other rewards so you can be pono too!

Green Tips Pages that Follow

Section 1: Food p.2
Section 2: Shopping p.3
Section 3: Cleaning p.3
Section 4: Personal Grooming p.4
Section 5: Work p.4
Section 6: Community p.5
Section 7: Travel p.5
Section 8: Vehicle Maintenance p.6
Section 9: Water p.6
Section 10: Yard and Garden/Home Exterior p.7
Section 11: Home Repair p.7
Section 12: Waste/Recycling p.8
Section 13: Energy p.9-10
Section 1: Food

☐ Compost food waste outside or in an indoor compost bucket.

☐ Use the microwave instead of the stove to heat small items or to re-heat leftovers.

☐ Forego preheating your oven if baking, roasting, or broiling a dish that will take longer than one hour to cook. For breads and cakes, preheat for ten minutes or less.

☐ Follow the Monterey Bay Aquarium Seafood Watch checklist to know what seafood to avoid (http://www.mbayaq.org/cr/seafoodwatch.asp). Choose sustainably harvested wild fish when possible, instead of farmed varieties, to reduce your exposure to heavy metals.

☐ Shop at farmers’ markets or buy locally-produced food from your neighborhood supermarket or natural foods store.

☐ Buy USDA certified organic food.

☐ Grow the vegetables and herbs you eat frequently in a home or community garden.

☐ Purchase fresh fruits and vegetables rather than canned or frozen to eliminate packaging waste.

☐ Save leftovers and take them for lunch.

☐ Freeze quantities of food or leftovers that are too big to eat right away, in order to reduce food waste.

☐ When dining out, carry with you a non-disposable food container to take home what you don’t eat.

☐ Cut out at least one meal of meat per week.

☐ Use non-disposable containers and dishes to store food.

☐ Install water filters on your faucets rather than purchasing bottled water.
### Section 2: Shopping

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- Buy products packaged in recyclable materials or products that use less packaging.
- Buy items in bulk to further reduce packaging waste.
- Take reusable bags, such as cloth or canvas, when grocery shopping.
- Buy clothing made from sustainably-produced materials and manufactured by companies that provide fair working conditions and wages to employees.
- Purchase goods and services that are produced and delivered in cleaner ways. Buy commodities that are grown or produced locally to reduce emissions that result from transport and shipping. Look for reusable and recyclable products, and buy from companies that have good environmental track records.

### Section 3: Cleaning

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- Hang clothes to dry whenever possible. Clean the lint screen of the clothes dryer after every use, and clean ducts and vents regularly.
- Wash clothes with cold water whenever possible. Only use hot water for very dirty loads. Always use the appropriate water level and amount of detergent.
- Use dry cleaning companies that use environmentally sensitive cleaning. Purchase a reusable garment bag to transport your dry-cleaned clothes, and return your hangers to the dry cleaners for reuse or recycling.
- Purchase organic or environmentally safe cleaning products or make your own out of vinegar, baking soda, and water.
- Buy sturdy cleaning tools (like mops, toilet bowl brushes, and dusters) that will last for a long time. Avoid disposable cleaning tools.
- Purchase biodegradable, phosphorus-free laundry soap without chemical and dye additives.
Section 4: Personal Grooming

☐ Turn off the water while brushing your teeth.

☐ When taking a bath, plug the drain in the tub before turning on the water.

☐ Or, to save hot water, take a 4-5 minutes shower instead of a bath.

☐ Buy products made from natural ingredients that are not tested on animals.

Section 5: Work/School

☐ Take the bus, bike, or walk at least twice a week to school, work, an errand or an appointment.

☐ Start a carpool or check into vanpool options at work.

☐ Work from home one or two days per month.

☐ Use both sides of paper when copying or printing to reduce paper waste.

☐ Eliminate a cover page when faxing to save paper on both ends of the transmission.

☐ Use a ceramic mug or thermos for your morning coffee, rather than a disposable cup.

☐ When possible, turn off your office lights and take advantage of natural lighting from the sun.

☐ Adjust the power management feature on your work computer to operate at low energy mode when not in immediate use.

☐ Turn off computers, printers and lights, if possible, at the end of the work day.
**Section 6: Community**

- Ask your employer or school to become Cleaner and Greener® Certified.
- Look for the Cleaner and Greener® Seal when you shop. A list of certified companies is available at [www.cleanerandgreener.org](http://www.cleanerandgreener.org).
- Ask your friends and relatives to fill out a Personal ‘Go Green’ Checklist.
- Share one sustainability tip with someone each week.

**Section 7: Travel**

- Consider a “service vacation” or other way to give back to the community when you travel.
- Purchase emissions offsets for your travels.
- Unplug your appliances before leaving home.
- Use public transportation or rent a hybrid or fuel-efficient vehicle when traveling.
- Reuse linens and towels during your hotel stay to reduce water consumption.
- Turn off all lights when leaving your hotel room.
- Use a refillable water bottle, canteen, or thermos instead of purchasing bottled water.
- Use a digital camera and eliminate the use of hazardous chemicals for processing prints from film.
### Section 8: Vehicle Maintenance

- [ ] Keep your vehicle in good running condition. Have the vehicle inspected regularly, and follow the manufacturer's instructions on routine maintenance, such as oil and filter changes.

- [ ] Make sure tires are properly inflated and aligned, and fix any leaks immediately. Consider replacing worn tires with retreads to reduce the use of virgin materials.

- [ ] Get warning lights checked out as soon as they appear.

- [ ] Change your vehicle's air filter regularly.

- [ ] Purchase an alternative fuel vehicle or vehicle that achieves overall fuel mileage greater than 40 mpg, or 60 mpg.

### Section 9: Water

- [ ] Fix all dripping water faucets.

- [ ] Install a low water (1 gallon per flush or less) toilet.

- [ ] Install a low flow showerhead (1.6 gallon per minute or less).

- [ ] Fit faucets with low flow aerators (1.6 gallon per minute or less).

- [ ] Use large water-hogging appliances such as the washing machine and dishwasher during off-peak hours (i.e., between 8pm and 8am) to reduce municipal wastewater treatment plant loads.
Section 10: Yard and Garden/Home Exterior

☐ Eliminate herbicide, pesticide and fertilizer use in the yard.

☐ Leave grass clippings on the lawn or use them as mulch for plantings.

☐ Compost yard waste.

☐ Use native plantings and rain gardens.

☐ Install rain barrels at downspouts and use rainwater to water the yard.

☐ Use drip irrigation instead of regular sprinklers to gardens, grass, and flower beds.

☐ Water in the evenings or mornings to reduce evaporation and allow more water directly to the plants.

☐ Install photocells, timers, or motion sensors on exterior lights.

☐ Cover your pool when not in use to reduce water evaporation.

Section 11: Home Repair

☐ Use low VOC paints, stains, varnishes, adhesives, and carpeting.

☐ Use FSC-certified wood for home repairs and improvements.

☐ Use recycled or recyclable sheet flooring and carpeting. When replacing wood floors, choose sustainably harvested bamboo over conventionally harvested hardwood.

☐ Select highly reflective roofing materials when installing a new roof to save in cooling costs.

☐ Only select contractors who pledge to recycle construction waste when remodeling your home.
Section 12: Waste/Recycling

☐ Use “stuff exchange” websites such as www.freecycle.org instead of buying new items and throwing away or donating old ones.

☐ Reduce the amount of junk mail you receive by registering with the National Do Not Mail List https://www.directmail.com/directory/mail_preference/?ref=G) or the Mail Preference Service https://www.dmchoice.org/MPS/mps_consumer_description.php

☐ Recycle all paper, newspaper, plastics, glass, aluminum, and other metals.

☐ Purchase rechargeable batteries to reduce hazardous waste.

☐ Dispose of light bulbs, electronics, batteries, paint, cleaners, and other household hazardous waste items at appropriate municipal drop-off centers.

☐ When replacing your personal computer, consider purchasing a refurbished model to reduce manufacturing waste.

☐ Download software online to reduce computer disk and packaging waste.

☐ Take advantage of online banking and electronic billing to save paper.
### Section 13: Energy

<table>
<thead>
<tr>
<th>My Personal Goal</th>
</tr>
</thead>
<tbody>
<tr>
<td>Replace burned out light bulbs with compact fluorescents or LEDs.</td>
</tr>
<tr>
<td>Order renewable energy, such as wind power or solar power, from your power company.</td>
</tr>
<tr>
<td>Visit <a href="http://www.cleanerandgreener.org/resources/calculators.htm">http://www.cleanerandgreener.org/resources/calculators.htm</a> to use our emissions calculator and calculate the emissions created by energy use in your home.</td>
</tr>
<tr>
<td>Turn off interior lights whenever you leave the room for more than two minutes.</td>
</tr>
<tr>
<td>Turn off appliances (TV, stereo, computer, etc.) when not in use. Turn off at the switch or wall socket, instead of leaving them on standby.</td>
</tr>
<tr>
<td>Plug electronics--such as computers, printers, and lamps--into a power strip and turn off when not in use.</td>
</tr>
<tr>
<td>Unplug your cell phone charger when not in use.</td>
</tr>
<tr>
<td>Check out the energy saving options on your computer, enable standby, and set the system to hibernate after 10 or 15 minutes.</td>
</tr>
<tr>
<td>In winter, set your thermostat 2 degrees lower; in summer, set it 2 degrees higher – better yet, install a programmable thermostat and recycle your old dial (it contains mercury).</td>
</tr>
<tr>
<td>Use shades and drapes to block out sunlight during hot weather and let it in during cold weather.</td>
</tr>
<tr>
<td>Set your refrigerator temperature at 38 to 42 degrees Fahrenheit, and your freezer at 0 to 5 degrees Fahrenheit.</td>
</tr>
<tr>
<td>If you have one, unplug that old second refrigerator in the garage or basement; old appliances tend to consume a lot of energy.</td>
</tr>
</tbody>
</table>
Section 13: Energy (continued)

☐ Clean refrigerator and air conditioner coils regularly, and defrost freezer to eliminate ice build-up.

☐ Keep the hot water heater set close to (but not below) 120 degrees (Note: Those with weak or suppressed immune systems should keep the thermostat set closer to 130).

☐ Check for leaks around the stove and refrigerator doors, and replace seals if necessary (a dollar bill stuck into the closed door should be difficult to pull out – if it’s not, the seal needs replacing).

☐ Clean and service your furnace and air conditioners yearly, and replace your filters 3-4 times a year.

☐ Have a certified home energy rating conducted and implement the recommendations.

☐ Install low emissivity (low E) glass with a solar heat gain coefficient of .40 or less and a u-value of .35 or less.

☐ Use large electrical appliances such as the washing machine, dryer and dishwasher during off-peak hours (i.e., between 8pm and 8am) to reduce power plant loads.

☐ When shopping for electronics or major appliances, such as washers and dryers, refrigerators, and heating/cooling systems, buy ENERGY STAR labeled products.

☐ Conserve power (and manufacturing waste) by purchasing an all-in-one printer, copier, scanner, and fax machine.

### Objectives:
1) to learn how giving testimony to legislative committees can be an important part of science work for career or community living; 
2) to practice giving testimony in writing or verbally on a sustainability issue of personal &/or community interest or concern

### Minutes: Suggested Sequence:

<table>
<thead>
<tr>
<th>Minutes</th>
<th>Suggested Sequence</th>
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<tbody>
<tr>
<td>2-5</td>
<td>1. TALK STORY – as a class, scan pages 1 and 2 of the reading “Giving Testimony to a Legislative Committee” and ask students what they know about how the legislature works. Share what you know about the process, challenges and successes of citizens – including youth – who testify for or against bills.</td>
</tr>
<tr>
<td>5-15</td>
<td>2. Optional ONLINE SEARCH &amp;/or READING: ask students to visit <a href="http://www.capitol.hawaii.gov">www.capitol.hawaii.gov</a> and conduct a keyword search for “sustainable” or other keywords related to this class, then share information and questions about the postings they find. If you don’t have computer access for enough students, go over page 4 of the reading above called “Example Written Testimony” (to save time, 1/5th of the class can each read &amp; evaluate short sections then share information about who wrote this testimony, when and why).</td>
</tr>
<tr>
<td>10-30</td>
<td>3. Optional FILM: show all or part of the 16 minute film “Green Jobs Not Jails - The Third Wave Of Environmentalism” at: <a href="http://www.youtube.com/watch?v=o3Zb0EVKOy">http://www.youtube.com/watch?v=o3Zb0EVKOy</a>. It may be best to prepare students for discussion by previewing these ideas &amp;/or getting ready to take notes on them: third wave environmentalism, eco-justice, green vs. gulag economy, incarceration, restoration, social justice.</td>
</tr>
<tr>
<td>20-45</td>
<td>4. ROLE PLAY ACTIVITY: 1) have the class brainstorm a list of environmental issues to address and another list of different types of citizens who would be for or against the issues if they were part of a bill in the legislature (see Teacher’s Notes for helpful brainstorm prompts). 2) Next select just 3 issues for the class to focus on for this activity, then have pairs help one another choose 1 issue and prepare testimony for it. 3) Tell students in advance they will have 3 minutes to testify and they must introduce themselves and clearly state if they support or do not support the bill the issue addresses, and why. (Try to find volunteers to present sides they don’t normally agree with, so issues are discussed and viewed more broadly.) Use a timer with bell to cue students to begin and complete their role play. 4) After role playing, discuss as a group &amp;/or have students write individually a brief reflection on what they learned from the activity (i.e. what to do, what not to do, how to do it and why).</td>
</tr>
</tbody>
</table>
| 15-30+  | 5. Optional WRITE TESTIMONY: Go over the directions on page 3 of the “Giving Testimony to a Legislative Committee” handout, referring again to the example
Total = 52+ min

given on page 4. Then assign students a due date to complete their own written testimony for a legislative bill. This could be done as homework, or in class, either individually, in small groups or as a class. This could also be done as part of this unit’s Community Action Project. If the legislature is not in session (it runs from January to May), students can still prepare testimony for bills slated for the coming year’s session. Encourage students to research actual bills which may affect them and your school’s community and complete this assignment in reference to one of these bills.

<table>
<thead>
<tr>
<th>Materials:</th>
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<tbody>
<tr>
<td>• For teacher: Optional: Internet access &amp; projector (or 1 computer for every 4 students)</td>
<td></td>
</tr>
<tr>
<td>• For students: 1 each of 4 page handout: “Giving Testimony to a Legislative Committee”</td>
<td></td>
</tr>
<tr>
<td>• Safety: remind students to stay seated during the role play and not attempt “Jerry Springer” types of interactions or inappropriate language</td>
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<tr>
<th>Assessment/Performance Indicators:</th>
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<tbody>
<tr>
<td>• Informal assessment: Participation in Group Discussions &amp; Role Play practice activity, as well as optional reading, online search &amp;/or practice writing activities</td>
<td></td>
</tr>
<tr>
<td>• Formal assessment: optional If students are given sufficient preparation time and practice, Role Play and/or Written Testimony can be graded for persuasiveness, clarity, accuracy of information and appropriateness of topic (2½ points each to total 10 Points)</td>
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<table>
<thead>
<tr>
<th>Suggested Points:</th>
<th></th>
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<tbody>
<tr>
<td>10 points possible for participation …9+ insightful; 8+ engaged; 6.5+ adequate; 6 or below inadequate</td>
<td></td>
</tr>
<tr>
<td>10 points for optional graded Verbal &amp;/or Written Testimony … see same scale as above &amp; criteria at left</td>
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<thead>
<tr>
<th>Exceeds Expectations:</th>
<th>Meets Expectations:</th>
<th>Needs Improvement:</th>
</tr>
</thead>
<tbody>
<tr>
<td>Notes are taken in group discussions &amp; while watching peers in practice role play (&amp; optional reading, online search &amp;/or practice writing activities); overall participation shows insight &amp; engagement in learning; Optional Formal work products show insight and accurate use of research to be highly persuasive to audience</td>
<td>Spoke &amp; listened in group discussions &amp; while watching peers in practice role play (&amp; optional reading, online search &amp;/or practice writing activities); overall participation shows adequate attention and at least 2/3rd of time on task; Optional Formal work products show clarity and some accurate use of research to attempt to persuade audience</td>
<td>Participated less than 2/3rd of the time in group discussions &amp; while watching peers in practice role play (&amp; optional reading, online search &amp;/or practice writing activities); overall participation shows insufficient attention and time on task; Optional Formal work products are not clear, are inaccurate, use no research &amp;/or do not attempt to persuade audience</td>
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<tr>
<th>Learning Styles:</th>
<th></th>
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<tbody>
<tr>
<td>✔ Left Brain ✔ Right Brain ✔ Auditory ✔ Visual ✔ Kinesthetic/Tactile ✔ Spatial</td>
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</table>

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<tr>
<th>Enrichment/Extension:</th>
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<tbody>
<tr>
<td>• Read the extra handout in this unit, Part B: “Example Bright Idea – Service with a Statement”</td>
<td></td>
</tr>
<tr>
<td>• Take part and get others to join in Earth Hour (see: <a href="http://www.earthhour.org/about/">www.earthhour.org/about/</a>), a global yearly campaign to influence policy on climate change by turning off the lights for an hour. The movement began in 2007 in Sydney with over 2 million people, in 2008 involved 50</td>
<td></td>
</tr>
</tbody>
</table>
Teacher’s Notes for Unit 10, Legislative Testimony Lesson

For #3 above – About “Green Jobs Not Jails - The Third Wave Of Environmentalism”
Van Jones, Founder/Director of the Ella Baker Center for Human Rights
(http://ellabakercenter.org/) talks about his compelling moral vision for California to abandon its ‘incarceration economy’ for an ‘innovation economy’ and do an ecological U-turn on the four wheels of labor, progressive business, environmentalism and social justice. As he puts it, "a rainbow city in a rainbow state in a rainbow country leading the way to a rainbow planet."

- gu·лаг (say GOO-lahg), noun
  1. A network of forced labor camps in the former Soviet Union.
  2. A forced labor camp or prison, especially for political dissidents.
  3. A place or situation of great suffering and hardship, likened to the atmosphere in a prison system or a forced labor camp


For #4 above – Role Play Activity: Brainstorm Prompts
1. What environmental issues are related to water, land, or air that concern our community? Which people, animals or other species do they affect? Are the issues very local (just our town), island-wide concerns, state, national and/or global?
2. Which citizens might be concerned about these issues? Students? Parents? The elderly? People with disabilities? The poor or the rich? People of specific cultures, races or religions? People in business or politics? Local people or others?
GIVING TESTIMONY TO A LEGISLATIVE COMMITTEE

Information to track a bill may be easily obtained from the Hawaii State Legislature website: www.capitol.hawaii.gov. Find out which committees your bills have been referred to by checking this website or by contacting your district representative's or senator's office, the Chief Clerk's Office of either the House (Ph: 586-6400/Fax: 586-6401) or the Senate (Ph: 586-6720/Fax: 586-6719).

To get on a committee mailing list to receive copies of agendas, public hearing notices, and informational briefing notices, inform the appropriate committee chair of your interest. The most timely and cost-effective method, however, is to be placed on an automatic e-mail list through the Hawaii State Legislature website listed above.

You may have an opportunity to influence the decision of a committee chair to consider a bill and to schedule the bill for a public hearing by contacting the committee chair or committee clerk as soon as the bill has been referred to the committee. At this time, you should provide the committee chair or committee clerk with background information on the bill and answer any questions that they may have. You may also want to send a letter to the committee chair to raise your concerns about the bill or express your support or opposition to the bill, either as an individual or on behalf of your group or organization.

For the most part, committee chairs control their committee's agenda and schedule the bills that they feel should move through the legislative process. However, you may want to consider communicating your views to the individual members of each committee who may then voice your concerns to the committee chair.

Continue …
If your bill is scheduled for a **public hearing**, keep these **guidelines** in mind:

- When submitting testimony on a bill, the committee may require you to present a minimum number of copies of written testimony to be inserted into individual committee folders for distribution to committee members and staff. Written testimony should be submitted to the appropriate office at least 24 hours prior to the hearing. Testimony may also be delivered via email to House Committees using the appropriate committee email address (see pages 23 - 24 for House Committee email addresses).

- If you are unable to prepare and submit written testimony in time for a hearing, some committee chairs may allow the presentation of oral comments at the public hearing. However, you should be prepared to submit written testimony summarizing your oral comments as soon as possible after the public hearing.

- Generally, each committee chair follows the order of the bills listed on the agenda.

- As a courtesy to departmental and other government officials who must testify before a number of committees each day, most committee chairs allow government representatives to present their testimony before the general public presents its testimony.

**Prepare your oral testimony in advance** and be brief unless asked to elaborate. Do not read your written testimony. If you are asked to summarize your oral testimony, comply with the committee chair's request. There may be a large number of bills scheduled and many testifiers. When presenting oral testimony, it helps to:

- Be specific and to the point regarding the bill on which you are testifying.

- Be prepared to answer questions from committee members about your testimony or your position on the bill. If you don't know the answer to the question, just say so. You can always get the information to the committee later.
WRITTEN TESTIMONY OUTLINE

• CHAIR OF THE HOUSE OR SENATE COMMITTEE
  NAME
OF THE HOUSE OR SENATE COMMITTEE
• Your name
  The group or organization that you represent (if any)
  A contact number or address
• Day and Date of Hearing
• Your position on the measure and the bill or resolution
  number, and draft number (if any)
• Introduction:
  1. Introduce who you are and/or the group or organization that
     you represent;
  2. State the measure you are testifying on; and
  3. State your position on the measure (e.g., "I am testifying
     in favor of/in support of . . . ." or "I am testifying against/in
     opposition to ..." or "I am testifying against/in opposition
     to ..." or "I am providing comments on...")
• Content:
  State or list the reasons for taking your position, starting with
  the most important or compelling reasons. Include any facts,
  figures, statements, and experiences to support your position.
• Closing:
  1. Include any closing remarks; and
  2. Reiterate your position on the measure (especially if you
     did not state your position previously within the testimony).
EXAMPLE WRITTEN TESTIMONY

UNIVERSITY of HAWAII
MANOEA
RL: 2156

Water Resources Research Center
Environmental Center

SB 2356
RELATING TO THE ENVIRONMENT
Senate Committee on Education
Senate Committee on Energy and Environment
Joint Public Hearing - February 4, 2008
1: 15 p.m., State Capitol, Conference Room 225

By
Denise Eby Konan, Department of Economics
Mary Tiles, Department of Philosophy and Chair of the Sustainability Council
Peter Rappa, Environmental Center

SB 2356 makes an appropriation to the University of Hawaii to finance energy conservation and renewable energy matters to make Saunders Hall a campus and community model of sustainability and energy conservation. Our statement on this measure does not represent an institutional position of the University of Hawaii.

The Environmental Center supports the intent of this bill. We strongly support the student initiative to reduce the amount of energy used by Saunders Hall on the UH Manoa (UHM) campus. Sustainable Saunders is a wonderful model for the behavioral modification side and the students, faculty and staff involved are doing a great job. In an ideal world they would get all the funds they need for retrofits. We applaud the Legislature for its interest in Sustainable Saunders.

Saunders Hall, however, is not the biggest energy users among campus buildings though it is probably the best documented. We would not like to see the funding of retrofits for Saunders Hall come at the expense of the repair and maintenance funds for other more energy intensive buildings. We ask the committees to keep in mind that UHM is devising a strategy to address energy use on campus and we need to stick to campus priorities and the plan that is being developed for tackling big ticket energy reduction measures. We suggest that the language be made flexible to include Saunders "and other high impact energy retrofits on the Manoa campus." This flexibility will allow campus energy planners to include Saunders amongst other energy saving projects.

Thank you for the opportunity to comment on this bill.

2500 Dole Street, Krauss Annex 19 Honolulu, Hawai‘i 96822
Telephone: (808) 956-7361 Fax: (808) 956-3980
An Equal Opportunity/Affirmative Action Institution
A Bright Idea – Service with a Statement!

Service Learning Activity:

Kanu Hawai`i is a movement of 7,040 people working to protect and promote island living - our connection to the 'aina, our culture of aloha, and our economic self-reliance.

On Monday, April 27, 2009, Kanu Hawai`i members and volunteers gathered at the State Capitol to perform two free services for everyone there, including our lawmakers:

1. Traded their incandescent bulbs for energy-efficient bulbs (even bulbs brought from home)

2. Checked the tire pressure of every car in the Capitol parking lot, and left a report card

“When we change 100 bulbs, we prevent 19,000 lbs of CO2 from being emitted per year. It would take 500 trees to absorb that much. When we get 100 cars to correct tire pressure, we keep an additional 22,000 lbs of CO2 out of the air and save 1,100 gallons of gas – like driving 24,000 less miles annually.”

Through service, they highlighted the issues they care about, including climate change, energy security, and the environment. “We left a small card in every office we visited and on every car we checked, noting the issues and bills we hope lawmakers take action on.”

Through service, we make a statement. We show lawmakers that we're willing to get our hands dirty working on issues that matter to us. And, we let them know we expect them to do their part, too.

Class Planning:
What can our class do to encourage people, especially lawmakers, to make protect the environment and society like Kanu Hawai`i did? Who else could we involve to “scale up” good ideas? When and where should our event happen? Brainstorm a group service learning project here:

(Learn more about Kanu Hawai`i at www.kanuhawaii.org)
**LESSON: Community Action Project Intro & Planning**

**UNIT 10: Ka ‘Aha Mua (Hawaii’s Future)**

**Objectives:** 1) To choose a sustainability topic for group action after considering local and international efforts; 2) To write up a group project proposal; 3) *optional* To begin researching a project topic

<table>
<thead>
<tr>
<th>Minutes:</th>
<th>Suggested Sequence:</th>
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<tbody>
<tr>
<td>3-5</td>
<td>1. <strong>TALK STORY:</strong> Share with students the information on the document “Advocacy &amp; Activism Resources” (or give to them as a handout). Ask students if they can think of anything local interest groups have done to help Hawai‘i’s environment, people or businesses to become sustainable. One example is Kahe’a’s and other groups’ success at protecting the Northwest Hawaiian Islands, which is an ongoing struggle despite the president’s naming of it as a national monument (see website for more details at: <a href="http://www.kahea.org">www.kahea.org</a>).</td>
</tr>
<tr>
<td>7-30+</td>
<td>2. <em>Optional: CONTINUE THE DISCUSSION</em> with another example, the Fair Trade movement, which students can join for this class project (see short films at <a href="http://www.globalexchange.org/campaigns/fairtrade/cocoa/">www.globalexchange.org/campaigns/fairtrade/cocoa/</a> to see how residents around the US are campaigning to support farmers worldwide; &amp;/or see the “Fair Trade Action Plan” in this unit with readings, facts and solutions to end child slavery in the chocolate trade through school and consumer actions).</td>
</tr>
<tr>
<td>5-20+</td>
<td>3. <strong>INTRO PROJECT:</strong> give each student the “Community Action Project” handout (1 per group of 2 to 5 students) and discuss their options to choose a topic and propose an action plan. *Optional: *create a rubric and criteria to score student projects. Give students a due date to hand in their proposals: ______________. Also, brainstorm which guests should be invited to view the final project presentations, whether or not they should participate in grading projects, and when and how they will be invited. Guests can include family members, school staff, community members, specialists in the science content area students choose to focus their projects on, or employers in related science careers. See example basic rubric in Lesson #5.</td>
</tr>
<tr>
<td>5-10</td>
<td>4. <em>Optional – STUDENT MINI-GRADE:</em> Student “social entrepreneurs and community activists” can apply for up to $500 to support their project at: <a href="http://www.dosomething.org/grants">www.dosomething.org/grants</a> Go online to see how the above project may get funding, and to introduce students to grant writing.</td>
</tr>
</tbody>
</table>
| 15-25    | 5. *Optional – EXTRA PROJECT IDEA PREP:* Show the 1 minute news clip at: [http://kgmb9.com/main/content/view/4045/40/](http://kgmb9.com/main/content/view/4045/40/) then give 5 groups a copy each of pages 1-2 of the “Community Action Project: Ideas from Hawai‘i 2050” handout in the Unit 10 Appendix (see disk in front of binder). Discuss this local, statewide sustainability movement. Next, give each group a different “Indicator Goal &
Table” to review and write comments in the right margin. Have each group share their ideas of how the class projects can assist Hawai‘i meet sustainability goals for 2020 and 2050.

6. **Optional EXTRA PROJECT RESEARCH:** Have students download the Hawai‘i 2050 Issue Book at: [http://hawaii2050.org/images/uploads/HI2050_web5.pdf](http://hawaii2050.org/images/uploads/HI2050_web5.pdf) and/or print the 110 page book in part of whole (or the 17 page summary book at [http://hawaii2050.org/images/uploads/H2050_Issue_Book_Summary5.pdf](http://hawaii2050.org/images/uploads/H2050_Issue_Book_Summary5.pdf)) to either review one section as a class or have student groups each choose a section to read as part of their unit Community Action Project. The table of contents on page 5 lists these “issue” headings, each about 10-12 pages long with images: Economy, Population, Environmental Quality, Water, Energy, Agriculture, and Land Use, along with introductory and summary sections (Aloha ‘Āina, Quality of Life, Holomua Kakou Paradise Index and The Future: A Call to Action). See more notes below.

### Materials:
- **For teacher:** *Optional:* Internet access & projector (or 1 computer for every 4 students)
- **For students:** 1 handout per group of 2 to 5 students “Community Action Project”; 1 each of handouts: “Advocacy & Activism Resources” & *optional* handouts from: “Fair Trade Action Plan”, “Ideas from Hawai‘i 2050” &/or “Hawai‘i 2050: Issue Book”
- **Safety:** n/a

### Assessment/Performance Indicators:
- **Informal assessment:** Participation in Group Discussions, Project Planning and *optional* extended research activities
- **Formal assessment:** none (see Lesson 5 for Project Assessment &/or own student designed rubric generated in this lesson)

### Suggested Points:
- 10 points possible for participation …
- 9+ insightful; 8+ engaged; 6.5+ adequate; 6 or below inadequate

### Exceeds Expectations:
- Notes are taken in group discussions & project planning (& *optional* extended research activities); overall participation shows insight & engagement in learning

### Meets Expectations:
- Spoke & listened in group discussions & project planning (& *optional* extended research activities); overall participation shows adequate attention and at least 2/3rd of time on task

### Needs Improvement:
- Participated less than 2/3rd of the time in group discussions & project planning (& *optional* extended research activities); overall participation shows insufficient attention and time on task

### Learning Styles:
- ✔ Left Brain ✔ Right Brain ✔ Auditory ✔ Visual , Kinesthetic/Tactile , Spatial

### Enrichment/Extension:
- Explore the Internet for information about Green Collar Jobs at these sites:
  - [http://greencollartech.com](http://greencollartech.com)
  - For Hawai‘i go to: [http://greencollartech.com/tag/hawaii-island](http://greencollartech.com/tag/hawaii-island)
• Explore these sites for issues and actions related to sustainability:
  Natural Resources Defense Council: http://www.nrdc.org/action/default.asp This is the Earth Action Center page, and the homepage is at: www.nrdc.org
  Green Your School info can be found at: http://www.newdream.org/work/school.php This website also has resources on careers/volunteering, organizing kits for taking action, and more (see drop down menus on tabs near top of homepage)

Keywords: activism, advocacy, Community Action Project, Fair Trade, Hawai‘i 2050 Sustainability Plan, Indicators Issue Book, Kahea, pono

Additional Notes for Unit 10

For #2 or #3 above - www.styrophobia.com/
  • Styrophobia
  This “eco store” website can be explored for students who want to do a simple community action project focused on reducing waste at gatherings where people use disposable eating containers and utensils. Short readings on the website explain the purpose of their products.

For #5 above - http://www.hawaii2050.org/index.php/site/research/
  • Hawai‘i 2050 Issue Book (pdf)
  Commissioned by the Hawaii 2050 Sustainability Task Force, the Hawai‘i 2050 Issue Book provides fact-based research on key sustainability issues. The Issue Book contains the research and conclusions of a group of scholars at the University of Hawai‘i Center for Sustainability. A 17 page summary (pdf) of the Issue Book can also be downloaded at: http://hawaii2050.org/images/uploads/H2050_Issue_Book_Summary5.pdf
  Both versions of this book are also in the Appendix for unit 10 on disk in this curriculum.
Community Action Project

"All that is necessary for evil to triumph is for good men to do nothing"
- Tolstoy

Why learn about the world’s problems if we do nothing to help solve them? If your group already has an idea you’d like to explore, write it here: ___________

If not, here are some issues you might get involved with at your own school &/or in your community:

Some Issue Options are:
- fair trade consumer products (see: www.globalexchange.org)
- waste water management or water conservation
- recycling, re-using and reducing our garbage, compost, etc.
- reducing energy waste and pollution
- plant or animal endangered species & habitats (land, sea, air)

Here are some ways you might address the problem:

Increase Awareness!
- Make a Public Service Announcement (PSA) video, Powerpoint movie, podcast, or in print, poster or live presentation. Present your PSA to another class, the whole school, younger children, parents, school administration, the school board, church, community center, or via radio, TV or a local newspaper.
- Organize an information booth at a local event or a busy community venue, such as a nearby supermarket, church, library or someplace where pono people could be invited to do good things for our future
- Create an eye-catching community bulletin board on or off campus

Take Action!
- Raise funds for a worthy cause (e.g. buy a solar panel, donate to sustainable causes here or in the 3rd world, paint a mural, etc.)
- Create a volunteer project (find a stream, beach, park, wildlife habitat or garden, organize an improvement event & invite others to join you)
- Volunteer for service learning activities (join a community clean up, conservation or recycling effort; become a committed member of a local sustainability group, see for example: www.hi.sierraclub.org)
- Take political action on a hot topic (create a petition & collect signatures; attract media attention to your issue through letters, TV or radio; attend & speak at your School Community Council meeting; track environmental bills in the legislature or testify for or against a bill …see: www.capitol.hawaii.gov/site1/info/guide/guide.asp)
Think about WHO you want to notice your issue & WHAT you want them to DO about the problem and solutions you identify. Write your proposal below.

“Community Action Project” GROUP MEMBERS, ROLES & TARGET SKILLS:
1. _______________________________________________________
2. _______________________________________________________
3. _______________________________________________________
4. _______________________________________________________
5. _______________________________________________________

COMMUNITY ACTION PROJECT NAME: ________________________

MAIN IDEA & GOAL: _________________________________________

HOW THIS WILL HELP OUR SCHOOL &/OR COMMUNITY: _________

<table>
<thead>
<tr>
<th>STEPS TO ACHIEVE THE GOAL (use another sheet if needed)</th>
<th>PREPARATION, MATERIALS, COSTS &amp; TIME ESTIMATES FOR EACH STEP (use more paper if needed)</th>
</tr>
</thead>
<tbody>
<tr>
<td>1.</td>
<td></td>
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<tr>
<td>2.</td>
<td></td>
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<td>3.</td>
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<tr>
<td>4.</td>
<td></td>
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<tr>
<td>5.</td>
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</tr>
</tbody>
</table>

TIMELINE TO COMPLETE THE PROJECT:

WHO TO INVITE TO THE PROJECT PRESENTATION on ________________:

OTHER NOTES:

TEACHER INPUT & OK TO BEGIN:
# Project & Presentation Evaluation

**EVALUATOR’S NAME:** __________________________________________

Evaluator is: ___ self (student)    ___ peer       ___ teacher

___ guest (with knowledge of: ____________________________)

**GROUP MEMBERS:** ____________________________________________

**DIRECTIONS:** Please read the criteria in the left column below before viewing the student presentation. While or after they present, circle the groups’ score fairly and honestly to the best of your ability. Please word your comments carefully, as they will be shared with students later. Mahalo for participating!

<table>
<thead>
<tr>
<th>Criteria</th>
<th>Exceeded (B- to A+)</th>
<th>Met (C – C+)</th>
<th>Not Met (D to C-)</th>
<th>Points Possible (100)</th>
</tr>
</thead>
<tbody>
<tr>
<td>1. <strong>Topic</strong> is: ______________________________________________________</td>
<td>very clear 5-6</td>
<td>mostly 4-4½</td>
<td>partially 3½</td>
<td>6</td>
</tr>
<tr>
<td>(is clear &amp; relevant)</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>2. <strong>Project Purpose</strong> is:</td>
<td>very clear! 5-6</td>
<td>mostly clear 4-4½</td>
<td>partially clear 3½</td>
<td>6</td>
</tr>
<tr>
<td>___ increase awareness</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>___ help make improvement(s)</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>3. <strong>Project Description</strong> (activities group did are presented clearly)</td>
<td>very clear 16-20</td>
<td>mostly 14-15½</td>
<td>partially 12-12½</td>
<td>20</td>
</tr>
<tr>
<td>(activities group did are presented clearly)</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>4. <strong>Skill Target(s)</strong> (each student identifies own skill(s) s/he tried to increase &amp; overall progress made)</td>
<td>great effort! 6½-8</td>
<td>ok effort 5½-6</td>
<td>partial effort 5</td>
<td>8</td>
</tr>
<tr>
<td>5. <strong>Project Preparations</strong> (adequate progress checks were noted by in journals &amp; meetings w/ teacher)</td>
<td>great effort! 16-20</td>
<td>ok effort 14-15½</td>
<td>partial effort 12-12½</td>
<td>20</td>
</tr>
<tr>
<td>6. <strong>Project Outcomes</strong> (successes &amp;/or challenges group experienced are described)</td>
<td>great success! 16-20</td>
<td>ok success 14-15½</td>
<td>partial success 12-12½</td>
<td>20</td>
</tr>
<tr>
<td>7. <strong>Presentation</strong> (oral, visual, written &amp;/or other elements of presentation are clear &amp; relevant; info is shared in ___ minute limit)</td>
<td>great success! 16-20</td>
<td>ok success 14-15½</td>
<td>partial success 12-12½</td>
<td>20</td>
</tr>
</tbody>
</table>

**COMMENTS:** write on back of page what students did well and what could have been changed to make the presentation better or different.
Internet Sites to Explore for Your PSA Project

To See Example PSAs and Learn How to Make One go to:
  And this interactive website: [http://www.cyberbee.com/cb_copyright.swf](http://www.cyberbee.com/cb_copyright.swf)
- Legal Images to Search & Use: [www.creativecommons.org](http://www.creativecommons.org) & [www.flickr.com](http://www.flickr.com)
- Plan your PSA with a Storyboard handout: [http://www.rockwood.k12.mo.us/MARQUETTE/kane/classes%20pages/bl/Storyboard%20Handout.pdf](http://www.rockwood.k12.mo.us/MARQUETTE/kane/classes%20pages/bl/Storyboard%20Handout.pdf)

To Make a Jaycut Video go to:
- To begin online video-making go to: [http://jaycut.com](http://jaycut.com) On the homepage click on “Quick Guide” then “See Demonstration” for a 6 minute video tutorial. Next, on the homepage click “Register” to open a new account, the click “Upload” to gather your photos, videos and music. Last, click the tabs to see your materials, drag them to the editing bars, and finesse them with effects & transitions you choose. Then save!

To Make a Podcast (for Radio PSA) go to:
- Audacity software to create audio files, free download: [http://audacity.sourceforge.net](http://audacity.sourceforge.net)
- Audacity Tutorial on the basics of audio recording: [http://audacity.sourceforge.net/manual-1.2/tutorial_basics_1.html](http://audacity.sourceforge.net/manual-1.2/tutorial_basics_1.html) (includes Digital Audio; Rules of Audacity; Setup, Audio Import and Playback; Recording with Audacity)
- Convert Audacity (save as .wav) to MP3: [http://media-convert.com/convert/](http://media-convert.com/convert/) (Follow these steps: 1. Choose file (find your .wav file on your computer); 2. Leave the “auto detect” in the file type box; 3. Choose MPEG 1/2 audio layer 3 (mp3) format in the Output box (scroll down the list in the pull down menu); 4. Choose OK to ”accept terms”; 5. Wait for conversion (takes 2-3 minutes); 6. click OK for the default encoding rate after your file is converted; 7. Download your converted file

Other Options:
- If you have access to other video equipment and computer software such as a camcorder & iMovie, you may use them to create your PSA – just make sure you already have some skill or have the hours available to learn a lot
- If you have no access to technology or want to focus on speaking, writing &/or graphic art skills you may make a PSA for a newspaper, magazine or poster

“Target Skill” Criteria:
- In your Team Project Proposal you must identify Individual Skill(s) you plan to learn &/or improve. This means, firstly, you must be honest about your current level of skill (familiarity with programs like iMovie, Powerpoint, etc.: filming, recording sound & editing; researching; writing; graphic design; &/or public speaking) and secondly, you must set a realistic goal to practice your skill and use it in your project.
<table>
<thead>
<tr>
<th>Student Name(s)</th>
<th>Teacher &amp; Class</th>
<th>Working Title</th>
</tr>
</thead>
<tbody>
<tr>
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<tr>
<th>Sketch</th>
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<tr>
<td>Scene:</td>
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<tr>
<td>Actions:</td>
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<tr>
<td>Location/Background:</td>
<td>Location/Background:</td>
<td>Location/Background:</td>
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<tr>
<td>Sound Effects:</td>
<td>Sound Effects:</td>
<td>Sound Effects:</td>
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<td>Notes:</td>
<td>Notes:</td>
<td>Notes:</td>
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<tr>
<td>Length:</td>
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<td>Length:</td>
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<td>Length:</td>
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</tbody>
</table>
Unit 10 Community Action Project

Video Example: How to Make a PSA Movie

(see this video on the compact disk in the front of the binder – CD not DVD!)
COPYRIGHT & FAIR USE FACT SHEET

A. In the USA

1. **Copyright** is a law that refers to intellectual property, such as a writings, music, or art, which gives the creator of original work exclusive rights to reproduce, publish, sell, or distribute their work for a certain time period, after which time the work is said to enter the public domain.

2. The **public domain** is a range of "public property" works, such as a writings, music, or art, which are not owned or controlled by anyone and are not protected by copyright. These materials are available for anyone to use for any purpose.

3. **Fair use**, in American copyright law, allows limited use of copyrighted material without permission from the copyright holders provided the use is fair and reasonable, does not substantially impair the value of the materials, and does not curtail the profits expected by the owner. An easy tip to fair use is:

   Don’t “borrow” more than 10% of any image, sound or text you find!

B. In Hawai‘i Public Schools

**Student Assignments**

1. Fair Use guidelines allow for the use of portions of copyrighted material in educational multimedia assignments without obtaining permission from the copyright holders.

2. Be sure to credit all sources of copyrighted material in your bibliography. This information may be shown in a separate section (i.e. the credits).
   - This applies to all works with the exception of pictures and photographs.
   - For pictures or photographs, it is recommended that the copyright notice and name of the creator be incorporated in the image. Putting this information directly below the picture is acceptable.

3. State that all copyrighted material in your project is being used under the fair use exemption of the US Copyright Law and have been prepared according to the multimedia fair use guidelines and are restricted from further use. This statement must be included on the opening screen of the multimedia project and on any accompanying print media.
Public Viewing (i.e. posting on the WEB, videos housed in the school library)

4. No longer covered by Fair Use guidelines: permission must be obtained for use of any copyrighted material.

5. Public viewing includes posting on the Web, placing a multimedia project in the library for circulation, or using the project for more than one course or at more than one school.

6. After obtaining permission for use of copyrighted material, be sure to keep a copy of both your request for permission and the permission received.

Why make it your own?

It’s more fun creating your own ideas than using someone else’s – and wouldn’t you like to see © beside your name?!

C. Discussion Activity

In pair or small groups imagine 1 example of copyright infringement and 1 example of fair use students might include, on purpose or not, in their assignments. Share your examples with the class aloud (or write them down to be read aloud by the teacher), and discuss which examples are which!

D. Online Activities

Learn more about Copyright Law & Fair Use:

- Read this short brochure:

- Surf this cool interactive website:
  - [www.cyberbee.com/cb_copyright.swf](http://www.cyberbee.com/cb_copyright.swf)
Fair Trade Chocolate: Action Plan, Videos & Fundraiser

See this 28 page Student &/or Teacher action guide in the Unit 10 Appendix (disk in front of binder) or go to: www.gobalexchange.org/cocoa to view videos & download the guide (quick sign up is required).

How K-12 Students and Teachers Can Promote Fair Trade for Farmers Across the World

GLOBAL EXCHANGE
2017 Mission Street, Suite 303, San Francisco, CA 94110
1-800-497-1994 www.globalexchange.org
### Objectives:
1) to create test questions related to the science content of group projects; 2) survey and analyze the attitudes of the class (and possibly guests) related to sustainable responsibility and behavior; 3) to present Community Action Projects and receive feedback/evaluation on group effort and outcomes.

<table>
<thead>
<tr>
<th>Minutes</th>
<th>Suggested Sequence</th>
</tr>
</thead>
<tbody>
<tr>
<td>1+</td>
<td>1. Optional WELCOME – have students greet guests with leis if any attend (see Lesson #3 for who to invite &amp; why)</td>
</tr>
<tr>
<td>5-10</td>
<td>2. POST-TEST PREP – have presentation groups each create 1-3 test items with answers on a separate sheet (or back of same sheet) for the unit post-test to be given at the end of this lesson. Tell them the questions they create should focus on the science content of their presentation (their Community Action Project), require short answers, and be more challenging than simple recall of facts (i.e. encourage questions that begin with “why” or “how” rather than “what”, “when”, “who” or “where”). Optional – have invited guests take the test along with students and compare results when done.</td>
</tr>
<tr>
<td>3-5</td>
<td>3. SURVEY &amp; ANALYSIS – give each student the handout “Hawaii’s Future ‘Aha: Survey &amp; Discussion” and read the first paragraph and directions aloud. Assure students their honest answers are sought and will not be graded. Have volunteers add the total number of scores from 1-4 in several group, then combine the totals for a class analysis of the results. If this survey was used earlier in the year, also have students compare the results. (Alternately, this survey can be done at the end of this lesson and include invited guests’ results after they have watched the student Community Action Project Presentations.)</td>
</tr>
<tr>
<td>5+</td>
<td>4. TALK STORY &amp; SURVEY FOLLOW-UP – see “Discussion” on the handout and in groups or as a class, talk about what Hawaii’s future will be like, based on what the class members do from now on. Ask students, if all classes in all state high schools responded similarly to ours, what will Hawaii be like in 2020? In 2050? If guests are present, elicit their comments. Have students complete the last question on the survey and hand in. As groups prepare to present, tally the total number of each score from 1-4, or have a volunteer do this, and share the results with all at the end of the class.</td>
</tr>
</tbody>
</table>
| 20+     | 5. HO’IKE/PRESENTATIONS – If students and/or guests are to be involved in grading presentations, go over the rubric designed by the class in Lesson #3. Alternately, use the rubric below for teacher evaluation, student evaluation &/or guest evaluation, giving examples of each criteria if met, exceeded or unmet and
stating the time limits for presentations. If only the teacher will grade the presentations, simply give a short introduction of the project to guests after welcoming each with a lei (a student volunteer can do this as well).

6. POST-TEST PLUS: Future Resource Management – write the questions on the board, an overhead projector or give students and guests a hand-out, then read each question aloud while they write answers on paper. Score the test by reviewing answers aloud. Alternately collect the tests to grade later, but allow student volunteers to score guest tests as answers are reviewed.

7. SURVEY RESULTS – Share the results of the last survey question with everyone. If results are not positive (i.e. the majority of students have circled “1” and are not committed to working with others to improve sustainability in Hawaii’s future) encourage them to keep an open mind and assure all that most young people change much as they mature and their perceptions of what “really matters” in life also change according to their social, physical, emotional, mental and spiritual needs.

### Materials:

- **For teacher:** leis for guests (students may be able to make) & sufficient seating; *optional* bring beverages, food &/or music for guests comfort, or have students prepare this as part of their presentations; extra handouts for guests (see 3 handouts below)
- **For students:** presentation materials & equipment (projector, laptop, screen, other?; 1 handout each of: “Hawaii’s Future ‘Aha: Survey & Discussion”, “Project & Presentation Evaluation” below and “Post-Test Plus” if copying
- **Safety:** ensure number of people in room does not exceed fire marshall’s maximum posted

### Assessment/Performance Indicators:

- **Informal assessment:** Participation in welcome, survey and analysis, group discussion, and viewing peer presentations
- **Formal assessment:** Post-Test Question/Answer Preparation (up to 2 points each for 3 questions with answers on own project science content, as directed in lesson); Project Presentation & optional Evaluation (see 100 point rubric below or class rubric designed in Lesson #3)

### Suggested Points:

- **10 points** possible for participation ...9+ insightful; 8+ engaged; 6.5+ adequate; 6 or below inadequate
- **100 points** for Project & Presentation (recommend subtracting up to 5 points for evaluations done incorrectly &/or awarding up to 5 points more)

<table>
<thead>
<tr>
<th>Exceeds Expectations:</th>
<th>Meets Expectations:</th>
<th>Needs Improvement:</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Informal:</strong> Welcome guests warmly; participated fully in survey, analysis, group discussion and viewing peer presentations. <strong>Formal:</strong> scored 80% or better on post-test prep questions/answers, Post-Test</td>
<td><strong>Informal:</strong> Welcome guests warmly; participated at least 2/3rd of the time in survey, analysis, group discussion &amp; viewing peer presentations. <strong>Formal:</strong> scored 65% or better on post-test prep questions/</td>
<td><strong>Informal:</strong> did not welcome guests warmly; participated less than 2/3rd of the time in survey, analysis, group discussion &amp; viewing peer presentations. <strong>Formal:</strong> scored less than 65% on</td>
</tr>
<tr>
<td>Plus, Project &amp; Presentation. Scored 4 or more points on <em>optional</em> Evaluation of self &amp;/or peer (or lost no project points as evaluation was done thoughtfully and correctly)</td>
<td>answers, Post-Test Plus, Project &amp; Presentation. Scored 2.5-3 points on <em>optional</em> Evaluation of self &amp;/or peer (or lost no more than 2 project points for correct evaluation)</td>
<td>post-test prep questions/answers, Post-Test Plus, Project &amp; Presentation. Scored less than 2.5 points on <em>optional</em> Evaluation of self &amp;/or peer (or lost more than 2.5 project points for correct evaluation)</td>
</tr>
<tr>
<td>---</td>
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<td>---</td>
</tr>
</tbody>
</table>

**Learning Styles may include:**
- Left Brain
- Right Brain
- Auditory
- Visual
- Kinesthetic/Tactile
- Spatial

**Enrichment/Extension:**
- Brainstorm ways to improve the project and/or presentations done for this unit. Analyze and evaluate the successes and challenges of this project for the class overall.
- Research other projects teens and/or college students have done or are doing in Hawaii or elsewhere. Share this information with the class &/or write a paper or make a poster about it.

**Keywords:** ‘aha survey analysis, activism, advocacy, Community Action Project, evaluation, future, presentation, pono, rubric
NAME:  
CLASS:  

Unit 10 Post-Test Plus: Future Resource Management

UNIT CONTENT
See unit Pre- & Post-Test, page 1

GROUP PROJECT CONTENT
1 student from each presentation group will provide 1-3 questions requiring short answers related to the content of their Community Action Project.
1.
2.
3.
4.
5.
6.
7.
8.
9.
10.
### Project & Presentation Evaluation

**EVALUATOR’S NAME:** __________________________________________

Evaluator is: ___ self (student)        ___ peer        ___ teacher

___ guest (type/specialty: ______________________)

**GROUP MEMBERS:** __________________________________________

**DIRECTIONS:** Please read the criteria in the left column below before viewing the student presentation. During or after they present, score student groups fairly and honestly to the best of your ability. Please word your comments carefully, as they will be shared with students later. Mahalo for participating!

<table>
<thead>
<tr>
<th>Criteria</th>
<th>Expectations</th>
<th>Points (100)</th>
</tr>
</thead>
<tbody>
<tr>
<td>1. <strong>Topic</strong> is: __________ (is clear &amp; relevant)</td>
<td>Exceeded (B- to A+)</td>
<td>10</td>
</tr>
<tr>
<td>2. <strong>Project Purpose</strong> is: ___ increase awareness ___ help make improvement(s)</td>
<td>Met (C – C+)</td>
<td>10</td>
</tr>
<tr>
<td>3. <strong>Project Description</strong> (activities group did are presented clearly)</td>
<td>Not Met (C- to D)</td>
<td>20</td>
</tr>
<tr>
<td>4. <strong>Project Outcomes</strong> (successes &amp;/or challenges group experienced are described)</td>
<td></td>
<td>20</td>
</tr>
<tr>
<td>5. <strong>Planning Project &amp; Presentation</strong> (appears to have been adequate)</td>
<td></td>
<td>20</td>
</tr>
<tr>
<td>6. <strong>Presentation</strong> (oral, visual, written &amp;/or other elements of presentation are clear &amp; relevant; info is shared within time limits)</td>
<td></td>
<td>20</td>
</tr>
</tbody>
</table>

**Total:** __/100

**COMMENTS:** write on back of page what students did well and what could have been changed to make the presentation better or different.
Name:  
Class:  

Hawaii’s Future ‘Aha: Survey & Discussion

An ‘aha in ancient Hawai‘i was a council of experts who managed all the resources in an ahupua‘a (watershed community). Today, we call such experts Natural Resource Managers, but they don’t always work in groups or ask for everyone’s expert advice before making decisions. Hawaii’s future managers will be you &/or your classmates. These questions are meant to help you think about how you will manage Hawai‘i and our resources in the future.

DIRECTIONS: Read these 2 questions about the environmental issues you have studied, then circle the answer that is closest to what you think.

a) My reaction to the environmental issues we’ve studied is:

<table>
<thead>
<tr>
<th>1</th>
<th>2</th>
<th>3</th>
<th>4</th>
</tr>
</thead>
<tbody>
<tr>
<td>I don’t care at all.</td>
<td>I am interested.</td>
<td>I am concerned.</td>
<td>I am outraged.</td>
</tr>
</tbody>
</table>

b) What I will probably do from now on because of my reaction is:

<table>
<thead>
<tr>
<th>1</th>
<th>2</th>
<th>3</th>
<th>4</th>
</tr>
</thead>
<tbody>
<tr>
<td>Nothing at all.</td>
<td>Pay attention if I hear more about it.</td>
<td>Look for more information &amp; avoid making things worse.</td>
<td>Get involved right away to improve things.</td>
</tr>
</tbody>
</table>

DISCUSSION: In groups or as a class, talk about what Hawaii’s future will be like, based on what each of us does from now on. Think about the effects of every person’s actions, or inaction, and what that will do throughout your adult life. Make notes on the back of the page.

c) The best I believe I can, and should, do about these issues is:

<table>
<thead>
<tr>
<th>1</th>
<th>2</th>
<th>3</th>
<th>4</th>
</tr>
</thead>
<tbody>
<tr>
<td>Be pono (do the right thing) in my daily life.</td>
<td>Volunteer &amp;/or donate my time or money to my community once in a while.</td>
<td>Advocate for change regularly - volunteer, teach others &amp; take political action.</td>
<td>Get a career as a scientist or politician to help lead others &amp; make things better.</td>
</tr>
</tbody>
</table>