End of Year Report
Sept 2005-April 2006

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A joint program between Green Practices & Housing and Dining Services

16 May 2006
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Students at Carnegie Mellon have many opportunities to take environmental classes in their majors, however there was nothing challenging them to test that knowledge in their everyday lives outside of the classroom. Eco-Reps were created to be a group of students, who lived in campus housing, who were charged with constantly thinking up new ways to make their peers aware of their lifestyle choices and how they effect the environment. Other institutions of higher learning such as Tufts University and University of Vermont were sources of inspiration for Carnegie Mellon’s pilot program.
History

The goal of the program is to make students aware of their everyday lifestyle decisions and understand the effects an individual can have on the environment, but specifically in their residence hall, sorority, fraternity or apartment building.

In a way, Eco-Reps act as environmental resident assistants, programming lectures, events, workshops and activities as well as hanging posters and starting causal conversations with the peers in their house.

It started as a joint program between Green Practices and Housing and Dining Services, but next year it will be a Student Affairs program.
Carnegie Mellon students are exposed to a variety of environmentally focused classes in the arts, sciences, engineering and humanities however they do not always remember what they learn when they go back to their rooms at night. The Eco-Reps program was started so that students would be empowered to teach their peers how easy it can be for their house to make less of an ecological footprint.

My environmental passion comes from sustainable architecture, for I’m especially interested in how people relate to their surroundings inside and outside the built environment.

The most exciting NEW initiative on campus is the Eco-Reps green living program. Peer to peer education where you live on campus is a fun, effective way for students to engage and motivate each other to learn about their personal impact on Earth’s life support systems.

My hope is that the Eco-Rep Program will become a permanent student program at Carnegie Mellon and the sustainable living practices learned on campus will persist beyond graduation and through adulthood.

Earth Day 1970 was my first inspiration to be eco-minded. My family lived on an organic farm in Naperville Illinois, and we sold our produce and eggs at our roadside vegetable stand and farmers market. I went canoeing and camping in wilderness areas and the pristine beauty I experienced will always be with me. My up-bringing taught me to ‘want’ to do my part, to keep the earth healthy.
Rosemary Lapka
Communication
Designer
Fifth Year Scholar

Rosemary is a senior communication design major and a Fifth Year Scholar for 2006-2007, planning to develop a communication and marketing strategy for Carnegie Mellon’s Steinbrenner Institute for Environmental Education and Research (SEER). She is dedicated to using design to improve communication about environmental initiatives and activities. Rosemary has studied sustainable architecture at Ecosa Institute in AZ, currently coordinates communications for the Carnegie Mellon Solar Decathlon 2005 & 2007 teams, interns with Green Practices, and is a TA for ‘Design and Social Change’.

Ian Voysey
Webmaster
CIT First Year

Ian is a first year student in the Carnegie Institute of Technology, enrolled in the Electrical and Computer Engineering program. He is interested in expanding his knowledge of website design and upkeep.
I am a senior studying civil and environmental engineering, originally from New Jersey. I am interested in the Eco-Reps program because I believe that if people consciously examined their lifestyles, and the impact they could have on the planet, they would live their lives in a more eco-friendly manner. As an Eco-Rep I hope to encourage the Doherty residents to think about what they can do both now and later in life to minimize the negative effects they have on the earth and to live in a more sustainable manner.

Hello! I am a first-year. I am a Minnesotan! I love humanity!

My interest in the environment stems from my deeply rooted passion in humanity. I believe we live in a world where everyone and everything are interconnected. This includes the way in which we live our lives.

We can choose to make decisions based on self interest, but it is important to understand that our actions affect those around us. Encouraging sustainable life practices in others through the Eco-Reps program provides an excellent outlet for me to empower others in respecting people and the environment we live in.

Through the Eco-Reps program, I hope to foster a sense of caring and respect for humanity and the environment among the Global Studies residents. I hope to achieve this by merging the idea of life and work into one vision. Being able to help only one person makes the Eco-Reps experience worth it. How Empowering!
I am a freshman business major. I am from Korea but I have lived in several countries. Because of early exposure to various cultures, I love traveling. So far, I am loving my life in Carnegie Mellon. I joined the Eco-Reps because I am very interested in the environment. We are so dependent on the environment but people do not realize how important it is to do the least damage to it. Everything that people do cannot be pollution-free but it is so evident that if everyone cares a little more about the environment, it would be beneficial for everyone. For example, people throw away newspapers into trash cans and drop glass bottles into a trash can even though there is a recycling bin right next to it. If people are somewhat environmentally conscious, they will attempt to look around to find a recycling bin. So, as an Eco-Rep, I believe that the most important thing to be accomplished is to educate the campus and let the community become aware of the issues.

Now a Freshman at Carnegie Mellon, I am originally from Blacksburg, VA and was not previously particularly environmentally conscious. I applied to be an Eco-Rep because ever since a senior government project I have been very interested in the environment, and have wanted to learn more about what I could do for it. By being an Eco-Rep I hope to be able to further my knowledge about the environment and how I can help, as well as being able to educate my friends and peers so that they will be able to make environmentally conscious lifestyle choices as well.
Craig Rosman  
New House  
Eco-Rep

I am a first-year architecture student from Margate, New Jersey. I was drawn to Carnegie Mellon because of its commitment to the environment. I have always been passionate about the study of architecture and how it is possible to benefit the environment through building. The Eco-Reps program is the perfect supplement to this. I look forward to learning how to be a eco-friendly person and architect and hope to inform others about the same.

Robert Bethea  
Margaret Morrison Apartments  
Eco-Rep

I am from a town outside Washington, D.C. called Springfield. In this town there are over one million people. It is over populated, under funded, and polluted beyond recognition.

My family is originally from a small farm town, Dillon, South Carolina. After visiting there and seeing what an impact we have on the rural farmers and townspeople, such as the affect acid rain (caused by smog pollution) has on their crops, it was eye-opening to see the contrapuntal argument that we could do something to help these people. There are billions around the world who don’t have enough water or food to eat and there is so much that we could do to help this cause, among others.

This microcosm of the earth I portrayed above is a simple example of the devastation that abuses to our environment can cause and it is with that that I decided to take a small role towards that rehabilitation.
Carrie Kmetzo  
Webster Hall  
Eco-Rep

I’m a sophomore business major at Carnegie Mellon. After taking an environmental science course in high school I became very interested in teaching others about ways to be more environmentally conscious. I joined Eco-Reps at Carnegie Mellon because I felt that it was the perfect way to get students involved in promoting green practices. By planning events through the student dorms, I hope to help students make a conscious effort to incorporate these environmentally-friendly practices in their daily routines.

Abiola Fasehun  
West Wing  
Eco-Rep

I am currently a junior in H&SS. I have always been interested in the environment and learning how to live a more sustainable lifestyle. Being an Eco-Rep has given me the opportunity to learn more about the environment and meet eco-conscious peers. I enjoy planning programs to educate the Carnegie Mellon community about environmental issues.
Each month, Eco-Reps focused their actions on a specific environmental issue.

**September: Waste**

**Personal Recycling Bins**
We delivered small recycling bins to residents in Mudge, Webster and West Wing who were missing bins from their room.

**Glass, Plastic, and Metal Recycling Bins**
We brought large recycling bins for glass, plastic, and metal to the main floor of Global Studies House so that residents had somewhere to empty their personal recycling bins.

**Plastic Bag Recycling**
We organized a grocery bag recycling program in which residents could drop off their plastic grocery bags in Doherty Apartments. The Eco-Rep returned them to the grocery store whenever she went, where they have a special collection spot for the bags.

**Composting Magnets**
We made magnets explaining the do’s and don’t’s of composting so that Doherty Apartments and Tech House residents could be quickly educated on composting.

**Compost Bin**
We installed an Earth Machine composting bin in their backyard of Tech House to collect organic wastes in hopes of making soil and decreasing the amount of waste we throw in our trash.
October: Energy

Sleep is Good
We encouraged residents to turn their computers off during the night in Mudge and Webster. We also taught them how to set their preferences so that after 20 minutes of being idle, their monitors would go to sleep.

Kill-a-Watt
We went around to residents rooms and tested their microwaves, mini-refrigerators, and laptops and desktops to see how many kilowatts they were drawing and compared them with each other.

Light Bulb Exchange
We handed out 82 Energy Star compact fluorescent light bulbs to residents from New House, Forbes House, Global Studies, and Doherty Apartments in exchange for their incandescent desk lamp light bulbs, even if the bulbs were working. This event helped to decrease the amount of energy used to supply the same wattage of light.

Read an Energy Bill
We invited Energy Manager, Brad Hochberg, to teach our peers how to read an energy bill, a skill we will all need once we move out of campus housing and start paying the utility company ourselves.
November: Water

Tap Water v. Bottled Water
We wrote an essay explaining that Pittsburgh tap water was not only safe but healthy to drink so that plastic bottle water consumption might decrease.

Toilet Testing
We tested the toilets in Margaret Morrison Apartments by putting a drop of food coloring in the toilet tank and waited 8 seconds to see if the dye ended up in the toilet bowl. We found a few leaks and so filled out maintenance requests to have them fixed!

Drinking Water Treatment Plant
We toured the drinking water facilities and learned about the added fluoride that Pittsburgh puts in their water supply and how it is considered a cheap way to whiten your teeth.

Trip to ALCOSAN
We toured the local wastewater treatment plant, ALCOSAN and learned that the only difference between waste water treatment plants and drinking water is that the later has one extra cleaning step at the end.

Toilet Tanks in Doherty Apt’s
We installed a toilet tank bag in Doherty Apartments which has toilets that use more than 1.6 gallons of water per flush. Toilet tank bags or plastic bags filled with water that sit in your toilet tank and decrease the amount of water your tank uses with every flush.

Water Use Display
We stacked empty plastic bottles on the first floor of New House to illustrate the rate at which water comes out of the showers (2.5 gallons per minute) and the amount of water that the toilet uses per flush (1.6 gallons).
December: Consumption

Mr. Clean’s Got Nothing
We tested out the cleaning capability of baking soda, vinegar and lemon juice on countertops and silverware. Our peers were surprised to learn that household products could be a substitute for commercial cleaning products.

Measuring Your Eco-Footprint
We measured the ecological footprint of Global Studies’ residents by taking the quiz at myfootprint.org website. Ecological footprint is defined as the amount of square acreage one person takes up in a landfill. Everyone realized that they were living a more sustainable life at Carnegie Mellon that they did at home.

ReUse A Sneaker Shoe Drive
We collected sneakers from our houses to send to Nike to create brand new athletic tracks for schools using the worn-out rubber soles.

Eco-Purchasing Guide
We created an Eco-Purchasing guide for any incoming first-year student who want to be environmentally conscious. It provides information on where to buy eco-friendly appliances, food, household products, clothing, and paper.

Make Your Own Wrapping Paper
We hosted a gift wrapping party during the holiday season where our peers brought presents and we showed them how to turn paper bags, newspapers and any other scrap materials they brought, into wrapping paper.

Clothing Drive
We collected clothes from peers in Doherty Apartments and bagged them up with the clothes left in the laundry room all semester and donated them to Goodwill.

Message In A Bottle
We made alternative mailing containers out of old water bottles to conserve paper and reuse plastic. Everyone wrote letters to their friends and stamped them and put them in the mail.
January: Climate Change

**House Insulation at Tech House**
We insulated the windows of our house with toilet paper and tape to reduce the heat loss.

**Pennsylvania Clean Energy Summit**
Chisom Amaechi presented her findings from the PA Clean Energy summit. Her presentation is included on the CD included with this booklet.

**Temperature Control**
We recorded the thermostats temperature reading of the rooms in Margaret Morrison and found that most people have their heat turned up too high. Everyone was very responsive in agreeing to keep our thermostats at a lower temperature of 70°.

**Day After Tomorrow Showing and Discussion**
We watched *The Day After Tomorrow* to springboard a discussion on Climate Change. We got into a great dialogue about what causes climate change? and how it affects us locally and globally. 10 students came to this event.

**GreenLeaves**
We passed out GreenLeaves to New House residents that were seen recycling, conserving energy, conserving water or going to EcoEvents. RedLeaves were also put on doors of peers who used excessive resources.
February: Food

**Soy Cream Taste Test**
New House residents brought their mugs and spoons down to the kitchen to taste test strawberry and cookies and cream Soy Dream, Soy Delicious and 365 Brand soy and ice creams. Three out of the 20 taste testers would purchase soy cream having it tried it for the first time.

**Iron Chef**
Steve from Global Studies and Lauren from McGill had to use organic bananas, as they were the special ingredient and cook a appetizer, main course and dessert with organic food purchased from Whole Foods. Over 40 people attended this organic meal.

**Consume Fish Responsibly**
We collected a list of fish that are mercury free, abundant, and caught using environmentally friendly methods, so that you will know what to order next time you are at a seafood restaurant. Check out the report included on the CD included with this booklet.

**Making Cereal**
We made homemade cereal from a raw food recipe at our training session. It’s as easy as chopping almonds, raisins, lemon juice, cinnamon, honey and oats.

**Be a 7-day Veggie**
We challenged ourselves to not eat any red meat, chicken or fish for a week so that we could promote eating like a vegetarian.
March: Green Buildings

**Ethics, Values, + The Environment**
Nelson Cheung presented his views on Ethics, Values, and the Environment after attending a recent conference at Harvard University. Check out his presentation included on the CD included with this booklet.

**Blue Vinyl**
We watched the 2002 Sundance Film Festival Cinematography Award Winner, *Blue Vinyl*, which explains that vinyl is a hazardous building supply because of its production and decomposition process.

**Painless Environmentalism**
We spent sometime working through simple changes that could be made in people’s lives, without great inconvenience, to make their actions more eco-friendly, and then advertised accordingly.

**Green Building Quiz**
We sent an online quiz to peers in McGill House to find out how much they know about the benefits of green buildings. Both the questions and multiple choice answers were educational.

**Blue Jeans Insulation**
We hosted a talk about cellulose insulation being made from blue jean scraps in Margaret Morrison Apartments and donated an old pair to Artemis, a local green building supply store, who sent them to the insulation manufacturer.
April: Transportation

Climate Change
Corey Tucker presented her views on Climate Change at the Northeastern Climate Conference, on April 18 2006. Check out her presentation included on the CD included with this booklet.

Are You From Around Here?
We informed through posters in the bathroom stalls of New House about products made in or around Pittsburgh, like Heinz, to encourage purchasing of local goods because they have less embodied energy.

Critical Mass
We rode our bikes on the monthly Pittsburgh Critical Mass with over 200 bicyclists to promote pollution-free transportation.

Public Transit Survey
We asked our peers in Doherty Apartments and New House why they ride the bus and found out that it is because it is inconvenient to own a car not because they are concerned about air pollution. Our peers also explained that if they are going a short distance they walk once again not because it is inconvenient but because the buses are not frequent enough.
Participants
Being our first year, we had 12 Eco-Reps representing Doherty Apartments, Global Studies, Margaret Morrison Apartments, McGill House, Mudge House, New House, Tech House, Webster and West Wing. Next year we already have 8 Eco-Reps representing Boss House, Doherty Apartments, Fairfax Apartments, Margaret Morrison Apartments, Morewood Gardens, Mudge House and Shirley Apartments, and that is without including the incoming first-year students.

Resources Conserved
We saved $6,344 this year in a Net Life Cycle Cost Estimate by exchanging 82 incandescent lightbulbs with 82 compact fluorescent lightbulbs.

Behaviors/Attitudes Changed
At our Soy Cream Taste Test, we surveyed 20 peers as to whether or not they would eat soy cream again and 15 said they would. We also convinced eight peers to compost their food waste in their backyard.

House Inventories

<table>
<thead>
<tr>
<th></th>
<th>Doherty Apts</th>
<th>Global Studies</th>
<th>Mudge House</th>
<th>New House</th>
<th>Tech House</th>
</tr>
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<tbody>
<tr>
<td>plastic/glass/aluminum recycling bins next to every trash can</td>
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<td>n</td>
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<td>n</td>
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<td>y</td>
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<tr>
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<td>31</td>
<td>305</td>
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<td>8</td>
</tr>
<tr>
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<td>1</td>
<td>60</td>
<td>6</td>
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<td>occupancy sensors in common spaces</td>
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<td>n</td>
<td>y</td>
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<td>n</td>
</tr>
<tr>
<td>motion sensors above vending machines</td>
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<td>n</td>
<td>--</td>
<td>--</td>
<td>--</td>
</tr>
<tr>
<td>washer front-loading</td>
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<td>n</td>
<td>y</td>
<td>y</td>
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<tr>
<td>pesticide-free grounds</td>
<td>y</td>
<td>y</td>
<td>y</td>
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<td>y</td>
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<td>bathroom paper products chlorine-free and made of recycled content</td>
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<td>n</td>
<td>n</td>
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<tr>
<td>cleaning products chlorine-free</td>
<td>n</td>
<td>n</td>
<td>n</td>
<td>n</td>
<td>n</td>
</tr>
<tr>
<td>furniture made of sustainably harvested wood and recycled content fabric</td>
<td>n</td>
<td>n</td>
<td>n</td>
<td>n</td>
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</tr>
</tbody>
</table>
Other Accomplishments
We created and maintained a website, www.cmu.edu/eco-reps, which is linked on the Green Practices, the Housing and Dining Services and the Office of Admissions websites. We also hosted our own blog, which can be found at http://www.eco-reps.blogspot.com/. The Eco-Reps program was also written up in the 2005 annual Bed and Breakfast newsletter published by the Housing and Dining Services, the May 2005 Issue 15 and March 2006 Issue 18 Green Scenes and the Green Schools List Serv hosted by Brown University.

We also wrote a 65 page Training Manual with information and action item ideas for Waste Management, Energy, Water, Consumption, Climate Change, Food, Green Buildings and Transportation (see attached CD).

Diane Loviglio, the Coordinator, was interviewed by cmuTV for a 20 minute segment showcasing people in Pittsburgh making a difference entitled “Leaders in Policy” (see attached CD). She was also invited to make an hour-long presentation on the Eco-Reps program for the Academy for Lifelong Learning class entitled “Green Isn’t Just a Color Anymore”.

Carnegie Mellon’s Eco-Reps program with the help of Deb Perry, from University of Vermont initiated a monthly conference call with coordinators from American University, Bowdoin University, Carnegie Mellon University, Columbia University, Harvard University, Mount Holyoke College, Princeton University, Portland State University, Tufts University, University of Arizona, University of California at Berkeley, University of Tennessee at Knoxville, University of Texas at Austin and University of Vermont.

We screen printed our own shirts so that we would not have to use toxic ink.

We also hosted an end of the year celebration in which we all brought Tupperware containers, water bottles and utensils and so we did not have to use the catered plastic plates or cups. Eco-Reps were awarded with their own book on a specific environmental topic of their interest.

The overarching goal for the Carnegie Mellon Eco-Reps program in its inaugural year was to have fun and informally educate our peers and indeed we accomplished our goal!
Other than the $200 housing refunds for each of the 10 full-time Eco-Reps and Webmaster, we did not have a budget this first year. Green Practices donated color printing and copying services and Housing and Dining Services donated 82 compact fluorescent lightbulbs and the Steinbrenner Institute for Environmental Education and Research donated lunch for our end of the year celebration. Next year however, we received $5,000 from Housing and Dining Services for Eco-Reps, Webmaster and Communication Designer compensation, action item purchases and food and Coordinator compensation will be coming from the Office of Student Affairs.
Barb Kviz, Environmental Coordinator of Facilities Management Services, for constantly keeping up with the newest environmental trends and for sending me a link to Eco-Reps programs at other universities, which motivated me to start a modified version at Carnegie Mellon and for supporting me this past year.

Vice Provost of Education, Indira Nair for helping to craft the proposal that funded me to stay in Pittsburgh to implement this program and for being a role model.

Eco-Reps Abiola, Alexa, Carrie, Chisom, Corey, Craig, Hyun, Jesse, Nelson and Robert for making an environmental impact everyday through your actions, constant feedback, enthusiasm and inspiration!

Dean of Student Affairs, Jennifer Church for believing in the informal environmental education that happens in the house communities and for helping to make it a permanent program at Carnegie Mellon.

Brad Hochberg, Energy Manager of Facilities Management Services, for proofing the energy chapter and for supplying me with utility information upon request.

Wil Forrest, Associate Director of Housing and Dining Services, for taking care of logistics on the Housing end.

Louis McCauley, Assistant Director of Housing and Dining Services, for supplying us with compact fluorescent lightbulbs.

Rosemary Lapka, Eco-Reps Communication Designer, for making sure our printed materials were always impressive.

Ian Voysey, Eco-Reps Webmaster, for his endless hours updating the website so that the rest of us could recite the URL with pride. University of Vermont, Tufts University, Harvard University and University of California Berkeley for your monthly conference call participation, praise and best practices.

Tim Michael, Director of Housing and Dining Services, for financially securing the program next year.

Student Dormitory Council and New House for funding the shower timers pilot.

Vice Provost of Education, Indira Nair for helping to craft the proposal that funded me to stay in Pittsburgh to implement this program and for being a role model.

Eco-Reps Abiola, Alexa, Carrie, Chisom, Corey, Craig, Hyun, Jesse, Nelson and Robert for making an environmental impact everyday through your actions, constant feedback, enthusiasm and inspiration!

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The supplemental items are included in digital format with the CD included at the end of this booklet.

**Multimedia Extras**

**Water**
“Tap Water vs. Bottled Water”
bottled.pdf

“Water Article”
eco-reps water article.doc

**Consumption**
“Eco-Purchasing Guide”
guide.doc

**Climate Change**
“Pennsylvania Clean Energy Summit Recap Presentation”
energy.ppt

**Food**
“Consume Fish Responsibly”
fish.doc

**Green Buildings**
“Ethics, Values, and the Environment”
ethics.ppt

**Transportation**
“Climate Change”
climate.ppt

**cmuTV Clip**
“Leaders in Policy”
interview.avi
### Life Cycle Cost Estimate for 82 ENERGY STAR Qualified Compact Fluorescent Lamp(s)

**Number of units**: 82  
**Electricity Rate ($/kWh)**: $0.071  
**Hours used per day**: 6  
**Initial cost per unit (estimated retail price)**: $3.00  
**Wattage (watts)**: 14  
**Lifetime (hours)**: 10,000  
**Energy cost**  
<table>
<thead>
<tr>
<th>82 ENERGY STAR Qualified Units</th>
<th>82 Conventional Units</th>
<th>Savings with ENERGY STAR</th>
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<tbody>
<tr>
<td>Energy cost</td>
<td>$179</td>
<td>$867</td>
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<tr>
<td>Maintenance cost</td>
<td>$0</td>
<td>$558</td>
</tr>
<tr>
<td>Total</td>
<td>$179</td>
<td>$1,425</td>
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</table>

**Life Cycle Costs**  
| Operating cost (energy and maintenance) | $936 | $7,472 | $6,536 |
| Purchase price for 82 unit(s)          | $246.00 | $53.30 | -$192.70 |
| Total                                  | $1,182 | $7,525 | $6,344 |

**Simple payback of initial additional cost (years)**: 0.2

* Annual costs exclude the initial purchase price. All costs, except initial cost, are discounted over the products' lifetime using a real discount rate of 4%. See “Assumptions” to change factors including the discount rate.

† A simple payback period of zero years means that the payback is immediate.
# Soy Cream Taste Test Results

<table>
<thead>
<tr>
<th>#</th>
<th>product given</th>
<th>product guessed</th>
<th>accurate guess</th>
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<td>soy</td>
<td>right</td>
<td>no</td>
</tr>
<tr>
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