

USDA Sustainable Energy Project – SHSU ASEEN FY13

Post Workshop Exam Item Analysis

	Incorrect	Correct
At depth's relating to most geothermal applications, Earth's temperature is approximately	5%	95%
Geothermal systems are	5%	95%
Which medium is the better for cooling, air or water	0%	100%
Geothermal loops are made of	5%	95%
The operational savings from GeoExchange HVAC systems are	29%	71%
Which Photovoltaic material is currently more efficient at absorbing solar radiation	5%	95%
What does an inverter do	10%	90%
kW.h (kilo watt hour) is a unit of	52%	48%
Electricity production from a solar panel is highest in	5%	95%
In a solar panel set up, what is the role of the charge controller (select the best answer)	62%	38%
M85 biofuel	19%	81%
Methanol and ethanol are rich in	14%	86%
The engine running on a biodiesel was first demonstrated in	33%	67%
Which is True	19%	81%
If an energy conversion process requires three steps, each performed with an efficiency of 10%, 50%, and 20%, what is the net efficiency of the conversion process	38%	62%

POST-WORKSHOP SURVEY RESULTS

Pre and Post Workshop Mean Understanding Ratings

		N	Mean Understanding	Std. Deviation	Std. Error Mean
Renewable Energy	Pre	22	3.23	.752	.160
	Post	21	4.38	.498	.109
Energy Conservation	Pre	22	3.41	.734	.157
	Post	21	4.29	.644	.140
Solar Energy	Pre	22	3.36	.727	.155
	Post	21	4.29	.717	.156
Wind Energy	Pre	22	3.32	.716	.153
	Post	21	3.95	.669	.146
Geothermal Energy	Pre	22	2.36	.658	.140
	Post	21	4.43	.676	.148
Biofuels	Pre	22	3.14	.834	.178
	Post	21	4.00	.775	.169
Hydropower	Pre	22	2.95	.899	.192
	Post	21	4.19	.750	.164
Energy Audit Practices	Pre	22	1.86	.834	.178
	Post	21	4.57	.598	.130

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Pre and Post Workshop Mean Importance Ratings

		N	Mean Importance	Std. Deviation	Std. Error Mean
Renewable Energy	Pre	21	3.43	.978	.213
	Post	21	4.33	.658	.144
Energy Conservation	Pre	21	3.57	.811	.177
	Post	21	4.29	.717	.156
Solar Energy	Pre	21	3.33	.966	.211
	Post	21	3.90	.625	.136
Wind Energy	Pre	21	3.10	.995	.217
	Post	21	3.71	.784	.171
Geothermal Energy	Pre	21	2.90	1.091	.238
	Post	21	4.00	.707	.154
Biofuels	Pre	21	3.52	1.167	.255
	Post	21	4.10	.831	.181
Hydropower	Pre	20	3.25	.786	.176
	Post	20	3.80	.696	.156
Energy Audit Practices	Pre	21	2.76	1.221	.266
	Post	21	4.24	.625	.136

Overall Workshop Rating

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Good	12	57.1	60.0	60.0
	Excellent	8	38.1	40.0	100.0
	Total	20	95.2	100.0	
Missing	System	1	4.8		
Total		21	100.0		

Training Worth Your Time

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Moderately	1	4.8	4.8	4.8
	Very	17	81.0	81.0	85.7
	Extremely	3	14.3	14.3	100.0
	Total	21	100.0	100.0	

Workshop Content

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Fair	1	4.8	4.8	4.8
	Good	12	57.1	57.1	61.9
	Very Good	8	38.1	38.1	100.0
	Total	21	100.0	100.0	

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Workshop Organization

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Fair	5	23.8	23.8	23.8
	Good	10	47.6	47.6	71.4
	Very Good	6	28.6	28.6	100.0
	Total	21	100.0	100.0	

Use of Instructional Aids

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Fair	4	19.0	19.0	19.0
	Good	9	42.9	42.9	61.9
	Very Good	8	38.1	38.1	100.0
	Total	21	100.0	100.0	

Creating Interest in Topics

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Poor	1	4.8	4.8	4.8
	Fair	3	14.3	14.3	19.0
	Good	9	42.9	42.9	61.9
	Very Good	8	38.1	38.1	100.0
	Total	21	100.0	100.0	

Involvement of Participants

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Fair	3	14.3	14.3	14.3
	Good	11	52.4	52.4	66.7
	Very Good	7	33.3	33.3	100.0
	Total	21	100.0	100.0	

Pace of Delivery

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Fair	5	23.8	23.8	23.8
	Good	10	47.6	47.6	71.4
	Very Good	6	28.6	28.6	100.0
	Total	21	100.0	100.0	

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Effectiveness of Training Kits

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Fair	3	14.3	14.3	14.3
	Good	7	33.3	33.3	47.6
	Very Good	11	52.4	52.4	100.0
	Total	21	100.0	100.0	

How much of the workshop info is useable to you

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	41-60%	1	4.8	4.8	4.8
	61-70%	5	23.8	23.8	28.6
	71-80%	9	42.9	42.9	71.4
	81-100%	6	28.6	28.6	100.0
	Total	21	100.0	100.0	

Recommend workshop to others

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Yes	21	100.0	100.0	100.0

Overall Level of Workshop Content

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	About right	20	95.2	95.2	95.2
	Too advanced	1	4.8	4.8	100.0
	Total	21	100.0	100.0	

LSC Biotech Institute Tour

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Average	1	4.8	4.8	4.8
	Above Average	10	47.6	47.6	52.4
	Excellent	10	47.6	47.6	100.0
	Total	21	100.0	100.0	

HCC Energy Institute Tour

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Below Average	2	9.5	9.5	9.5
	Average	5	23.8	23.8	33.3
	Above Average	8	38.1	38.1	71.4
	Excellent	6	28.6	28.6	100.0
	Total	21	100.0	100.0	

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Green Bldg Resource Center Tour

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Average	2	9.5	9.5	9.5
	Above Average	9	42.9	42.9	52.4
	Excellent	10	47.6	47.6	100.0
	Total	21	100.0	100.0	

Overall usefulness of workshop for prof. dev.

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Moderately	3	14.3	14.3	14.3
	Very	14	66.7	66.7	81.0
	Extremely	4	19.0	19.0	100.0
	Total	21	100.0	100.0	

Overall, how well workshop met expectations

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Met Expectations	4	19.0	19.0	19.0
	Above	12	57.1	57.1	76.2
	Far above	5	23.8	23.8	100.0
	Total	21	100.0	100.0	

Did workshop improve knowledge & skills

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Moderately	3	14.3	14.3	14.3
	Very	10	47.6	47.6	61.9
	Extremely	8	38.1	38.1	100.0
	Total	21	100.0	100.0	

Current (Post Workshop) Understanding

15	Very Poor	Poor	Fair	Good	Very Good
	Row N %	Row N %	Row N %	Row N %	Row N %
Renewable Energy	0%	0%	0%	62%	38%
Energy Conservation	0%	0%	10%	52%	38%
Solar Energy	0%	0%	14%	43%	43%
Wind Energy	0%	0%	24%	57%	19%
Geothermal Energy	0%	0%	10%	38%	52%
Biofuels	0%	5%	14%	57%	24%
Hydropower	0%	0%	19%	43%	38%
Energy Audit Practices	0%	0%	5%	33%	62%

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Pre-Workshop Importance Placed on Topics

16	Very Low	Low	Average	High	Very High
	Row N %	Row N %	Row N %	Row N %	Row N %
Renewable Energy	0%	19%	33%	33%	14%
Energy Conservation	0%	5%	48%	33%	14%
Solar Energy	0%	19%	43%	24%	14%
Wind Energy	5%	24%	33%	33%	5%
Geothermal Energy	10%	24%	43%	14%	10%
Biofuels	5%	19%	14%	43%	19%
Hydropower	0%	14%	48%	29%	10%
Energy Audit Practices	19%	24%	24%	29%	5%

Post-Workshop Importance Placed on Topics

17	Very Low	Low	Average	High	Very High
	Row N %	Row N %	Row N %	Row N %	Row N %
Renewable Energy	0%	0%	10%	48%	43%
Energy Conservation	0%	0%	14%	43%	43%
Solar Energy	0%	0%	24%	62%	14%
Wind Energy	0%	5%	33%	48%	14%
Geothermal Energy	0%	0%	24%	52%	24%
Biofuels	0%	0%	29%	33%	38%
Hydropower	0%	0%	35%	50%	15%
Energy Audit Practices	0%	0%	10%	57%	33%

General Workshop Outcomes Ratings

18	Strongly Disagree	Disagree	Neither Agree nor Disagree	Agree	Strongly Agree	No Opinion
	Row N %	Row N %	Row N %	Row N %	Row N %	Row N %
Helped me better understand the issue	0%	0%	0%	25%	75%	0%
Provided information relevant to my work	0%	0%	15%	40%	45%	0%
Were based on current, up-to-date information	0%	0%	0%	20%	80%	0%
Addressed the topic identified in the title	0%	0%	0%	50%	50%	0%
Were well organized	0%	5%	15%	30%	50%	0%
Were easy to understand	0%	0%	15%	50%	35%	0%
Will be of great use to me	0%	0%	5%	50%	45%	0%

Plan to use information from the workshop

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Yes	21	100.0	100.0	100.0

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To what extent will you be able to teach content due to this workshop

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Somewhat	2	9.5	9.5	9.5
	Quite a bit	12	57.1	57.1	66.7
	A great deal	7	33.3	33.3	100.0
	Total	21	100.0	100.0	

Motivated me to want to learn more

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Good	8	38.1	38.1	38.1
	Excellent	13	61.9	61.9	100.0
	Total	21	100.0	100.0	

Motivated me to do something different

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Good	12	57.1	57.1	57.1
	Excellent	9	42.9	42.9	100.0
	Total	21	100.0	100.0	

Changed attitude about energy conservation due to workshop

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Yes	19	90.5	90.5	90.5
	No	2	9.5	9.5	100.0
	Total	21	100.0	100.0	

Stay in Huntsville Satisfactory

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Yes	21	100.0	100.0	100.0

OPEN-ENDED ITEM RESPONSES

Three most helpful things from workshop

GEOHERMAL	HYDROPOWER	ENERGY AUDITS
SCIENCE INFO	SCIENCE TOURS	STUDENT KITS
LCC TOUR	HOYT ENERGY AUDITS	KEITH STAPLETON
GEOHERMAL LOOPS	ELECTRICITY OVERVIEW	ENERGY AUDITS
Technology opportunities for students	Practical uses for information	Students can have career paths that do not include 4 years
Biofuel	Geothermal	ENERGY AUDITS
Looptech	Energy Audit	Co-op
Training kits for students	Tours	Knowledge of subject matter
Hydropower	Geothermal	Tours
Hands-on activities	Tours	Speakers
Discussion of research	Hands-on kits	
Real-life application to pass on to students	Trends in use of renewable energy	<u>Regulations/Structure of renewables compared to traditional energy</u>
Training kits for students	Energy Audit	Geothermal
Geothermal	Thermal audits	Green building
Better understanding of various forms of energy	Environmental effects	Algae and prospect
Hydropower	Geothermal	Solar
Training kits for students	Hands-on work	Material I can provide my students
Geothermal	LSC tour	Solar talks
Hands-on experience with concepts that may be difficult to grasp otherwise	Information gained from experts in various fields	Collaboration with other teaching professionals
Wind power	Solar power	Tours
Geothermal and energy audit presentations	Tours/Field trips	Lab activities/Hands-on

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Most Liked About Workshop	Least Liked About Workshop
HYDROPOWER	SOLAR POWER
ALL	N/A
RUSSEL BURAS; GENE HOYT; KEITH STAPLETON	JAMES BANDY; KYUNG AHOOO
1 st day and last day and geothermal. Best presenters, who gave information on how something actually works.	Wind energy never really explained anything
Talking/tour of technical schools; Sam Houston Electric Co-Op	Some of the solar installation was too in depth
Geothermal	Wind
Looptech	A couple of presenters
Tour to LSC Biotech Inst	Speakers that were difficult to follow
	Various presentations were hard to understand presenters
Hands-on activities	The heat while working/touring outside. Jim Bandy and Dr. Woo are boring
Hands-on lab activities	The lectures could be a little more on our level. Not quite as long
Geothermal, energy audits, hydropower, kits that worked and were relevant (wind, solar tracker)	Some of the lectures were bland and did not have information presented in an interesting way. Timing was off structurally someday that did not help with lack of “student” engagement during some presentation
Hand-on labs	Certain presentations I learned nothing from
Tour of green building, seeing it put to use and take home labs	Solar Board/Electrical & presenter Ms. Woo
Tours	Length of each presentation could be condensed
Geothermal	Solar
Working with trainers and kits	Some speakers were not informative
Meeting other teache4rs and SHSU faculty	Lab next door was unorganized
Hands-on manipulation of electrical boards and kits	Listening to PowerPoint presentations read verbatim
Tour of green building resources	Solar power presentation by Mrs. Woo
Kit activities and peer interactions (professionally stimulating)	Some speakers were not able to deliver on efficient presentation or some lacked complete information

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Suggestions for Workshop Improvement

GOOD WORKSHOPS; NEED BETTER PRESENTERS
EXCELLENT; GREATLY BENEFICIAL TO SCIENCE AND MATH TEACHERS
FINE TUNE SPEAKERS; HANDS ON WAS GREAT
Coordinate between speakers to minimize repeat of information; HCC pretty much duplicates SHSU
Move toward practical use for H.S. students post-graduation; Use more practical application for this area
Better presentations
Improve presenters
A few of the speakers were difficult to follow some time
Take a tour of Lake Livingston Dam; Explain further the connection between Ag & Science and why you bring these two teachers together for this workshop
This was a fantastic workshop and I enjoyed it! I would definitely attend this workshop again
Bring in more people that actually work with the different types of energy rather than teaching
Looking at timing so if we finish early were not just sitting around could possibly cut down to a 4-day workshop or less time per day. Some presenters were hit or miss.
Really evaluate the effectiveness of presenters
Omit presenters who read, keep geothermal guy, SHECO guy, audit guy and tour of green building. Add more how to incorporate into class room instruction, ways to teach/implement.
Hands on activities were great. Add more if possible
More hands-on training
If it is repeated it will be extremely beneficial
Work on timing of scheduling
The presenter(s) that read their presentations with no real interaction aside from this should infuse examples and questions that are not necessarily visible on the slides. Being read to is not thought-provoking or interesting. We are taught not to do this with our students
More organized
I would have appreciated a more in-depth/border view of the current national energy policy as well as the near future requirements on industry

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How will you use information

In speaking events to get info to the public; shop work
To augment the “Energy” unit in Science; also to foster student leadership via the impartation of renewable technology info to their peers
I will teach aquatic science and will definitely use what I learned this week in class.
To teach students basics of renewable energy in Principles of Agriculture. More detailed and updated info for Wildlife class.
To use practical information that can be passed to my students. To help school personnel realize the career path at technical/junior colleges.
Incorporate into my ag mechanics classes
In labs
I am currently looking into pairing up with the science department and conduct a few different labs based of renewable energy
Integrating materials and information into lessons; Collaborate with science teachers on campus
I will not only use this information in my class room, school and barn, but also in my personal life I have gained valuable information to use in all aspects of my life.
Topics will be covered during class time as these are addresses during the year
All of the courses I’m teaching this upcoming year have elements that can be included in renewable energy. I’d also like to use some of the equipment to do-hands on projects.
I will use in my IPC class
Raise awareness with students on energy conservation. Provide students with knowledge and skills of emerging energy careers. Implement into daily life of activities
Options for hands on experiments and career options relevant to high school graduates
I will used this information to teach my students about new technology
I plan to teach my students with all these topics
Adding biotechnology and other renewable energy topics to my class where applicable
I will be able to take this information back to my Physics teacher and IPC teacher to use in their classrooms. Since we are doing away with CSCOPE this year, I plan to incorporate a portion of what I have learned in my Biology classes as well. The kits will be so exciting for all of our students to use. Being at a small, fairly poor school district can too many times prevent us from exciting kids about careers because we simply do not have the funds to purchase tactile learning manipulatives. So many students can’t “see” the benefit to them nor can they have those “Aha!” moments without the aid of visuals.
I plan to teach about this in my land scape and horticulture classes. I believe the information will be good for the students to learn
I will be incorporating all of these materials and information into my lesson plans, I also intend to expand on these kits for lab activities

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How attitude has changed

More aware of importance
Need to place more emphasis on incorporating this info
Seems more realistic
I see the future of energy completely differently
Allowed me to think about the issues related to my students
How everything works together
Realize more ways to conserve or convert energy
How important energy conservation is
Became more aware of various issues/topics
I am more aware and will be more conscientious about energy
It didn't matter much to me. I see its significance much more
I value it more than I did
More motivated to venture out & learn more
Residential energy audit - importance
Makes me want to look at my own energy use
I believe this is the future
Increased curiosity and motivation to share

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What you gained that was unexpected

Knowledge of hydropower and biomass plants in E. Texas
The wealth of knowledge about all these forms of alternative and/or renewable energy.
The cooperation of traditional sources for energy and renewable
Knowledge of sources and how each works
Different ideas
The total knowledge of certain energy topics that I did not think we were going to learn.
Tons of hands on, practical applications to use in the classroom
The wealth of knowledge and skills!
I didn't know how the industry was headed in the direction of including more renewable energy sources. It was interesting to learn more about what's being done that I can relay to my students
More knowledge of understanding of alternative energy sources
Algae growth and uses. Well kept secret
A new outlook on renewable energy sources
I learned a lot from the engineering aspects of renewable energy. It was really neat to learn on everything worked
Free stuff, new info on the technology of renewable energy. I heard about the energy but didn't really know about it
While I have always (since being an adult) appreciated the importance of energy conservation efforts, I have not always had the time or luxury of incorporating it into my lessons in Biology. I can easily use the models I saw to simply pique students' interest so that their physical science teachers can elaborate and really drive home the concepts
More about renewable resources that I deal not know before
A greater appreciation for agricultural sciences and industrial technologies, collaboration possibilities with the ag teachers at my campus

How was your stay

Quite Comfortable
Great workshop
I learned many ways to involve students in sustainable energy practices I plan on using this in the class and lab
great hospitality by SHSU faculty and guest presenters
Professors were helpful. Dr. Kane did a great job facilitating
The University hotel was in a good location, clean and comfortable
I really enjoyed the workshop
I live in Huntsville, but I greatly enjoyed the workshop