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## Abstract

- ASEEN is a three years project managed by the Sam Houston State University Department of Agricultural and Industrial Sciences to promote sustainable energy education in K-12 rural schools in Texas, with a focus on Ag applications
- Workshops are conducted with high school students in the school year to reinforce STEM concepts and educate students about careers in sustainable energy
- A renewable energy curriculum is being developed for Texas high school teachers and interested audiences
- The second teacher professional development summer workshop took place June 9, 2014 with 20 high school AFNR and Science teachers
- The pre and post workshop understanding of sustainable energy concepts by participants is reported

## Requirements for Participation

AFNR and Science teachers:

1. Must both participate in the 5 day professional development program on the SHSU campus
2. Must currently work in a 1A, 2A, 3A, 4A school district with a largely rural population
3. Should preferentially have between 3 and 15 years of teaching experience in Texas high schools, although other candidates are considered
4. Must commit to teaching across curriculum units, lecture on agricultural sustainable energy, energy safety and conservation, and promote STEM education
5. Must commit to completing a school-wide energy audit with student involvement

## Partners



## Surveys

Pre and Post Workshop Mean Understanding Ratings

		N	Mean	Std. Dev.	Std. Error
Renewable Energy	Pre	20	3.10	.72	.16
	Post	20	4.20	.62	.14
Energy Conservation	Pre	20	3.10	.72	.16
	Post	20	4.00	.73	.16
Solar Energy	Pre	20	3.10	.72	.16
	Post	20	4.10	.85	.19
Wind Energy	Pre	20	2.85	.59	.13
	Post	20	4.20	.70	.16
Geothermal Energy	Pre	20	2.25	.64	.14
	Post	20	4.30	.66	.15
Biofuels	Pre	20	2.65	.93	.21
	Post	20	3.75	.79	.18
Hydropower	Pre	20	2.60	.82	.18
	Post	20	3.65	.67	.15
Energy Audit Practices	Pre	20	2.00	.92	.21
	Post	20	3.70	.73	.16

In the area of Understanding Ratings, mean post-workshop average scores increased by 0.9 or greater over pre-workshop scores in every subject matter area. The greatest increases of understanding were in the areas of wind energy, geothermal energy and energy audit practices. In the 2013 workshop, only Wind Energy did not experience this level of increased understanding.

General Workshop Outcomes Ratings

	Disagree		Neither Agree nor Disagree		Agree		Strongly Agree	
	N	%	N	%	N	%	N	%
Helped me better understand the issue	0	.0	1	5.0	7	35.0	12	60.0
Provided information relevant to my work	0	.0	2	10.0	12	60.0	6	30.0
Were based on current, up-to-date information	0	.0	1	5.3	7	36.8	11	57.9
Addressed the topic identified in the title	0	.0	0	.0	6	31.6	13	68.4
Were well organized	1	5.0	7	35.0	8	40.0	4	20.0
Were easy to understand	0	.0	4	21.1	8	42.1	7	36.8
Will be of great use to me	0	.0	2	10.5	10	52.6	7	36.8

Sixty percent or more of the responses agreed or strongly agreed with seven positive workshop delivery outcomes. This compares favorably with 2013.

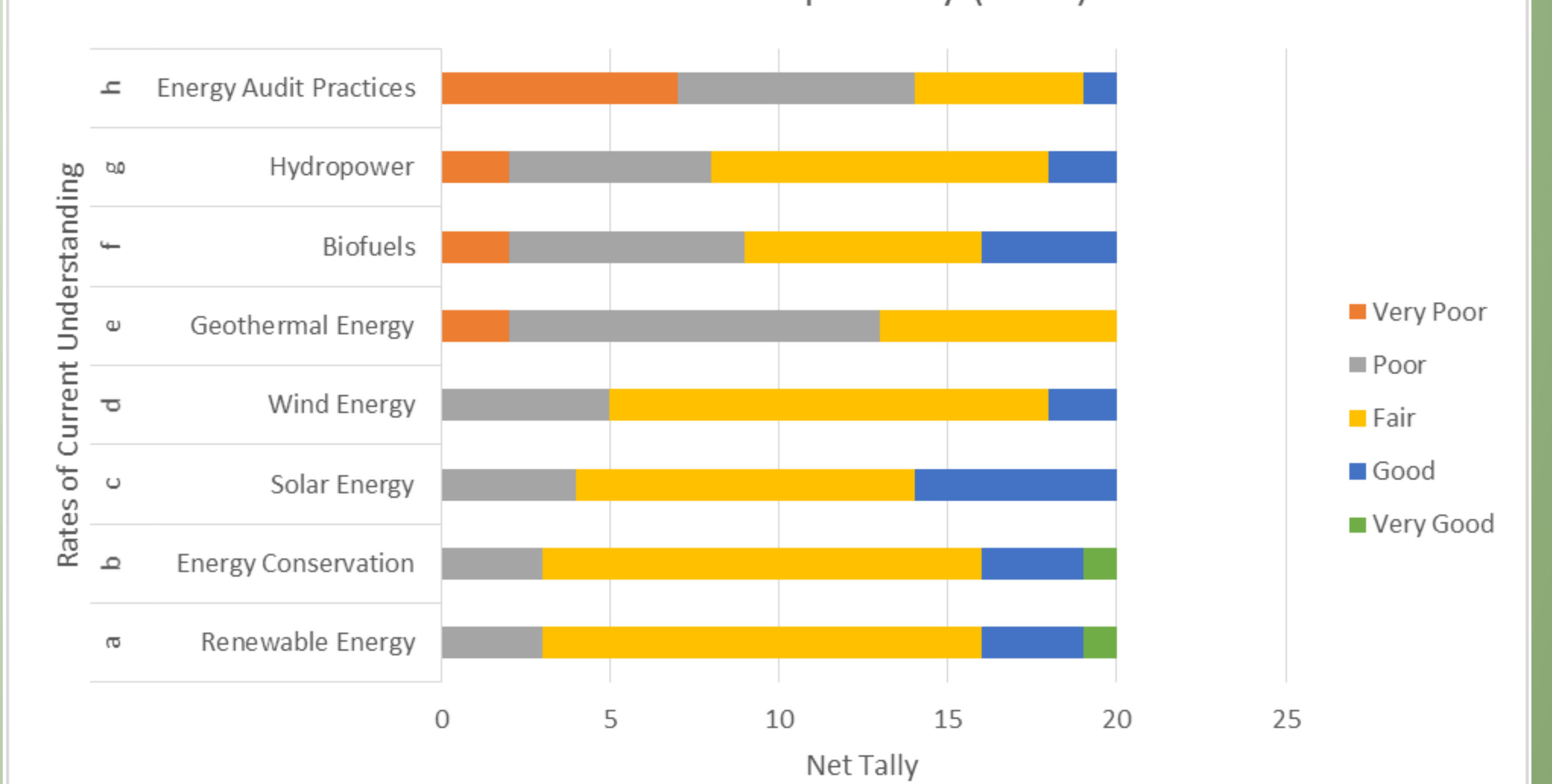
## Hands-On Activities

Teachers attended presentations from industry/academia and participated in hands-on training on: solar energy, wind power, hydro-power, biofuels, geothermal, and energy audit practices

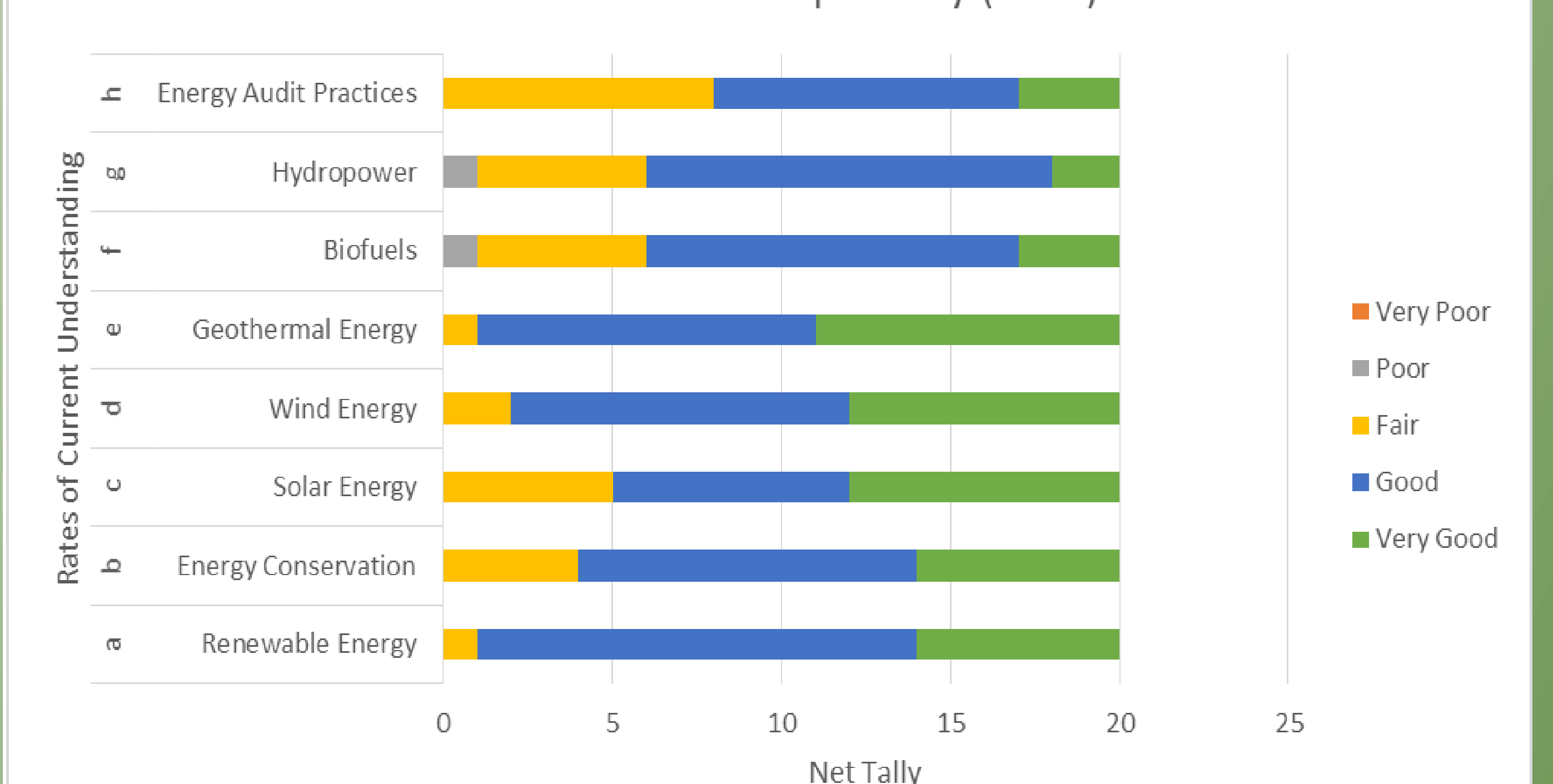


## Pre vs. Post Workshop Data

ASEEN Pre-Workshop Survey (2014)



ASEEN Post-Workshop Survey (2014)



## Conclusions

- Among the many results taken from the surveys that were not able to be included as a majority compared to the year before the ASEEN project has improved knowledge of teachers, both agriculture and science, for the better.
- During the five day work shop eight speakers presented topics based around the ASEEN project. After the speaker presented, teachers were asked to complete a survey of understanding for that certain topic.
- The results of all sections/topics for understanding among the teachers present did increase as of roughly forty percent post workshop.