V(A). Planned Program (Summary)

Program # 3

1. Name of the Planned Program

Sustainable Energy

☑ Reporting on this Program

V(B). Program Knowledge Area(s)

1. Program Knowledge Areas and Percentage

KA Code	Knowledge Area	%1862 Extension	%1890 Extension	%1862 Research	%1890 Research
206	Basic Plant Biology	0%		50%	
402	Engineering Systems and Equipment	30%		25%	
403	Waste Disposal, Recycling, and Reuse	70%		25%	
	Total	100%		100%	

V(C). Planned Program (Inputs)

1. Actual amount of FTE/SYs expended this Program

Year: 2014	Extension		Research	
	1862	1890	1862	1890
Plan	1.0	0.0	1.4	0.0
Actual Paid	0.2	0.0	0.5	0.0
Actual Volunteer	0.0	0.0	0.0	0.0

2. Actual dollars expended in this Program (includes Carryover Funds from previous years)

Extension		Research	
Smith-Lever 3b & 3c	**1890 Extension**	**Hatch**	**Evans-Allen**
7311	0	0	0
1862 Matching	**1890 Matching**	**1862 Matching**	**1890 Matching**
7311	0	0	0
1862 All Other	**1890 All Other**	**1862 All Other**	**1890 All Other**
0	0	168546	0

V(D). Planned Program (Activity)

1. Brief description of the Activity

1. Conducted research into alternative biofuels and methods of production that are well-suited for the Intermountain West.
2. Published in peer-reviewed journals and other professional outlets.
3. Took the research that is done and adapted that research so useful practical strategies might be followed in producer biofuels to the extent they were shown to be beneficial in terms of benefits and costs.

2. Brief description of the target audience

For experiment station faculty their target audiences are primarily directed towards extension specialists, county agents, and other scientists; the extension specialists' audiences include peers, county agents, federal and state organizations, producer groups, state and local government, and the general public. County agents work cooperatively with federal, state, and local governments, citizen groups, and the public to address sustainable energy issues in their areas.

3. How was eXtension used?

eXtension was not used in this program

V(E). Planned Program (Outputs)

1. Standard output measures

2014	Direct Contacts Adults	Indirect Contacts Adults	Direct Contacts Youth	Indirect Contacts Youth
Actual	39	188	19	91

2. Number of Patent Applications Submitted (Standard Research Output)

Patent Applications Submitted

Year:	2014
Actual:	0

Patents listed

3. Publications (Standard General Output Measure)

Number of Peer Reviewed Publications

2014	Extension	Research	Total
Actual	0	4	4

V(F). State Defined Outputs

Output Target

Output #1

Output Measure

- Number of Patent Applications Submitted
  Not reporting on this Output for this Annual Report

Output #2

Output Measure

- Number of Peer Reviewed Publications
  Not reporting on this Output for this Annual Report

V(G). State Defined Outcomes

V. State Defined Outcomes Table of Content

O. No.	OUTCOME NAME
1	Number of clientele gaining sustainable energy knowledge
2	Number of clientele who implement sustainable energy practices

Outcome #1

1. Outcome Measures

Number of clientele gaining sustainable energy knowledge

2. Associated Institution Types

- 1862 Extension
- 1862 Research

3a. Outcome Type:

Change in Knowledge Outcome Measure

3b. Quantitative Outcome

Year	Actual
2014	164

3c. Qualitative Outcome or Impact Statement

Issue (Who cares and Why)
For experiment station faculty their target audiences are geared primarily towards extension specialists, county agents, and other scientists. The extension specialists' audiences include peers, county agents, federal and state organizations, producer groups, state and local government, and the general public. County agents work cooperatively with federal, state, and local governments, citizen groups, and the public to address sustainable energy issues in their areas.

What has been done
On the genomics level, work is been done on lactic acid in the potential of lactic acid to provide an alternative energy source. Work was also done on examining the potential for biomass co-firing using straw and similar products.

Results
While there may be some commercial potential, it will be sometime in the future before any technology can be developed commercially. As far as co-generation using wheat straw is concerned, electrical prices would have to rise significantly, as would carbon prices, in order to justify assembling and co-firing of straw or related materials.

4. Associated Knowledge Areas

KA Code	Knowledge Area
206	Basic Plant Biology
402	Engineering Systems and Equipment

403 Waste Disposal, Recycling, and Reuse

Outcome #2

1. Outcome Measures

Number of clientele who implement sustainable energy practices

Not Reporting on this Outcome Measure

V(H). Planned Program (External Factors)

External factors which affected outcomes

- Natural Disasters (drought, weather extremes, etc.)
- Economy
- Appropriations changes
- Public Policy changes
- Government Regulations
- Competing Public priorities
- Competing Programmatic Challenges
- Populations changes (immigration, new cultural groupings, etc.)

Brief Explanation

Everyone of the areas checked above has had a significant effect on the development of sustainable energy. With the discovery of major sources of natural gas in the US, and even additional oil, it is unlikely that sustainable energy development will occur without heavy subsidization. Unless there is a change in technology or policy which allows for affordable sustainable energy production, this will not be an area that is heavily invested in by UCES or UAES. In addition, we would have a difficult time competing with other entities who are putting a major effort in this area.

V(I). Planned Program (Evaluation Studies)

Evaluation Results

We do not have evaluation results in this area, though there are a limited number of peer-reviewed citations USU faculty have been able to publish in this area.

Key Items of Evaluation

Nothing to note.