

**V (A). Planned Program (Summary)**

**Program # 8**

**1. Name of the Planned Program**

Sustainable Energy

**2. Brief summary about Planned Program**

The goals of this strategic initiative team are to:

- educate a core group of extension agents about renewable energy options and energy efficiency.
- broadly educate all extension agents on the basics of renewable energy.

Ultimately, we hope Extension will be seen as the educational entity of choice in the area of clean energy.

Strategies include developing fact sheets for the general public, identifying additional outside resources to support this work and partnering with community agencies to deliver educational programming.

Long term deliverables include:

- develop demonstration sites
- deliver short term classes
- partner with campus faculty
- develop green jobs program for schools
- develop school enrichment materials using STEM based standards

**3. Program existence :** Intermediate (One to five years)

**4. Program duration :** Medium Term (One to five years)

**5. Expending formula funds or state-matching funds :** Yes

**6. Expending other than formula funds or state-matching funds :** Yes

**V (B). Program Knowledge Area(s)**

1. Program Knowledge Areas and Percentage

<b>KA Code</b>	<b>Knowledge Area</b>	<b>%1862 Extension</b>	<b>%1890 Extension</b>	<b>%1862 Research</b>	<b>%1890 Research</b>
132	Weather and Climate	25%		0%	
402	Engineering Systems and Equipment	25%		0%	
605	Natural Resource and Environmental Economics	25%		0%	
803	Sociological and Technological Change Affecting Individuals, Families, and Communities	25%		0%	
	<b>Total</b>	100%		0%	

**V(C). Planned Program (Situation and Scope)**

**1. Situation and priorities**

APLU released the results of a nationwide survey regarding the value of the Extension brand. Participants were asked to rank the importance of local issues that could be addressed through the CSU research-

based information, including issues that are especially critical in the next five years. A total of 335 interviews were conducted online with Colorado residents from June to July 2008. The top characteristics that motivate consumers to use a resource are: trustworthy source, great staff, convenient access, current and reliable information, expert review, and quality of life.

In the survey, one of the top two issues they believe Extension should address was energy: bio-fuels, solar, wind, and biomass.

Some of Extension's traditional programs are timeless and will continue to serve our communities. But to remain viable, our programs and expertise must meet the current and changing needs of our world. We are quickly evolving from a fossil fuel-based economy to a sustainable and renewable-energy-based economy. This is one of the most significant changes of the past century. It is essential that we change along with the backbone of our energy paradigm.

Extension has an influential and important role to play in helping usher in this new era. Traditionally, Extension agents have been the most trusted and well regarded experts in agricultural matters. As such, we have the ear of those farmers and ranchers who own the very resources necessary to effectively build a new energy economy. Once trained, agriculture agents can act as information brokers to producers about everything from how to make their operation more energy-efficient, to the range of value-added opportunities that could help boost their bottom line. Essentially, agents could provide basic information and then link producers to professionals who can help erect a single wind turbine, lease their land to a utility for a large wind facility, grow fuel-producing crops, or construct an anaerobic digester-- and more. That said, ag agents can do none of this until they are trained to help their communities succeed.

Family & consumer science agents can also tap into the renewable energy boom. They can assist homeowners, businesses, rural operators, and communities with who can help them improve energy efficiency in their existing structures, or how to build new ones that employ geothermal, micro-hydrogen, solar and other clean energy sources. But these agents must first be trained to do so.

4-H agents can also play a meaningful role. By providing new curriculum for their club members, they can offer cutting-edge programs that could attract an entirely new demographic into the 4-H family. But our 4-H agents need to be supplied with these curriculums and trained in how to implement them.

Economic development agents will also be able to work with communities that may be interested in pursuing the economic benefits of renewable energy. For example, in Logan County, the wind farm produced \$4.16 million for the County. Additionally, annual easement payments to property owners range from \$4,000 to \$6,000 and will add another \$45 million over 30 years. During 2007, nearly 350 construction workers were employed in the area. They purchased temporary housing, food and supplies during their months there. Over 20 full-time, permanent jobs were created for wind technicians to service the wind turbines.

As our economic times become more tentative, it becomes increasingly more important to prove to our communities and stakeholders that we are an important, relevant and effective resource. To back that up, however, we must provide proper training and resources to our agents so they can confidently be among the leaders in their communities regarding all types of energy issues. It makes good sense to invest time, money and necessary efforts to augment the expertise of our agents so that they continue to stand out as Colorado's most reliable and trusted resource in the field. There has never been a better time -- or clearer understanding -- of how we can play an essential part in supporting our nation's transformation and independence.

By creating the Clean Energy Special Initiative Team (CESIT), we will begin to chip away at the task of answering to this change.

## **2. Scope of the Program**

- In-State Extension
- Multistate Extension
- Integrated Research and Extension

**V (D). Planned Program (Assumptions and Goals)**

**1. Assumptions made for the Program**

In order for Extension to quickly get up to speed, we need to continue to foster partnerships both within the campus (CSU Clean Energy Supercluster, CSU Climate Initiatives and Carbon Assets, and others) and externally (the Governor's Energy Office, the National Renewable Energy Laboratory, Colorado Renewable Energy Society, the Collaboratory, the Farm Bureau, Colorado Harvesting Energy Network, Utility Companies, Colorado Solar Energy Industry Association, and more). The external partnerships are required because CSU's Clean Energy Supercluster's emphasis is on research and development rather than education, although they recognize this as an unmet need. CSU Extension's energy work intends to fill the educational gap, and help to make CSU the Green University for even more people.

The renewable energy and energy efficiency industries (RE&EE) generates \$102 billion in annual revenue and provide more than 91,000 jobs in Colorado (2007) with potential for these industries to grow six-fold by 2030. Renewable energy is an emerging field for Extension both in Colorado, and across the country. The field crosses many different content and delivery/audience areas, including Community/Economic development, 4-H Youth Development, Family Economic Stability, and Competitive and Sustainable Agriculture systems. As an organization, we have had almost no resources or agents in this field, and there is an urgent need to train agents and develop materials for the public. This in turn will reduce carbon footprints, reduce global warming, reduce pollution and help drive the new energy economy.

**2. Ultimate goal(s) of this Program**

Programming from the Clean Energy Strategic Initiative Team activities will reduce the knowledge gap for people interested in renewable energy and energy efficiency, increasing implementation of energy efficient measure and installations of renewable energy projects. This in turn will reduce carbon footprints, reduce global warming, reduce pollution and help drive the new energy economy. The renewable energy and energy efficiency industries (RE&EE) generates \$102 billion in annual revenue and provide more than 91,000 jobs in Colorado (2007) with potential for these industries to grow six-fold by 2030.

**V (E). Planned Program (Inputs)**

**1. Estimated Number of professional FTE/SYs to be budgeted for this Program**

Year	Extension		Research	
	1862	1890	1862	1890
2011	2.0	0.0	0.0	0.0
2012	3.0	0.0	0.0	0.0
2013	3.0	0.0	0.0	0.0
2014	4.0	0.0	0.0	0.0
2015	4.0	0.0	0.0	0.0

**V (F). Planned Program (Activity)**

### 1. Activity for the Program

Programming from the Clean Energy Strategic Initiative Team activities will reduce the knowledge gap for people interested in renewable energy and energy efficiency, increasing implementation of energy efficient measure and installations of renewable energy projects. Our first- and second-year plan (this is Year 2) includes:

- Create, staff, and maintain an oversight (steering) committee to lead Clean Energy work in Colorado Extension.
- Identify and enlist, then maintain the support and commitment of field agents who will either lead the subcommittees or participate on them.
- Identify and enlist the support and commitment from on-campus faculty who will either lead the subcommittees or participate on them.

### 2. Type(s) of methods to be used to reach direct and indirect contacts

#### Extension

Direct Methods	Indirect Methods
<ul style="list-style-type: none"> <li>• Education Class</li> <li>• Workshop</li> <li>• Group Discussion</li> <li>• One-on-One Intervention</li> <li>• Demonstrations</li> </ul>	<ul style="list-style-type: none"> <li>• Newsletters</li> <li>• Web sites</li> </ul>

### 3. Description of targeted audience

Colorado individuals, families and communities interested in clean energy.

### V (G). Planned Program (Outputs)

#### 1. Standard output measures

Target for the number of persons(contacts) to be reached through direct and indirect contact

	Direct Contact Adults	Indirect Contacts Adults	Direct Contacts Youth	Indirect Contacts Youth
Year	Target	Target	Target	Target
2011	200	500	250	0
2012	200	500	250	0
2013	200	500	250	0
2014	200	500	250	0
2015	200	500	250	0

#### 2. (Standard Research Target) Number of Patent Applications Submitted

2011:0

2012:0

2013:0

2014:0

2015:0

**3. Expected Peer Review Publications**

Year	Research Target	Extension Target	Total
2011	0	2	0
2012	0	2	0
2013	0	2	0
2014	0	2	0
2015	0	2	0

## V (H). State Defined Outputs

### 1. Output Target

- Number of trainings/workshops/field days/camps/classes conducted

<b>2011:20</b>	<b>2012:20</b>	<b>2013:20</b>	<b>2014:20</b>	<b>2015:20</b>
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- Amount of grant dollars generated to support clean energy

<b>2011:50000</b>	<b>2012:50000</b>	<b>2013:50000</b>	<b>2014:50000</b>	<b>2015:50000</b>
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- Number of technical (fact sheets) generated about clean energy

<b>2011:8</b>	<b>2012:10</b>	<b>2013:10</b>	<b>2014:10</b>	<b>2015:10</b>
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- Number of volunteers supporting clean energy

<b>2011:50</b>	<b>2012:50</b>	<b>2013:50</b>	<b>2014:50</b>	<b>2015:50</b>
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- Number of partnering agencies/organizations around clean energy

<b>2011:20</b>	<b>2012:20</b>	<b>2013:20</b>	<b>2014:20</b>	<b>2015:20</b>
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- Number of Extension Agents trained

<b>2011:15</b>	<b>2012:15</b>	<b>2013:15</b>	<b>2014:15</b>	<b>2015:15</b>
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- Number of new technologies adopted by individuals/families/organizations/communities

<b>2011:5</b>	<b>2012:5</b>	<b>2013:5</b>	<b>2014:5</b>	<b>2015:5</b>
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- Number of curricula developed and/or disseminated for both formal and informal education.

<b>2011:5</b>	<b>2012:5</b>	<b>2013:5</b>	<b>2014:5</b>	<b>2015:5</b>
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**V (I). State Defined Outcome**

<b>O. No</b>	<b>Outcome Name</b>
1	Percent of participants reporting increase in knowledge about clean energy
2	Percent of participants reporting change in behavior in energy use
3	Percent of participants reporting a change in condition in their home, business, community, etc.
4	Planning, development and implementation of bio-based, renewable energy projects (such as processing plant, wind farm, etc.)

### Outcome # 1

#### 1. Outcome Target

Percent of participants reporting increase in knowledge about clean energy

#### 2. Outcome Type : Change in Knowledge Outcome Measure

2011:50                      2012:50                      2013:50                      2014:50                      2015:50

#### 3. Associated Knowledge Area(s)

- 132 - Weather and Climate
- 402 - Engineering Systems and Equipment
- 605 - Natural Resource and Environmental Economics
- 803 - Sociological and Technological Change Affecting Individuals, Families, and Communities

#### 4. Associated Institute Type(s)

- 1862 Extension

### Outcome # 2

#### 1. Outcome Target

Percent of participants reporting change in behavior in energy use

#### 2. Outcome Type : Change in Action Outcome Measure

2011:50                      2012:50                      2013:50                      2014:50                      2015:50

#### 3. Associated Knowledge Area(s)

- 132 - Weather and Climate
- 402 - Engineering Systems and Equipment
- 605 - Natural Resource and Environmental Economics
- 803 - Sociological and Technological Change Affecting Individuals, Families, and Communities

#### 4. Associated Institute Type(s)

- 1862 Extension

### Outcome # 3

#### 1. Outcome Target

Percent of participants reporting a change in condition in their home, business, community, etc.

**2. Outcome Type :** Change in Condition Outcome Measure

**2011:25                      2012:25                      2013:25                      2014:25                      2015:25**

**3. Associated Knowledge Area(s)**

- 132 - Weather and Climate
- 402 - Engineering Systems and Equipment
- 605 - Natural Resource and Environmental Economics
- 803 - Sociological and Technological Change Affecting Individuals, Families, and Communities

**4. Associated Institute Type(s)**

- 1862 Extension

**Outcome # 4**

**1. Outcome Target**

Planning, development and implementation of bio-based, renewable energy projects (such as processing plant, wind farm, etc.)

**2. Outcome Type :** Change in Knowledge Outcome Measure

**2011:75                      2012:75                      2013:75                      2014:75                      2015:75**

**3. Associated Knowledge Area(s)**

- 132 - Weather and Climate
- 402 - Engineering Systems and Equipment
- 605 - Natural Resource and Environmental Economics
- 803 - Sociological and Technological Change Affecting Individuals, Families, and Communities

**4. Associated Institute Type(s)**

- 1862 Extension

**V (J). Planned Program (External Factors)**

**1. External Factors which may affect 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.)

## **Description**

Economic conditions and changes in public policy could drive outcomes up or impede success, depending on the direction of the changes. This work was organized as a "strategic initiative team" in fall, 2009. NIFA priorities and progress by the team are reflected in showing the work as a planned program for 2011. A new Clean Energy specialist, hired for a three-year fixed term position, starts May 10, 2010.

## **V (K). Planned Program (Evaluation Studies and Data Collection)**

### **1. Evaluation Studies Planned**

- After Only (post program)
- Retrospective (post program)
- Before-After (before and after program)
- Case Study
- Comparisons between program participants (individuals, group, organizations) and non-participants

#### **Description**

Evaluation efforts are formative to date. Targets are made by conservative estimate.

### **2. Data Collection Methods**

- Sampling
- On-Site
- Structured
- Unstructured
- Case Study
- Observation

#### **Description**

While organizing the initiative, team members must consider how to evaluate their success. A Clean Energy specialist starting May 10, 2010, will lead evaluation discussion and implementation. Funding agencies may require program results that will align with Extension priorities and Logic Models.