

V(A). Planned Program (Summary)

Program # 7

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
131	Alternative Uses of Land	10%			
402	Engineering Systems and Equipment	20%			
605	Natural Resource and Environmental Economics	20%			
608	Community Resource Planning and Development	20%			
803	Sociological and Technological Change Affecting Individuals, Families, and Communities	20%			
804	Human Environmental Issues Concerning Apparel, Textiles, and Residential and Commercial Structures	10%			
	Total	100%			

V(C). Planned Program (Inputs)

1. Actual amount of FTE/SYs expended this Program

Year: 2013	Extension		Research	
	1862	1890	1862	1890
Plan	2.3	0.0	0.0	0.0
Actual Paid Professional	1.0	0.0	0.0	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
57	0	0	0
1862 Matching	1890 Matching	1862 Matching	1890 Matching
0	0	0	0
1862 All Other	1890 All Other	1862 All Other	1890 All Other
60925	0	0	0

V(D). Planned Program (Activity)

1. Brief description of the Activity

- Produce MontGuides on current energy topics
- Conduct community meetings on energy topics
- Conduct meetings for agriculture and other landowners on alternative energy topics
- Partner with agencies, local and tribal government, organizations and industry
- Conduct meetings and seminars on methods for evaluating alternative energy opportunities
- Conduct workshops on home energy for the building/remodeling industry
- Tibbal Housing Authority

2. Brief description of the target audience

- Farmers and Ranchers
- Non-farm or ranch energy users
- Landowners
- Local Government
- Current Community Leadership
- Local Development Entities
- Local Economic Development Entities
- Chamber of Commerce Members
- People interested in becoming involved with creating alternative energy opportunities
- Small businesses by SBA definition
- Building Industry
- Montana Building Industry Association
- Montana Department of Environmental Quality
- Montana AARP
- Human Resource Development Councils

3. How was eXtension used?

Extension professionals and clientele are encouraged to use the system as a resource for information and educational materials related to their specific questions and concerns. The Ask an Expert function has been valuable to provide information that is not available in our state.

V(E). Planned Program (Outputs)

1. Standard output measures

2013	Direct Contacts Adults	Indirect Contacts Adults	Direct Contacts Youth	Indirect Contacts Youth
Actual	584	1000	0	0

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

Patent Applications Submitted

Year: 2013
 Actual: 0

Patents listed

3. Publications (Standard General Output Measure)

Number of Peer Reviewed Publications

2013	Extension	Research	Total
Actual	7	0	7

V(F). State Defined Outputs

Output Target

Output #1

Output Measure

- Energy and Agriculture: Number of people attending workshops/presentations or using the website for information about energy alternatives and what criteria to use for decision making on becoming involved with energy generation. (wind, solar, bio-diesel, bio-mass, oilseed production/processing, ethanol etc.) Number of producers attending seminars/demonstrations on using energy saving tillage system practices.

Year	Actual
2013	150

Output #2

Output Measure

- Residential Energy: Number of homeowners and builders who attend workshops/seminars or accessing the web site on home energy saving/conservation practices. Number of home builders, contractors and crews attending workshops on weatherization techniques in construction of homes. Number of people who gain information about the Camelina Composite Pellet Fuels for home stoves. Number of people learning methods to save home energy, including purchasing Energy Star products. Number of people using energy saving practices in new and remodel construction. Number of people practicing weatherization techniques.

Year	Actual
2013	179

Output #3

Output Measure

- Renewable/Alternative Energy: Number of people making decisions about alternative energy opportunities based on Extension information. Number of people attending workshop/presentations and/or accessing the web site for information about wind energy. Number of people attending workshops/presentations on the pros and cons of various types of bio-fuels or alternative energy sources. Development of educational guides/publications on current energy issues. Workshops/seminars on quantifying the impact of energy generation or savings as it relates to the bottom line of their primary business function. Number of people gathering information from the Extension Energy web site. Number of people attending workshops/presentations or using the web site on public policy issues related to energy generation and transmission. Number of people participating in workshops/presentations on land leasing issues related to energy generation.
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	Energy and Agriculture (reservation and non-reservation) Participants will understand energy alternatives and how to use a framework to evaluate energy opportunities. Participants will be able to make a sound decision on becoming involved with energy generation. (wind, solar, bio-diesel, bio-mass, oilseed production/processing, ethanol etc.). Participants will use energy saving tillage system practices.
2	Residential Energy: Homeowners will apply home energy savings/conservation practices. Home builders, contractors and crews will use weatherization techniques in constructing homes. Participants will become aware of the Camelina Composite Pellet Fuels for home stoves. Participants will apply common methods to save home energy to new or existing homes. Participants will use high performance, resource efficient building materials and construction techniques in remodeling and new construction. Participants will increase their purchase of Energy Star products and appliances resulting in an energy savings of at least 30% annually per appliance. Participants will experience an energy savings due to weatherizing and remodeling existing homes (13-65% energy savings per household).
3	Renewable/Alternative Energy: Landowners/citizens will have tools to make decisions about becoming involved with renewable/alternative energy opportunities. Participants will understand the public policy issues related to wind and other alternative energy generation and transmission. Participants will understand land leasing issues related to wind and other alternative energy generation and transmission. Landowners/citizens will have tools to make decisions about renewable/alternative energy opportunities.

Outcome #1

1. Outcome Measures

Energy and Agriculture (reservation and non-reservation) Participants will understand energy alternatives and how to use a framework to evaluate energy opportunities. Participants will be able to make a sound decision on becoming involved with energy generation. (wind, solar, bio-diesel, bio-mass, oilseed production/processing, ethanol etc.). Participants will use energy saving tillage system practices.

2. Associated Institution Types

- 1862 Extension

3a. Outcome Type:

Change in Knowledge Outcome Measure

3b. Quantitative Outcome

Year	Actual
2013	150

3c. Qualitative Outcome or Impact Statement

Issue (Who cares and Why)

E3: Economy, Energy and Environment is a coordinated federal and local technical assistance framework that helps communities adapt and thrive in a new business era focused on sustainability by providing customized, hands-on assessments of production processes. Montana is leading the nation by piloting this framework with agricultural producers to reduce energy consumption, increase productivity, minimize their carbon footprint, prevent pollution, and drive innovation. Peaks to Prairies, a program within MSU's Extension Housing and Environmental Health Department, was awarded an EPA grant to apply the E3 framework by leveraging strategic partnerships to develop and test the E3 approach in Montana agriculture.

What has been done

Six MSU Extension Agents who have established trust relationships within their counties have been selected and trained to conduct an E3 assessment with local producers. The assessment identifies ways to reduce energy consumption, increase productivity, minimize carbon footprint, and drive innovation. The goal is to ensure that by participating in E3, agricultural producers are in the best position possible to maximize available financial opportunities in order to implement E3 recommendations. This means that upon completion of the assessment, the producer will be eligible for USDA grant and loan opportunities as well as other programs from E3 federal partners.

Results

This program is in its early stages so qualitative impact data related to assessments and follow-up actions are not yet available. Once ready, results will be posted at www.e3.peakstoprairies.org. Currently the biggest impact is the strengthened partnerships among agencies. The Natural

Resource Conservation Services (NRCS) offers technical tools, such as the Cropland Energy Estimator, that are important in calculating E3 metrics; and funding sources such as the Environmental Quality Incentives Program (ECIP) to help producers with costs of implementation. Rural Development (RD) has opportunities including the Renewable Energy for America (REAP) program, value-added producer grants and loan guarantee programs. The Farm Services Agency (FSA) offers funding such as the Guaranteed Conservation Loan. The Montana Manufacturing Extension Center located at MSU provides assistance in setting up food processing and other value-added plants and manufacturing processes that can lead to substantial environmental and economic benefits. Building this network around a common goal will have long-term and far-reaching impacts for producers.

4. Associated Knowledge Areas

KA Code	Knowledge Area
131	Alternative Uses of Land
605	Natural Resource and Environmental Economics

Outcome #2

1. Outcome Measures

Residential Energy: Homeowners will apply home energy savings/conservation practices. Home builders, contractors and crews will use weatherization techniques in constructing homes. Participants will become aware of the Camelina Composite Pellet Fuels for home stoves. Participants will apply common methods to save home energy to new or existing homes. Participants will use high performance, resource efficient building materials and construction techniques in remodeling and new construction. Participants will increase their purchase of Energy Star products and appliances resulting in an energy savings of at least 30% annually per appliance. Participants will experience an energy savings due to weatherizing and remodeling existing homes (13-65% energy savings per household).

2. Associated Institution Types

- 1862 Extension

3a. Outcome Type:

Change in Action Outcome Measure

3b. Quantitative Outcome

Year	Actual
2013	179

3c. Qualitative Outcome or Impact Statement

Issue (Who cares and Why)

Consumers are interested in reducing consumption, using more efficient energy sources and learning the latest technologies and solutions for being good stewards of limited resources.

Finding reliable, science-based information can be a challenge.

What has been done

In 2010, the Montana Weatherization Training Center, in partnership with Exxon Mobil and National Community Action Foundation, created WxTV, a national weatherization training show that uses a blend of expert advice, how-to techniques, innovation and reality TV to create entertainment-based learning. The show has since expanded to cover all aspects of energy-efficient living. There are more than 90 eLearning modules for trainers. In 2013, 12 new episodes were produced.

Results

WxTV had from 4,000-5,000 monthly viewers and over 200,000 unique views on WxTV and 113,000 on YouTube. Being available anytime, anywhere has made it a useful tool for weatherization professionals and home handymen.

4. Associated Knowledge Areas

KA Code	Knowledge Area
402	Engineering Systems and Equipment
605	Natural Resource and Environmental Economics

Outcome #3

1. Outcome Measures

Renewable/Alternative Energy: Landowners/citizens will have tools to make decisions about becoming involved with renewable/alternative energy opportunities. Participants will understand the public policy issues related to wind and other alternative energy generation and transmission. Participants will understand land leasing issues related to wind and other alternative energy generation and transmission. Landowners/citizens will have tools to make decisions about renewable/alternative energy opportunities.

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

Brief Explanation

V(I). Planned Program (Evaluation Studies)

Evaluation Results

E3 in Montana Agriculture has made great strides in bringing together a network of organizations with resources for producers who are serious about limiting agriculture's footprint while increasing productivity, profit and innovation. Though in its early stages, E3 has all the pieces to 1) increase opportunities for economic advancement and 2) preserve, protect and enhance the environment.

The Montana Weatherization Training Center and certification program was established in 1991 in partnership with the Montana Department of Public Health and Human Services and employs 6 people focused on reducing energy costs for low-income families, particularly the elderly, people with disabilities and children by improving the energy efficiency of their homes while ensuring their health and safety. The goal of the Weatherization Training Center is to train the professionals who are weatherizing homes every day. Working closely with Montana's Human Resource Development Councils and Tribal associates, the Center focuses on safe, efficient, cutting-edge techniques to address the health, safety, and energy efficiency issues present in low-income housing.

Key Items of Evaluation

The best impact of E3 in Montana Agriculture so far is the network of partners working together on behalf of Montana's producers. The Natural Resource Conservation Services (NRCS) offers technical tools, such as the Cropland Energy Estimator, that are important in calculating E3 metrics; and funding sources such as the Environmental Quality Incentives Program (EQIP) to help producers with costs of implementation. Rural Development (RD) has opportunities including the Renewable Energy for America (REAP) program, value-added producer grants and loan guarantee programs. As an example, the Farm Services Agency (FSA) offers funding such as the Guaranteed Conservation Loan. The Montana Manufacturing Extension Center located at MSU provides assistance in setting up food processing and other value-added plants and manufacturing processes that can lead to substantial environmental and economic benefits. Building this network around a common goal will have long-term and far-reaching impacts for producers. Once E3 analyzes individual situations for specific producers, they will record specific impacts. These will be posted at www.e3.peakstoprairies.org.

Residential energy is an ongoing focus for MSU Extension. The Weatherization Training Center staff remains in daily communication with ten Montana Human Resource Development Councils (HRDC) and two Tribes having weatherization and Low-Income Home Energy Assistance Program (LIEAP) as well as numerous contractors, businesses and homeowners on such topics as: scheduling training sessions, registration for training, transcript requests, test results, weatherization technical questions and standards interpretation, management issues, consumer education materials, training and reference materials, and equipment questions among others.