

# 2015 University of Alaska Combined Research and Extension Annual Report of Accomplishments and Results

Status: Accepted

Date Accepted: 06/06/2016

## I. Report Overview

### 1. Executive Summary

Alaska is recognized for its immense size, sparse population and its cultural, geographic and environmental diversity. The state represents a major region of renewable and nonrenewable natural resources in the United States. Its 365 million acres include the nation's largest oil reserves, coal deposits and two largest national forests. The state also contains an array of mineral deposits, including gold, zinc, boron, molybdenum and rare earth minerals. Alaska has a diverse geography that offers soils for production of food, fiber and biomass fuels as well as a multitude of recreational and tourism activities. Waters surrounding Alaska's shoreline and riparian habitats contain large stocks of salmon, cod, pollock, halibut, herring, crab and shrimp that support thriving commercial, sport and subsistence fisheries. Alaska's natural resources have historically been the foundation of the state's economy though resource industries have been mostly extractive in nature. The use and management of these resources is a predominant force in the planning and delivery of teaching, research, Extension and engagement programs.

During the past 40 years, Alaska's economy has become dependent upon revenues related to petroleum development. To diversify its economy, the state is moving toward nonpetroleum natural resources for economic opportunities that are cost-effective and sustainable.

Our combined unit has been known as the School of Natural Resources and Extension (SNRE) since July 1, 2014, after the formal merger of the School of Natural Resources and Agricultural Sciences (SNRAS) and the Agricultural and Forestry Experiment Station (AFES) with the Cooperative Extension Service (CES). The programs of AFES and CES play a vital role in linking the knowledge generated at the university to meet the needs and interests of Alaskans. Citizens are provided opportunities through engagement to influence future research and education priorities. CES is a critical partner for the university, providing a two-way linkage (engagement) between researchers and natural resource users to deliver the latest research findings, educational and outreach opportunities.

Planned programs for purposes of this report include Agriculture and Food Security; Natural Resources and Community Development; Healthy Individuals, Families and Communities; Youth Development; Climate Change and Ecosystem Management; and Sustainable Energy. Climate change, while addressed primarily in one planned program, affects all the program areas.

Alaska imports over 90 percent of foods and other agricultural products. As the population grows and transportation costs increase, more locally and regionally produced food will be needed to provide greater food security. To this end, growers in the agricultural sector produce fresh market potatoes, vegetables and herbs; forages, grains and manufactured livestock feeds; controlled environment products, which include bedding plants, florals, landscape ornamentals, and short season vegetables; and a variety of niche market crops. One such crop, peonies, is one of our success stories and *Rhodiola rosea* also continues to show potential.

Many Alaskans live a subsistence lifestyle or supplement their diets with local fish and game meat. Alaska also has a large military population, and most have not previously preserved game meat or fish. Our state has one of the nation's highest rates of botulism, making it imperative to provide much needed information on safe preservation of these staples.

Alaska also has one of the fastest growing senior populations, who face the challenge of remaining active and healthy in a demanding environment. Other concerns that define health and nutrition

programming are the high rates of child and adult obesity and diabetes. Indoor air quality is a particular Alaska concern.

High energy costs remain a critical issue, particularly in rural Alaska. Research and outreach have focused on new and alternative sources of energy, wood and biomass and energy conservation. The mission of SNRE is to provide new information to manage renewable resources and to improve technology for enhancing the economic well-being and quality of life at high latitudes. While foresters, farmers and land managers use our research results, all Alaskans benefit from the wise use of land resources. Our research projects are in response to requests from producers, industries, and state and federal agencies for information in plant, animal and soil sciences; forest sciences; and resources management.

AFES priorities, like national priorities, are to enhance sustainability of food and agricultural systems; adapt to and mitigate the impacts of climate change; support energy security through the development of renewable natural resources; ensure a safe, secure and abundant food supply; improve human health, nutrition and wellness; support environmental stewardship through the development of sustainable management practices; and strengthen individual, family, and community development and resilience. Experiment station scientists publish their research in scientific journals, conference proceedings, books, and in experiment station bulletins, circulars, newsletters, research progress reports and miscellaneous publications. Scientists also disseminate their findings through conferences, public presentations, workshops and other public information programs like websites and blogs.

Administratively, AFES is an integral part of SNRE. This association provides a direct link between research, teaching and outreach. Scientists who conduct research at the experiment station also teach, sharing their expertise with both undergraduate and graduate students, adult learners and Extension faculty.

Cooperative Extension's mission is to educate, engage and support the people and communities of Alaska, connecting them with their university. Extension provides factual and practical information while bringing Alaskans' issues and challenges to the university. CES is committed to promoting the sustainability and economic security of individuals, families and communities by providing practical, non-formal education, including conferences, workshops and cooperative work with community, regional and tribal partners. Outreach is also provided through publications, faculty consultations, newsletters and social media outreach dedicated to district information and locally useful subject matter. CES priorities address national priorities by helping families, youth and individuals be physically, mentally and emotionally healthy; enhancing workforce preparation and life skills; strengthening the profitability of animal and plant production systems; protecting our rich natural resources and environment; ensuring an abundant and safe food supply through horticulture and food preservation education; preparing for and responding to economic and natural disasters; and fostering greater energy independence.

Programming respects cultural and ethnic diversity and is responsive to emerging stakeholder needs and interests. Programs result from client requests, an active state advisory council, various regional and subject matter advisory groups, surveys and needs assessments.

The merger has allowed SNRE to provide more unified support for agriculture, horticulture, forestry, and rural and economic development. Collaborations with other universities and with other units within the University of Alaska Fairbanks, the University of Alaska statewide system, federal and state agencies, nongovernmental organizations and private industry continue. Stakeholders include K-12 students, higher education students, researchers, individuals, businesses, industry, government, nongovernmental organizations, and families and communities throughout Alaska, the circumpolar North and the nation. SNRE brings the university to Alaskans while bringing community concerns and issues back to the university.

**Total Actual Amount of professional FTEs/SYs for this State**

Year: 2015	Extension		Research	
	1862	1890	1862	1890
Plan	41.8	0.0	23.0	0.0
Actual	66.2	0.0	20.6	0.0

**II. Merit Review Process**

**1. The Merit Review Process that was Employed for this year**

- Combined External and Internal University Panel
- Combined External and Internal University External Non-University Panel
- Expert Peer Review

**2. Brief Explanation**

The Agricultural and Forestry Experiment Station uses the scientific peer review process to review and evaluate proposals, publications and specific annual reports that include the annual narratives that are required to report activities related to the POW. Extension uses the merit review process and the general review process for this joint annual report and Plan of Work. The Agricultural and Forestry Experiment Station (AFES) complies with sections 3(c)(1) and (2) of the Hatch Act and section 1445 of NARETPA (Hatch Regular Capacity Funds) and the amendment to the Hatch Act of 1887 to Section 104 by AREERA for programs funded under section 3(c)(3) of the Hatch Act (Hatch Multistate Research Funds) by using its established scientific review process for all proposals, publications and specific annual reports.

All new and revised Hatch (and McIntire-Stennis) project proposals undergo scientific peer review. The blind peer review panel is composed of a minimum of three members and consists of competent authorities in the discipline of the proposal/publication/annual report or related disciplines. Each reviewer completes a Peer Review Form that includes specific criteria, provides for other comments and suggestions, and makes a recommendation to the director. Reviews are returned to the author(s) for revision if needed. The director reviews all comments and recommendations from the reviewers along with the revised proposal/publication/report. Scientific peer review of multistate research projects are carried out for individual projects under the aegis of the Multistate Review Committee (MRC- formerly RCIC). The director of research is a member of the MRC. All faculty who are participants in Hatch multistate projects are required to have an approved Hatch General project that is related to the field of study of the multistate project.

Extension has an evaluation specialist who helps design outcome and impact evaluations, working with faculty to evaluate individual programs. In FY15, faculty were required to include hours dedicated to evaluation in their workloads. Many workshops and all conferences are evaluated.

**III. Stakeholder Input**

**1. Actions taken to seek stakeholder input that encouraged their participation**

- Use of media to announce public meetings and listening sessions
- Targeted invitation to traditional stakeholder groups
- Targeted invitation to non-traditional stakeholder groups
- Targeted invitation to traditional stakeholder individuals

- Targeted invitation to non-traditional stakeholder individuals
- Targeted invitation to selected individuals from general public
- Survey of traditional stakeholder groups
- Survey of traditional stakeholder individuals
- Survey of the general public
- Survey specifically with non-traditional groups
- Survey specifically with non-traditional individuals
- Survey of selected individuals from the general public
- Other (SNRE Website, Newsletter & Blog, CES Facebook and Twitter)

**Brief explanation.**

AFES's Advisory Council has nine members drawn from agriculture, natural resources, forestry, mine engineering and economic development. SNRE interacts with regional audiences around the state in both formal and informal settings each year. Examples of these include:

- Regional and Statewide Farm Bureau
- Alaska Produce Growers
- Delta Farm Forum
- Alaska Greenhouse Growers
- Kawerak Native Association
- Reindeer Owners and Breeders Association
- Alaska Livestock Producers
- Alaska Peony Growers Association
- Alaska Food Policy Council
- On-demand meetings at the request of stakeholders
- Delta Harvest Wrap-Up

Since much of Alaska land is under federal and state agency control, natural resource stakeholders include government land managers. Federal stakeholders for SNRE include:

- National Park Service
- USDA/NRCS, ARS, Forest Service
- Bureau of Land Management
- Bureau of Indian Affairs
- U.S. Fish and Wildlife
- U.S. Geological Survey

State stakeholders include:

- Fairbanks North Star Borough
- Matanuska-Susitna Borough
- North Slope Borough
- Fairbanks Economic Development Corporation
- Department of Natural Resources
- Division of Agriculture
- Division of Forestry
- Department of Environmental Conservation
- School districts around the state
- AHTNA Native Corporation
- Afognak Native Corporation
- Chena Hot Springs Resort

- Pike's Waterfront Hotel and Greenhouse
- Diversified Livestock Association
- Alaska Food Policy Council
- Tanana Valley Farmers Market
- Alaska Natural Fiber Business Association

Extension sponsors agricultural and horticultural conferences and outreach activities. Formal and informal stakeholder input is gathered there. Stakeholders are also invited to serve on various conference planning committees. Outreach events in 2015 included the Delta Farm Forum, Alaska Sustainable Agriculture Conference, Alaska Produce Growers Conference, the Alaska Invasive Species Conference and the Harvest Wrap-Up. Extension coordinates the Alaska Wood Energy Conference.

Extension has a 13-seat Statewide Advisory Council, which provides guidance about programming across the state. Representatives are drawn from all regions of the state. The State Advisory Council meets face to face once a year as well as through four audio conferences. Local advisory committees provide community input related to local program needs and interests. Additionally, advisory councils provide guidance on forestry, mining and 4-H programming.

Extension faculty members gather stakeholder input as part of their program planning and development process as well as surveys following instructional activities. Faculty, staff and administrators within Extension are also members of the advisory committees and boards of organizations that are stakeholders of the organization. This service on committees and boards provides another venue for stakeholders to provide input to Extension. 4-H has several programmatic audios with stakeholders that generate suggestions. Forestry, 4-H, home economics, agricultural and Master Gardener newsletters also provide outlets for stakeholders. CES further invites stakeholder participation through social media via a statewide and two district Twitter feeds, an overall Facebook page and 21 district, 4-H and subject matter Facebook pages.

## **2(A). A brief statement of the process that was used by the recipient institution to identify individuals and groups stakeholders and to collect input from them**

### **1. Method to identify individuals and groups**

- Use Advisory Committees
- Use Internal Focus Groups
- Use External Focus Groups
- Open Listening Sessions
- Needs Assessments
- Use Surveys

### **Brief explanation.**

Stakeholders include individuals and groups who would logically benefit from Extension's services. Other stakeholders are partner agencies organizations and related stakeholder organizations. Examples include the Farm Bureau, Grange and Farmers Union, as well as Master Gardener associations and food banks. Additional stakeholder groups are Alaska Native tribal organizations, school districts and village governments who request services to help build community educational and development capacity. A number of stakeholders identify themselves by calling or e-mailing Extension faculty or staff. Individuals and groups have been identified through advisory committees, working with agencies that have similar missions, work with community, religious and workforce groups and other units of the university. Subject area advisory groups, 4-H leaders' organization and the State CES Advisory Council provide stakeholder input.

AFES stakeholders are research collaborators, partners in federal or state agencies who approach us with funding or needs, the public who often call and solicit assistance, graduate and

undergraduate students, public schools that connect through reindeer programs or the OneTree program, K-12 teachers, and agriculturalists, forest land owners, entrepreneurs and other end user groups.

**2(B). A brief statement of the process that was used by the recipient institution to identify individuals and groups who are stakeholders and to collect input from them**

**1. Methods for collecting Stakeholder Input**

- Meeting with traditional Stakeholder groups
- Survey of traditional Stakeholder groups
- Meeting with traditional Stakeholder individuals
- Survey of traditional Stakeholder individuals
- Survey of the general public
- Meeting with invited selected individuals from the general public

**Brief explanation.**

SNRE relies on stakeholder input from advisory groups, collaborators, federal and state agencies, colleagues, faculty and students for assistance in establishing priorities and developing program direction in consultation with appropriate constituencies. Current major stakeholders include the Fairbanks North Star Borough, Matanuska-Susitna Borough, Reindeer Herders Association, Northern Forest Cooperative, Peony Growers Association, Fairbanks Economic Development Corporation, and industries involved in food, fiber and fuel/energy production. Feedback from the Georgeson Botanical Garden Society, local community supported agriculture groups, local restaurants and resorts provide research direction.

Other significant stakeholder groups include state and federal and private organizations that have professional and programmatic relationships or direct interest in the unit's programming. Some of Extension's major stakeholder organizations include but are not limited to the Farm Bureau, Grange, Alaska Energy Authority, greenhouse growers, food banks, Boys and Girls Clubs, school districts and research service units of the university. Additional stakeholder groups are Alaska Native tribal organizations, school districts and village governments that request services to help build community, educational and development capacity. Input is collected from workshop participants and surveys following conferences, classes and workshops, by email or mail-in surveys. Input is also collected individually by agents who work with stakeholders and through programmatic advisory groups and membership on relevant partner committees.

**3. A statement of how the input will be considered**

- In the Budget Process
- To Identify Emerging Issues
- Redirect Extension Programs
- Redirect Research Programs
- In the Staff Hiring Process
- In the Action Plans
- To Set Priorities
- Other (Underserved populations identified)

**Brief explanation.**

SNRE joint research and outreach planned programs are directly related to the strategic plans produced by faculty as well as the direction set by administrative leadership. The AFES plan reflects

ideas and advice given by client user groups, students, expert advisors, state and national peers and cooperators, and UAF administration. During the 2015 reporting period, the focus areas of climate change, local and regional food production and food safety, and the need for adult and youth education and training to fill Alaska job and career demands were addressed. These focus areas were used to set priorities in meeting the need for knowledge about Alaska and circumpolar resources. Input was considered in the budget process. Capacity funds were used in response to research needs based on the emerging focus areas.

An updated SNRE strategic plan is in development with input planned from stakeholders, advisory councils and the public. It builds on the past focus areas of food safety and security, health, climate, energy, youth, families and communities, and economic development by adding emphasis on strengthening SNRE's relevancy, capacity and collaboration in those areas. Agents' work reflects the strategic plan. Stakeholder needs will continue to be a driving factor in determining Extension priorities and programming. Agents use stakeholder input to identify programming needs and work to offer programs and information that meet those needs. Stakeholder input in 2015 continues to support the need for youth outreach in rural Alaska, health and nutrition programming and programs on biomass and responsible wood burning. Interest in locally raised agricultural animals and food production continues to be high. Stakeholder involvement on conference planning committees and input at conferences led to specific topics and speakers at subsequent conferences. Interest continues for grazing management strategies in addition to animal reproduction and quality meat production techniques.

**Brief Explanation of what you learned from your Stakeholders**

Alaskans continue to desire information necessary to make decisions related to a healthy lifestyle and a healthy economy. Food security, energy, climate change, obesity, chronic health issues and youth development have risen to the forefront as areas of particular importance and are therefore leading to development of research and Extension programming, particularly in subsistence, small farm agriculture and energy. There is also strong interest in culturally relevant programming, local food production, health and nutrition programming, family finance, budgeting and estate planning, and programs that focus on reducing violence and reducing energy consumption.

**IV. Expenditure Summary**

1. Total Actual Formula dollars Allocated (prepopulated from C-REEMS)			
Extension		Research	
Smith-Lever 3b & 3c	1890 Extension	Hatch	Evans-Allen
1187120	0	1267025	0

<b>2. Totaled Actual dollars from Planned Programs Inputs</b>				
	<b>Extension</b>		<b>Research</b>	
	<b>Smith-Lever 3b &amp; 3c</b>	<b>1890 Extension</b>	<b>Hatch</b>	<b>Evans-Allen</b>
<b>Actual Formula</b>	1084395	0	553190	0
<b>Actual Matching</b>	1437266	0	255359	0
<b>Actual All Other</b>	6366507	0	810479	0
<b>Total Actual Expended</b>	8888168	0	1619028	0

<b>3. Amount of Above Actual Formula Dollars Expended which comes from Carryover funds from previous</b>				
<b>Carryover</b>	0	0	0	0



## V. Planned Program Table of Content

S. No.	PROGRAM NAME
1	Agriculture and Food Security
2	Natural Resources and Community Development
3	Healthy Individuals, Families and Communities
4	Climate Change and Ecosystem Management
5	Youth Development
6	Sustainable Energy

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

**Program # 1**

**1. Name of the Planned Program**

Agriculture and Food Security

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
102	Soil, Plant, Water, Nutrient Relationships	10%		20%	
205	Plant Management Systems	25%		22%	
212	Diseases and Nematodes Affecting Plants	0%		3%	
213	Weeds Affecting Plants	15%		0%	
216	Integrated Pest Management Systems	28%		0%	
301	Reproductive Performance of Animals	5%		10%	
302	Nutrient Utilization in Animals	5%		10%	
305	Animal Physiological Processes	2%		10%	
401	Structures, Facilities, and General Purpose Farm Supplies	5%		5%	
405	Drainage and Irrigation Systems and Facilities	0%		5%	
601	Economics of Agricultural Production and Farm Management	5%		0%	
903	Communication, Education, and Information Delivery	0%		15%	
	<b>Total</b>	100%		100%	

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

1. Actual amount of FTE/SYs expended this Program

Year: 2015	Extension		Research	
	1862	1890	1862	1890
<b>Plan</b>	3.0	0.0	3.1	0.0
<b>Actual Paid</b>	9.8	0.0	11.0	0.0
<b>Actual Volunteer</b>	0.0	0.0	45.0	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
400412	0	118692	0
1862 Matching	1890 Matching	1862 Matching	1890 Matching
530709	0	10982	0
1862 All Other	1890 All Other	1862 All Other	1890 All Other
2350830	0	0	0

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

**1. Brief description of the Activity**

Research and outreach continued to assure that best management practices appropriate to Alaska were provided to target audiences. There are new directions in resilience and adaptability of crops and animals as changes in the subarctic and arctic climate occur with revitalization in research and Extension programs relevant to regional and local agricultural production. An emphasis was placed on educating and training youth and adults in new fields opening in the Alaska workforce.. Group and one-on-one educational activities with specific sectors of the pest management industry, the agricultural community and the horticultural industry provided individuals and businesses with important information. Increased reliance on the Internet and technology enhances communication to more people. Increasing and maintaining partnerships remain important strategies in research, in pest management, and in training. Outreach included conferences, workshops, forums, tours and consultations with stakeholders.

**2. Brief description of the target audience**

The target audiences included producers and consumers, communities, entrepreneurs, agribusinesses, industry leaders, individuals and groups concerned about the quality of the Alaska environment, public resource agencies, public and private resource managers, other faculty and researchers, and undergraduate and graduate students. Others include arborists, farmers, garden and plant associations, public and commercial greenhouses, homeowner associations, landscapers, state and federal park employees, gardeners, museums, military base personnel, boroughs and urban municipalities, pest control operators, property managers, public health organizations, public and private schools, recreational facilities, resorts and hotels, rural residents, youth groups and school districts. Advisors and the target audience included: Alaska Farm Bureau, the USDA Natural Resource Conservation Service, the USDA Forest Service, the Alaska Department of Natural Resources, borough governments and Alaska Native corporations.

**3. How was eXtension used?**

Though not all personnel used eXtension, many agents did incorporate eXtension resources into their programming. Specifically, eXtension provision of Qualtrics training and access has been critical in increasing our evaluation efforts. Several Extension employees, including agriculture agents, have signed up for both an eXtension ID and Qualtrics access as a result of eXtension's help. In addition, after a site visit from eXtension in Fall 2014, the SNRE Communications unit made plans to better utilize the national Ask an Expert network to increase our capacity for client questions and make sure more Alaskans are answering Alaska agriculture questions. The Extension veterinarian is participating in the I-Three Issue Corps. Another agent is an Innovation Partner. Our agents and program assistants maintain membership in eXtension communities including Citizen Science, Extension Master Gardener Coordinators, Pesticide

Environmental Stewardship, and Women in Ag Learning Network. Some agents and program assistance accept and have answered questions through eXtension's Ask an Expert feature on topics like plant pests.

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

**1. Standard output measures**

2015	Direct Contacts Adults	Indirect Contacts Adults	Direct Contacts Youth	Indirect Contacts Youth
<b>Actual</b>	15067	408647	3625	21507

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

**Patent Applications Submitted**

Year: 2015  
 Actual: 0

**Patents listed**

**3. Publications (Standard General Output Measure)**

**Number of Peer Reviewed Publications**

2015	Extension	Research	Total
<b>Actual</b>	1	6	7

**V(F). State Defined Outputs**

**Output Target**

**Output #1**

**Output Measure**

- Output 1: Faculty will provide agricultural and horticultural workshops, short courses, classes, field days and conferences, including IPM.

Year	Actual
2015	160

**Output #2**

**Output Measure**

- Output 2: Faculty will provide agricultural, horticultural and pest management information through one-on-one consultations and consultations with other organizations. Output measure will be contact hours.

Year	Actual
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2015 4666

**Output #3**

**Output Measure**

- Output 3. Horticultural crop research will concentrate on home and commercial varieties appropriate to Alaska. Publications and presentations are the output measures.

<b>Year</b>	<b>Actual</b>
2015	20

**Output #4**

**Output Measure**

- Output 4. Controlled environment horticulture will focus on CEA technology and technology transfer and appropriate crops and best management practices for crop production in specific environments. Output measures will be publications and presentations.

<b>Year</b>	<b>Actual</b>
2015	7

**Output #5**

**Output Measure**

- Output 5. Focus will be on best management practices for livestock management and production. Output measures will be publications and presentations.

<b>Year</b>	<b>Actual</b>
2015	25

**V(G). State Defined Outcomes**

**V. State Defined Outcomes Table of Content**

O. No.	OUTCOME NAME
1	Outcome 1: Increase agronomic crop producers' ability to understand and assess best management practices of crop production. Measure will be number of producers.
2	Outcome 2: Increase livestock producers' ability to understand and assess optimum production practices. Measure will be number of producers.
3	Outcome 3: Increase participants' commercial and home horticulture best management practices. Measure will be number of individuals who adopt better management practices.
4	Outcome 4: Increase the number of adopters of new technology and management practices.
5	Outcome 5: Increase the number of activities that monitor and control invasive species and pests. Measure will be the number of outreach activities and publications.
6	Outcome 6. Increase the recruitment and retention of youth appreciating and considering agricultural careers.
7	Outcome 7: Increase the number of individuals who are trained to safely apply pesticides. Measure will be the number of individuals trained for pesticide application.
8	Outcome 8: Improve and support horticultural producers' ability to understand and assess optimum production practices. Measure will be the number of producers assisted.
9	Outcome 9: Provide support to entrepreneurs interested in market gardens. Measure will be number of gardeners assisted.
10	Outcome 10: Promote knowledge and practice of optimum gardening and sustainable agriculture techniques. Measure will be number of conference and Master Gardener course attendees and other producers assisted.

## **Outcome #1**

### **1. Outcome Measures**

Outcome 1: Increase agronomic crop producers' ability to understand and assess best management practices of crop production. Measure will be number of producers.

### **2. Associated Institution Types**

- 1862 Extension
- 1862 Research

### **3a. Outcome Type:**

Change in Action Outcome Measure

### **3b. Quantitative Outcome**

<b>Year</b>	<b>Actual</b>
2015	10

### **3c. Qualitative Outcome or Impact Statement**

#### **Issue (Who cares and Why)**

Food security is a serious issue in Alaska. With over 90% of food imported, transportation costs adds considerably to prices. If transportation were interrupted it is widely acknowledged that Alaska has 3 days of food on grocery shelves. If Alaska could successfully grow wheat, it could begin to feed itself.

#### **What has been done**

Research on an Alaska wheat variety 'Ingal' by a now graduated Ph.D. student shows promise. The student credits Glen Franklin of Delta Junction, Alaska for helping fund her research. Collaborating with her was a researcher from the University of Alaska Fairbank's School of Natural Resources and Extension and a researcher from the Mount Vernon Research and Extension Unit of Washington State University. Franklin, retired from the Alaska Division of Agriculture, established an endowed graduate fellowship in crops and soils at WSU, stipulating that the research should benefit Alaska and Washington. Her work resulted in crosses of several types of wheat to achieve a hard red spring variety that matures early and is shatter resistant.

#### **Results**

Now in the third year of evaluations of the three crosses that include non-shatter seed when ripe; early maturity; and high yields, no lodging. All will be compared to the same qualities of the parent, Ingal, and the three Canadian wheat varieties. These selections fared much better with maturity and yields very similar to the standard variety. Even though this research still has many years of trials ahead before it can be certified, farmers are beginning to grow wheat profitably. With the climate warming it is thought by some that by 2050 wheat could be a stable commercial crop in Alaska.

### **4. Associated Knowledge Areas**

<b>KA Code</b>	<b>Knowledge Area</b>
102	Soil, Plant, Water, Nutrient Relationships
205	Plant Management Systems
213	Weeds Affecting Plants

## **Outcome #2**

### **1. Outcome Measures**

Outcome 2: Increase livestock producers' ability to understand and assess optimum production practices. Measure will be number of producers.

### **2. Associated Institution Types**

- 1862 Extension
- 1862 Research

### **3a. Outcome Type:**

Change in Action Outcome Measure

### **3b. Quantitative Outcome**

<b>Year</b>	<b>Actual</b>
2015	52

### **3c. Qualitative Outcome or Impact Statement**

#### **Issue (Who cares and Why)**

Livestock raised in Alaska provides meat and dairy products for both home and commercial use. Educating livestock producers facilitates the development of management strategies that support sustainable, high-latitude livestock production. Of particular interest is reindeer, a domesticated livestock, which shows great potential as a commercial red meat source for Alaska and for sale outside of Alaska. Alaska only produces 5% of its red meat food supply, leaving residents vulnerable to high prices, shortages, and product demands in other markets. Domestic reindeer (*Rangifer tarandus tarandus*) are very well adapted to cold climate.

#### **What has been done**

Thirty-two livestock farms received an on-site visit from a trained IPM scout who oversaw the inspection of 707 cattle, sheep and goats for signs of parasitism. The Extension veterinarian collected comprehensive questionnaires regarding farming practices, deworming strategies, and information seeking behaviors from 13 of the farms. Research continues on quality reindeer meat for best management practices including feed development, slaughter techniques and predator control. Collaborations continue with the Kawerak Reindeer Herders Association, the Reindeer Breeders and Owners Association and others that benefit at least 20 reindeer producers.

#### **Results**



The pest scouts trained producers to perform a "5-point check" to score body conditioning and monitor for the presence of gastrointestinal parasites. Qualitative fecal analysis was performed on 66 composite samples from the farms as well, and results were reported back to the producer and their preferred veterinarian. Educational information was provided regarding strategic deworming strategies and legal use of anthelmintics. Reindeer meat continues its popularity with high-end restaurants continue to purchase any meat produced and grocery stores seeing quick turn-around for any meat placed on the shelves.

#### 4. Associated Knowledge Areas

KA Code	Knowledge Area
301	Reproductive Performance of Animals
305	Animal Physiological Processes

#### Outcome #3

##### 1. Outcome Measures

Outcome 3: Increase participants' commercial and home horticulture best management practices. Measure will be number of individuals who adopt better management practices.

##### 2. Associated Institution Types

- 1862 Extension
- 1862 Research

##### 3a. Outcome Type:

Change in Action Outcome Measure

##### 3b. Quantitative Outcome

Year	Actual
2015	11

##### 3c. Qualitative Outcome or Impact Statement

###### **Issue (Who cares and Why)**

Commercial and home growers produce flower, landscape and vegetable bedding plants. They face many of the same growing challenges as other producers, including a short growing season, cold soils and limited soil fertility. Research, education and outreach help them face these challenges and support new markets. Rhodiola rosea, harvested for the compound rosavin found in its roots is a viable high value crop for Alaska. Peonies also continue to be in demand from Alaska growers, and it is important they receive support for the longevity of the industry.

###### **What has been done**

There were two successful rhodiola harvests in 2013 and 2014 which revealed that we have much to learn about ideal Rhodiola harvest times, harvest techniques and processing procedures to maximize rosavin content in the roots. Higher rosavin content means more profit for growers.

There are currently 11 Rhodiola growers who have more than 1,000 plants in the ground. An Extension agent has provided ongoing support to rhodiola growers and had over 200 hours of estimated consultations with members of Alaska Rhodiola Products. Another agent continues to consult with the Alaska Peony Growers Association and presented to an audience of about 150 on the subject of integrated pest management. A researcher presented to the same group about soil and leaf sample results of peonies.

**Results**

An Extension agent wrote a grant proposal in May 2015 that was funded for \$20,000 by former university president Pat Gamble. The project duration will be approximately 14 months. This project will be a research/demonstration partnership between Alaska Rhodiola Products, UAF Matanuska Experiment Farm and the UAF Cooperative Extension Service.

**4. Associated Knowledge Areas**

<b>KA Code</b>	<b>Knowledge Area</b>
102	Soil, Plant, Water, Nutrient Relationships
205	Plant Management Systems
213	Weeds Affecting Plants
216	Integrated Pest Management Systems
401	Structures, Facilities, and General Purpose Farm Supplies
405	Drainage and Irrigation Systems and Facilities
601	Economics of Agricultural Production and Farm Management

**Outcome #4**

**1. Outcome Measures**

Outcome 4: Increase the number of adopters of new technology and management practices.

**2. Associated Institution Types**

- 1862 Extension
- 1862 Research

**3a. Outcome Type:**

Change in Knowledge Outcome Measure

**3b. Quantitative Outcome**

<b>Year</b>	<b>Actual</b>
2015	850

**3c. Qualitative Outcome or Impact Statement**

**Issue (Who cares and Why)**

New technologies help everyone in the agriculture field stay up-to-date through information sharing, diagnostics, and other improvements and efficiencies related to growing and managing crops. The horticulture researcher is studying the use of LEDs in high-latitude greenhouses and developing guidelines for their use. She says that LEDs are a good research tool because they allow researchers to hone in on different aspects of light. The Extension invasive plants instructor worked with the University of Georgia to develop the Alaska Weeds Identification application.

#### **What has been done**

For LEDs, the researcher has found that for photosynthesis to occur red and blue lights need to increase, but the mix of red, blue and even white and yellow needs to be modified to get exactly what is needed. By increasing red, plants might develop more vitamin C. For the weed identification application, the Extension instructor successfully launched the application for multiple device platforms and he continues to monitor its success and the data it generates.

#### **Results**

For the LEDs, adoption depends on the guidelines being developed, which will probably include different levels of blue and red with some added white to make the light more appealing to humans. Also, different plants at different stages need different types of light. For example, it was found that seedling tomatoes need a different mix of LEDs than do grafted plants. LEDs make the best sense for seedlings and plants that grow close to the ground. Last summer peppers were grown, as well as tomatoes. For the weeds app, in the first five months following its August release, more than 850 people have downloaded the app for IOS mobile devices, including iPhones, or Android devices. One of the first reports received was from a bear hunter in Cold Bay who reported Canadian thistle.

#### **4. Associated Knowledge Areas**

<b>KA Code</b>	<b>Knowledge Area</b>
205	Plant Management Systems
216	Integrated Pest Management Systems
301	Reproductive Performance of Animals
305	Animal Physiological Processes
401	Structures, Facilities, and General Purpose Farm Supplies
405	Drainage and Irrigation Systems and Facilities

#### **Outcome #5**

##### **1. Outcome Measures**

Outcome 5: Increase the number of activities that monitor and control invasive species and pests. Measure will be the number of outreach activities and publications.

##### **2. Associated Institution Types**

- 1862 Extension
- 1862 Research

**3a. Outcome Type:**

Change in Action Outcome Measure

**3b. Quantitative Outcome**

Year	Actual
2015	153

**3c. Qualitative Outcome or Impact Statement**

**Issue (Who cares and Why)**

Alaska hosts thousands of visitors every year. The state also imports most of its food and many horticultural products, so it remains vulnerable to imported pests. Retail sales of plant materials contaminated with a variety of pests continue to challenge the state. Invasive weed infestation can reduce land values and agricultural productivity and negatively impact recreation, tourism and subsistence harvesting. Improving citizen, farmer and land manager ability to assess pest management practices is critical.

**What has been done**

A new pest scouting program resulted in over 50 visits to farmers and ranchers in Alaska. Integrated pest management (IPM) staff conducted 59 workshops and 57 presentations and worked with producers, agencies and individuals to identify or diagnose 599 insect, plant and disease specimens. Other SNRE personnel conducted 10 workshops and presented 26 times on topics including pesticides, weeds, and invasive species, and an invasive species conference was hosted in Fairbanks. Seasonal IPM technicians and permanent staff, with support from faculty, provided community education and technical assistance in five district offices across Alaska.

**Results**

A total of 52 survey responses were received from a post-event evaluation of the Alaska Invasive Species Workshop (AISW). Sixteen people were attending for the first time. Forty attendees said they planned to use information gained from the workshop. Thirty-one gave specific examples of the information they planned to use, including one person who said they had already used the information in a proposal they were submitting. Eleven indicated they will "maybe" use information, and only one said they did not plan to. Sixteen of the people visited by the pest scouts returned surveys by mail, and 11 agreed or strongly agreed they plan to adopt a practice shown to them. Fifteen agreed or strongly agreed they feel confident to scout their own field (one did not answer).

**4. Associated Knowledge Areas**

KA Code	Knowledge Area
205	Plant Management Systems
213	Weeds Affecting Plants
216	Integrated Pest Management Systems

**Outcome #6**

**1. Outcome Measures**

Outcome 6. Increase the recruitment and retention of youth appreciating and considering agricultural careers.

**2. Associated Institution Types**

- 1862 Extension
- 1862 Research

**3a. Outcome Type:**

Change in Knowledge Outcome Measure

**3b. Quantitative Outcome**

Year	Actual
2015	135

**3c. Qualitative Outcome or Impact Statement**

**Issue (Who cares and Why)**

Alaska is a great natural classroom and attracts students who love the outdoors. To reverse the effects of man-made climate change it is essential to educate youth to care for the environment. Young adults often make really good communicators to other youth. Whether it is through 4-H or through outreach by current Natural Resource Management students, we need ongoing engagement with young people to inspire the next generation of growers, stewards and scientists.

**What has been done**

Through 4-H, 85 youth participated in Ag in the Classroom activities. An additional 1973 youth participated in animal projects, gaining firsthand knowledge and experience of raising livestock in Alaska. A SNRE graduate student volunteered as a docent at Calypso Farm, a non-profit, educational farm based in Ester, Alaska. She led 50 first-graders on a tour that taught about the woods, and got the students very excited about mushrooms, which are her specialty.

**Results**

The graduate student that led the gradeschool tour said the students may not have understood all the big words she used but the students had a great time and were very engaged by what they learned. Her favorite memory was when one of the students sawed open a tinder polypore (*Fomes fomentarius*) and lit a chunk of the fibrous interior on fire. It smoldered nicely, making it easy to imagine that same species being used as tinder by humans during the ice age.

**4. Associated Knowledge Areas**

KA Code	Knowledge Area
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102	Soil, Plant, Water, Nutrient Relationships
205	Plant Management Systems
301	Reproductive Performance of Animals
302	Nutrient Utilization in Animals
305	Animal Physiological Processes

## **Outcome #7**

### **1. Outcome Measures**

Outcome 7: Increase the number of individuals who are trained to safely apply pesticides. Measure will be the number of individuals trained for pesticide application.

### **2. Associated Institution Types**

- 1862 Extension

### **3a. Outcome Type:**

Change in Knowledge Outcome Measure

### **3b. Quantitative Outcome**

<b>Year</b>	<b>Actual</b>
2015	189

### **3c. Qualitative Outcome or Impact Statement**

#### **Issue (Who cares and Why)**

Pesticides can be important tools, but they can pose risks if improperly used. Alaska regulations require that anyone who engages in the custom, commercial or contract use of a pesticide or acts as a pesticide consultant must first become a certified pesticide applicator and must recertify every three years.

#### **What has been done**

Extension provided training through the pesticide safety education program (PSEP) and proctored certification exams for the Department of Environmental Conservation (DEC). Instructors taught face to face in Fairbanks and Delta Junction and offered the class to other locations statewide through videoconferencing. Continuing education credit required for recertification was offered at several conferences and webinars. Sample math questions generated by Extension and YouTube videos on basic pesticide-related math concepts posted on the PSEP website in spring of 2014 continue to be used by individuals studying for the exam.

#### **Results**

There were 189 individuals in three different sessions trained to safely apply pesticides. The DEC provided anecdotal evidence that there has been an improvement in math scores related to the help received from CES. One of the agents involved in PSEP received an inquiry from the University of Idaho pesticide specialist interested in using sample math questions and videos generated by Extension. The agent stated he has been approached at conferences by former

students thanking him for how much the questions and videos helped them gain stronger knowledge of the necessary math. The majority of respondents to post-training evaluations said their knowledge of subjects including calculations, product formulations, dilution rates, and legal requirements improved due to the course. The DEC's most recent information reported an 89 percent exam pass rate for individuals trained by CES.

#### 4. Associated Knowledge Areas

KA Code	Knowledge Area
216	Integrated Pest Management Systems

#### Outcome #8

##### 1. Outcome Measures

Outcome 8: Improve and support horticultural producers' ability to understand and assess optimum production practices. Measure will be the number of producers assisted.

##### 2. Associated Institution Types

- 1862 Extension
- 1862 Research

##### 3a. Outcome Type:

Change in Action Outcome Measure

##### 3b. Quantitative Outcome

Year	Actual
2015	35

##### 3c. Qualitative Outcome or Impact Statement

###### **Issue (Who cares and Why)**

There are lots of reasons to think about starting a farm or ranch. With persistent, low oil prices, agriculture could be a diversification strategy. Starting a farm in a remote village could provide fresher, healthier food for a community as well as improved food security. It also could improve local economies by providing job opportunities and keeping more money in a particular community. The Alaska Growers School provides the nuts and bolts of getting started farming or ranching in Alaska and specifically address opportunities available to Alaska Natives.

###### **What has been done**

An Alaska Growers School (AGS) with a focus on risk management was taught to 35 students in the fall/winter of 2014. After that iteration, 77 people asked to be contacted the next time the course is offered and recruitment is underway for a 2016 class focused on assisting disadvantaged groups. Extension is collaborating with experts from Arizona and Washington who are knowledgeable about Native American farming and ranching policies.

###### **Results**

Surveys were emailed to 175 past participants, 32 of whom responded (18% response rate). Thirty-one respondents said they started, continued, do more than before, or plan to (within 1 year) share the information they learned. Many respondents indicated that the school had helped them start or increase their efforts to farm, write a business plan, raise poultry or bees, or start a community garden. There were several success stories, one of which is the participant who reported "After the 2013 AGS, we were so inspired that we decided to jump into farming full time! In August 2015 we found and purchased several acres of land that we've turned into a farm!"

#### 4. Associated Knowledge Areas

KA Code	Knowledge Area
102	Soil, Plant, Water, Nutrient Relationships
205	Plant Management Systems
213	Weeds Affecting Plants
216	Integrated Pest Management Systems
401	Structures, Facilities, and General Purpose Farm Supplies
601	Economics of Agricultural Production and Farm Management
903	Communication, Education, and Information Delivery

#### Outcome #9

##### 1. Outcome Measures

Outcome 9: Provide support to entrepreneurs interested in market gardens. Measure will be number of gardeners assisted.

##### 2. Associated Institution Types

- 1862 Extension

##### 3a. Outcome Type:

Change in Knowledge Outcome Measure

##### 3b. Quantitative Outcome

Year	Actual
2015	14

##### 3c. Qualitative Outcome or Impact Statement

###### **Issue (Who cares and Why)**

Alaska is a uniquely diverse state. For example, CNN reported in 2015 that Anchorage, Alaska has the the top three most diverse census tracks in all of America. Anchorage has a notable population of refugees who benefit from activities that help them integrate into their new community. Extension has been teaching refugees how to garden Anchorage since 2007 as part of its Refugee Farmers Market Project. Participants have come from Congo, Togo, Sudan, Thailand and, most recently, Bhutan.



**What has been done**

Working with a horticulture agent, participants learned how to grow Alaska vegetables and herbs in an 8,000-square-foot garden on city parkland. The refugees harvest their crops and, with the help of volunteers, sell them at Anchorage farmers markets under the name Fresh International Gardens. Last summer, 14 participants worked more than 1,800 hours in the garden and at market. Three of them had never gardened before. Others have gardened for years, have their own gardens and are even selling independently.

**Results**

Sales from the garden in 2015 reached an all-time high of \$12,640 and included nearly 900 bags of the gardeners' signature salad mix, a blend of lettuces, mizuna, arugula, spinach, dill and other ingredients. The project gives participants a chance to practice their English and to learn marketing and customer service skills. One gardener, through an interpreter, said the volunteers help her to change money and speak to the customers. Proceeds are split among participants, but the agent says it is not about the money. The project gets the refugees out and interacting with others in the garden and at market. They also learn about new vegetables and may even start a business. The Bhutanese refugee has started her garden behind the home she acquired through the Habitat for Humanity program. She grows Asian vegetables, pumpkins, potatoes, lettuce and white radishes for her family and says she enjoys working in the garden.

**4. Associated Knowledge Areas**

<b>KA Code</b>	<b>Knowledge Area</b>
102	Soil, Plant, Water, Nutrient Relationships
205	Plant Management Systems
213	Weeds Affecting Plants
903	Communication, Education, and Information Delivery

**Outcome #10**

**1. Outcome Measures**

Outcome 10: Promote knowledge and practice of optimum gardening and sustainable agriculture techniques. Measure will be number of conference and Master Gardener course attendees and other producers assisted.

**2. Associated Institution Types**

- 1862 Extension

**3a. Outcome Type:**

Change in Knowledge Outcome Measure

**3b. Quantitative Outcome**

<b>Year</b>	<b>Actual</b>
2015	391

### 3c. Qualitative Outcome or Impact Statement

#### Issue (Who cares and Why)

Horticulture is the largest agricultural industry in Alaska amounting to more than 50 percent of cash receipts for all agricultural crops. Alaska imports most of its food and costs are high, particularly in rural areas. Dependence on imports poses a food security risk if supply lines are interrupted. Teaching more residents how to garden or grow horticultural crops increases the quality of food available to consumers and can lower the risk of food insecurity.

#### What has been done

Seventy-seven people attended Master Gardener courses, which provide intensive study of gardening issues and techniques. Through EQIP, one Extension agent helped three agronomic crop producers with nutrient sampling and pest management and provided expertise to three high tunnel operators. Another agent and program assistant helped two agronomic crop producers and 146 high tunnel operators. An agent presented on community weed control to 160 participants of the Sustainable Agriculture Research and Education (SARE) conference.

#### Results

The Alaska Master Gardener Online program contributes greatly to community capacity; in FY15, 10 volunteers reported 737 volunteer hours which reached 3,794 people, 356 of which were youth. One student commented, "I enjoyed this class so much and feel like I have a lot more knowledge to use and share in my community." Beyond gardening skills, the classes also have an effect on healthy living; 85% of students in the spring 2015 class said they planned to make healthier food choices because they would be growing more fresh food, and 78% said they planned to be more physically active by gardening. SARE post-conference evaluations showed that 28 out of 34 returning attendees answering a question on behavior change indicated they changed their practices as a result of attending a past conference, including how they fertilize, choose crops, till and keep records. All 21 returning agricultural educators that responded said they have educated others using information gained at past conferences.

### 4. Associated Knowledge Areas

KA Code	Knowledge Area
205	Plant Management Systems

### 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

Alaska has been severely impacted by the falling price of crude oil. The university has experienced budget cuts for the last seven years which has dramatically effected programs. SNRE, in particular, has been under the university administration's spotlight whose policy prevented the rehire of research and teaching faculty. As can be seen by our falling FTE, it has become increasing difficult to continue research and teaching. UAF policy rewards external grants but fails to appreciate the benefit of land grant funds and its required state match. The merger between AFES and CES has helped fill some positions, but both units have heavy workloads as we try to keep our productivity high in challenging times.

## **V(I). Planned Program (Evaluation Studies)**

### **Evaluation Results**

The inclusion of up to two units for evaluation planning, data collection and analysis for FY15 has positively impacted the quantity and quality of data being collected on our programs. Below are descriptions of some of the agriculture and horticulture-related outreach data our agents reported. The Alaska Master Gardener Online program contributes greatly to community capacity; in FY15, 10 volunteers reported 737 volunteer hours which reached 3,794 people, 356 of which were youth. One student commented, "I enjoyed this class so much and feel like I have a lot more knowledge to use and share in my community." Beyond gardening skills, the classes also have an effect on healthy living; 85% of students in the spring 2015 class said they planned to make healthier food choices because they would be growing more fresh food, and 78% said they planned to be more physically active by gardening.

A total of 52 survey responses were received from a post-event evaluation of the Alaska Invasive Species Workshop (AISW). Sixteen people were attending for the first time. Forty attendees said they planned to use information gained from the workshop. Thirty-one gave specific examples of the information they planned to use, including one person who said they had already used the information in a proposal they were submitting. Eleven indicated they will "maybe" use information, and only one said they did not plan to.

Sixteen of the people visited by pest scouts returned surveys by mail, and 11 agreed or strongly agreed they plan to adopt a practice shown to them. Fifteen agreed or strongly agreed they feel confident to scout their own field (one did not answer). Qualitative fecal analysis was performed on 66 composite samples from the farms visited by pest scouts. This work helps informs our knowledge of what animal pests have reached and are prevalent in different areas of Alaska. More farms will be visited this summer to gather a more representative sample. These results were reported back to the producer and their preferred veterinarian for follow up.

Three post-workshop surveys from a PSEP training in Delta Junction indicated that two of the three respondents improved their knowledge on sprayer calibration, product formulations, application rate, and state and federal regulations. For those who rated their knowledge on some topics as "stayed the same," they had already been through the certification process at least once before. In the Fairbanks classes, Of the 10 of 12 survey respondents in Fairbanks who answered a question on skills obtained, eight indicated an improvement in at least one area, with most citing understanding legal requirements. Only one respondent indicated continued confusion. In a second Fairbanks class, five out of five respondents indicated they improved their knowledge in at least three areas including application and dilution rates and legal requirements. Survey respondents across sites indicated they would like to see better technical support because of videoconferencing problems. Improving our distance delivery is a priority for SNRE as a whole, and we have an in-house IT person who was recently designated as the point person for videoconferencing issues.

## Key Items of Evaluation

There were several success stories from the Alaska Growers School of participants who reported success in starting farms. One wrote, "After the 2013 AGS, we were so inspired that we decided to jump into farming full time! In August 2015 we found and purchased several acres of land that we've turned into a farm!" A female beginning farmer broke ground on her farm after taking the course and talked in a six month follow-up phone interview about how the course helped her and her family think about the long term plan for their farm's marketing strategy and viability. Another farmer from the Kenai Peninsula changed their farming strategy and crop choices after doing a risk analysis for the class. He was able to look at the costs and potential pitfalls and decide that "I want to be building a sustainable farm, not mono-cropping."

The recently launched Alaska Weeds Identification app is rated an average of 4 out of 5 stars on the Android platform.

Seventeen out of 20 respondents indicated a change in knowledge and skills as a result of our pesticide safety courses.

The Alaska Master Gardener Online program contributes greatly to community capacity; in FY15, 10 volunteers reported 737 volunteer hours which reached 3,794 people, 356 of which were youth. One student commented, "I enjoyed this class so much and feel like I have a lot more knowledge to use and share in my community." Beyond gardening skills, the classes also have an effect on healthy living; 85% of students in the spring 2015 class said they planned to make healthier food choices because they would be growing more fresh food, and 78% said they planned to be more physically active by gardening.

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

**Program # 2**

**1. Name of the Planned Program**

Natural Resources and Community Development

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
111	Conservation and Efficient Use of Water	5%		0%	
112	Watershed Protection and Management	10%		0%	
121	Management of Range Resources	30%		0%	
122	Management and Control of Forest and Range Fires	0%		50%	
123	Management and Sustainability of Forest Resources	10%		0%	
131	Alternative Uses of Land	10%		0%	
134	Outdoor Recreation	0%		30%	
605	Natural Resource and Environmental Economics	5%		0%	
608	Community Resource Planning and Development	30%		0%	
610	Domestic Policy Analysis	0%		20%	
	<b>Total</b>	100%		100%	

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

1. Actual amount of FTE/SYs expended this Program

Year: 2015	Extension		Research	
	1862	1890	1862	1890
<b>Plan</b>	4.0	0.0	1.9	0.0
<b>Actual Paid</b>	2.3	0.0	1.1	0.0
<b>Actual Volunteer</b>	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
92449	0	434498	0
1862 Matching	1890 Matching	1862 Matching	1890 Matching
122533	0	43366	0
1862 All Other	1890 All Other	1862 All Other	1890 All Other
542770	0	0	0

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

**1. Brief description of the Activity**

Research products provided science-based information in resource planning, economic and environmental impact of natural resource use involving market and nonmarket value of resources, and land planning issues in urban and rural communities. Measurable outcomes will include peer-reviewed and lay publications, rural community business development plans and citizen participation.

Multi-institution and interdisciplinary activities continued in research, education and outreach. Integrated and/or multistate projects concerning natural resources stewardship provided collaboration and engagement with other land-grant institutions, extension and federal partners. Activities involved partners from other UAF units to assure engagement relevant to stakeholders needs.

Partnerships were developed and/or maintained that addressed emerging natural resources issues. Activities addressed the needs of Alaskans most directly impacted by specific natural resource matters.

Outreach activities included literature reviews; reviews of contemporary research relevant to the program; lay publications that provided unbiased, scientific information about natural resource issues; website development for natural resources issues; Extension workshops, demonstrations and basic skill training; public meetings and discussions; 4-H and FFA projects; and young adult stakeholder workforce readiness training.

**2. Brief description of the target audience**

This program focused on industry and entrepreneurs including communities, families, and newly forming cooperatives and businesses, nonprofit and for-profit development corporations. Efforts were made to address problems of the traditionally underserved rural populations within the limit of resources available. Stakeholders are those directly impacted by contemporary natural resource issues related to forest and land resources, mining resources, water resources, tourism, young adults wanting entry level skills needed for employment in natural resource related businesses, agencies or organizations, persons in natural resource-related occupations who wish to increase their skill and/or knowledge level, and federal and state agencies.

**3. How was eXtension used?**

Though not all personnel used eXtension, many agents did incorporate eXtension resources into their programming. Specifically, eXtension provision of Qualtrics training and access has been critical in increasing our evaluation efforts. Several Extension employees, including natural resources and community development agents, signed up for Qualtrics access as a result of eXtension's help. One agent

has an active Ask an Expert profile and accepts questions related to GPS and GIS. A program assistant is a member of several eXtension communities including Climate, Forests and Woodlands; Extension Wildfire Information Network; Forest Health and Stewardship; and Wood Energy. Another agent is a member of Entrepreneurs and their Communities.

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

**1. Standard output measures**

2015	Direct Contacts Adults	Indirect Contacts Adults	Direct Contacts Youth	Indirect Contacts Youth
Actual	2255	0	655	0

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

**Patent Applications Submitted**

Year: 2015  
 Actual: 0

**Patents listed**

**3. Publications (Standard General Output Measure)**

**Number of Peer Reviewed Publications**

2015	Extension	Research	Total
Actual	2	5	7

**V(F). State Defined Outputs**

**Output Target**

**Output #1**

**Output Measure**

- Output 1: Active partnerships with other land grant institutions, government agencies, stakeholder groups and organizations.

<b>Year</b>	<b>Actual</b>
2015	47

**Output #2**

**Output Measure**

- Output 2: Develop and deliver public issues education workshops and classes for stakeholders on locally relevant natural resources and related issues.

<b>Year</b>	<b>Actual</b>
2015	33

**Output #3**

**Output Measure**

- Output 3: Develop and maintain a web-based platform for discourse and information sharing on relevant areas of interest in natural resource issues that connect people to information.

<b>Year</b>	<b>Actual</b>
2015	4

**Output #4**

**Output Measure**

- Output 4: Conduct needs assessments of natural resource management stakeholders.

<b>Year</b>	<b>Actual</b>
2015	2

**Output #5**

**Output Measure**

- Output 5. Develop regional economic models for Alaska resource management scenarios. Output will be models, presentations and publications.  
Not reporting on this Output for this Annual Report

**Output #6**

**Output Measure**

- Output 6. Develop and implement public involvement in natural resource issues. Output measure will be public input sessions and publications.

<b>Year</b>	<b>Actual</b>
2015	7

**Output #7**

**Output Measure**

- Output 7. Provide analysis of natural resource and environmental laws. Output measure will be presentations, workshops and publications.

<b>Year</b>	<b>Actual</b>
2015	2



**V(G). State Defined Outcomes**

**V. State Defined Outcomes Table of Content**

O. No.	OUTCOME NAME
1	Outcome 1: Increase and maintain partnerships with stakeholder groups, government agencies and other institutions that will enhance the land-grant mission. Measure will be number of partnerships.
2	Outcome 2: Increase the number of integrated and multistate research-extension activities. Measure will be number of activities.
3	Outcome 3: Increase the recruitment and retention of youth appreciating and considering natural resource management careers. Measure will be number of graduate and undergraduate students enrolled and number of youth participating in natural resource management activities.
4	Outcome 4. Increase public involvement in natural resource and community development issues. Outcome measure will be the number of participants.
5	Outcome 5: Increase the recruitment and retention of graduate students pursuing natural resource careers. Measure is number of participants.

## **Outcome #1**

### **1. Outcome Measures**

Outcome 1: Increase and maintain partnerships with stakeholder groups, government agencies and other institutions that will enhance the land-grant mission. Measure will be number of partnerships.

### **2. Associated Institution Types**

- 1862 Extension
- 1862 Research

### **3a. Outcome Type:**

Change in Action Outcome Measure

### **3b. Quantitative Outcome**

<b>Year</b>	<b>Actual</b>
2015	47

### **3c. Qualitative Outcome or Impact Statement**

#### **Issue (Who cares and Why)**

Of the 375 million acres of land in Alaska, 44 million are Native lands, about 100 million acres are state lands and 218 million are federally managed. AFES provides research that meets the needs of the private, state and federal stakeholders and with Extension assures that stakeholders are engaged with UAF in the application of research. Extension promotes economic development and meets other community and rural needs. Partnerships are critical to assuring this happens. Our partners work with us, often assisting in the research and outreach efforts.

#### **What has been done**

Important partnerships included the Alaska Energy Authority, the U.S. Forest Service, Alaska Division of Forestry, Alaska Department of Fish and Game and the Cold Climate Housing Research Center. CES coordinates its Wood Energy Development Task Group. The Division of Forestry supports CES forest stewardship outreach and coordination of Project Learning Tree program. The National Park Service collaboration has proved invaluable.

#### **Results**

Work with the Division of Forestry and the Cold Climate Housing Research center extended knowledge about wood heat, biomass, firewood, forest stewardship and woodstove safety, which is important because of high energy costs in rural and urban Alaska. An Extension agent coordinates the Alaska Wood Energy Task Group. The collaboration between federal agencies and faculty member has resulted in a National Park Service contact teaching a wilderness management course to undergraduates, ongoing research in the national park system and the continued availability of student internships.

### **4. Associated Knowledge Areas**

<b>KA Code</b>	<b>Knowledge Area</b>
111	Conservation and Efficient Use of Water
112	Watershed Protection and Management
122	Management and Control of Forest and Range Fires
123	Management and Sustainability of Forest Resources
134	Outdoor Recreation
605	Natural Resource and Environmental Economics
608	Community Resource Planning and Development
610	Domestic Policy Analysis

**Outcome #2**

**1. Outcome Measures**

Outcome 2: Increase the number of integrated and multistate research-extension activities. Measure will be number of activities.

**2. Associated Institution Types**

- 1862 Extension
- 1862 Research

**3a. Outcome Type:**

Change in Knowledge Outcome Measure

**3b. Quantitative Outcome**

<b>Year</b>	<b>Actual</b>
2015	6

**3c. Qualitative Outcome or Impact Statement**

**Issue (Who cares and Why)**

Interior Alaska faces a set of challenges to sustainability, including the cascading effects of climate change on local forest health and productivity, threats to air and water quality, food insecurity and displacement of native flora and fauna by invasive plants and animals. What we do here is important because the Arctic is warming more rapidly than other regions and the impacts will be felt here first. At the state level the new state administration led by Governor Bill Walker has indicated support for natural resource management that exemplifies the core values of 1) stewardship 2) transparency 3) integrity and 4) science-based decision-making.

**What has been done**

A researcher joined the National Alliance for Broader Impacts (NABI), a community supported by the National Science Foundation committed to documenting the impacts of science at the societal level. The researcher has been instrumental in working with other campus units in planning the set up of a university broader impacts office. Partners include the International Arctic Research

Center, the College of Natural Sciences and Mathematics, the School of Natural Resources and Extension, and potentially the School of Education faculty and staff. She attended the NABI summit in April 2015 and presented a paper co-written by another SNRE researcher.

**Results**

The researcher was chosen and served as a member of the NABI working group, which successfully developed a guiding document for the NSF's broader impacts (BI) criterion. The broader impacts of climate change in particular are being addressed through multistate research projects on the community benefits of outdoor recreation, parks and green environments and public policy issues in education. Extension multistate activity included participation in the Oregon Master Naturalist Eco-Region Workshop, Western Regional Development Center community development institute and professional development. Researchers presented to the Bureau of Ocean Energy Management and the Montana Stockgrowers Association. Joint participation included coordination with Western Region Extension forestry activities.

**4. Associated Knowledge Areas**

<b>KA Code</b>	<b>Knowledge Area</b>
112	Watershed Protection and Management
121	Management of Range Resources
123	Management and Sustainability of Forest Resources
131	Alternative Uses of Land
608	Community Resource Planning and Development
610	Domestic Policy Analysis

**Outcome #3**

**1. Outcome Measures**

Outcome 3: Increase the recruitment and retention of youth appreciating and considering natural resource management careers. Measure will be number of graduate and undergraduate students enrolled and number of youth participating in natural resource management activities.

**2. Associated Institution Types**

- 1862 Extension
- 1862 Research

**3a. Outcome Type:**

Change in Action Outcome Measure

**3b. Quantitative Outcome**

<b>Year</b>	<b>Actual</b>
2015	137

**3c. Qualitative Outcome or Impact Statement**

### **Issue (Who cares and Why)**

Alaska is primarily about the management of natural resources. Our goal is to communicate the need to manage sustainably. Alaska's educators need support in engaging youth in natural resource management activities that inspire good stewardship and career paths that will build state capacity to manage natural resources.

### **What has been done**

SNRE hosts a student club, the Resource Management Society. Through participation in this club and interaction with faculty, Trish Levasseur changed her major from wildlife biology to natural resource management and has decided to pursue a career in natural resource management. SNRE also reaches out to youth of all age ranges to communicate the value of work in natural resource careers. A 4-H agent held a workshop on Career Adventures: Environmental Education that reached 22 middle school students. An Extension educator taught Project Learning Tree curriculum to 37 people, including how to work environmental education into other lesson plans.

### **Results**

During the school year, Levasseur worked for faculty conducting surveys concerning public park usage. She was hired as a student intern for the summer of 2015 and traveled by ATV to check on remote public use cabins for the Bureau of Land Management. She will continue this work this summer. This year she has become the president of the RMS club bringing commitment and continuity that has brought new life and new members to the group, as well as transfer students to the school.

## **4. Associated Knowledge Areas**

<b>KA Code</b>	<b>Knowledge Area</b>
111	Conservation and Efficient Use of Water
112	Watershed Protection and Management
123	Management and Sustainability of Forest Resources
131	Alternative Uses of Land
134	Outdoor Recreation
608	Community Resource Planning and Development

## **Outcome #4**

### **1. Outcome Measures**

Outcome 4. Increase public involvement in natural resource and community development issues. Outcome measure will be the number of participants.

### **2. Associated Institution Types**

- 1862 Extension
- 1862 Research

### **3a. Outcome Type:**

Change in Action Outcome Measure

**3b. Quantitative Outcome**

Year	Actual
2015	416

**3c. Qualitative Outcome or Impact Statement**

**Issue (Who cares and Why)**

Alaska communities, large and small, seek to broaden economic opportunities. Tourism in Alaska is dominated by large tour companies from Outside but there are community development opportunities for small tour operators and for beneficial local tourism based on the culture, aesthetics, heritage and environment of the communities. Alaskans also learn to appreciate the land around them through learning about geographic mapping, and there continues to be demand for hands-on classes that teach the public how to use various GPS and GIS tools.

**What has been done**

An agent presented to a group of 55 at the 2014 Joint Meetings of the Alaska Historical Society and Museums Alaska to increase awareness of Jujiro Wada, who helped pioneer the Iditarod Trail and was a marathon athlete, adventurer and dog musher. Memorial groups have developed in Japan, Alaska and the Yukon Territory. The agent also presented to 16 people in two different geotourism workshops and trained 15 people to be trainers for the AlaskaHost program. Another agent taught 330 people in eight different workshops how to use GPS, GIS, and to do geocaching.

**Results**

Training additional trainers for the AlaskaHost program continues to expand state capacity for cultural tourism. Introducing Alaskans to land mapping technologies increases awareness of the state's unique geography.

**4. Associated Knowledge Areas**

KA Code	Knowledge Area
123	Management and Sustainability of Forest Resources
131	Alternative Uses of Land
605	Natural Resource and Environmental Economics
608	Community Resource Planning and Development
610	Domestic Policy Analysis

**Outcome #5**

**1. Outcome Measures**

Outcome 5: Increase the recruitment and retention of graduate students pursuing natural resource careers. Measure is number of participants.

**2. Associated Institution Types**

- 1862 Extension
- 1862 Research

**3a. Outcome Type:**

Change in Action Outcome Measure

**3b. Quantitative Outcome**

<b>Year</b>	<b>Actual</b>
2015	60

**3c. Qualitative Outcome or Impact Statement**

**Issue (Who cares and Why)**

Educating our citizenry is part of our mission. The Peace Corps has been a leader in international development and citizen diplomacy for more than 50 years across more than 140 countries. In an increasingly interdependent world, we tackle challenges that know no borders such as climate change, pandemic disease, food security, and gender equality and empowerment.

**What has been done**

The University of Alaska Fairbanks provides a tuition waiver for Peace Corps Masters International students, so they maintain their active student status during their two-year Peace Corps assignment. In addition, up to six credit hours will be granted for Peace Corps service.

**Results**

Since its initiation in 2004, 15 students have participated in this program. Students have been assigned to The Gambia, Fiji, Togo, Panama, Paraguay, Mali, Honduras, Peru, Zambia, El Salvador, Philippines, Mexico, and Malawi while pursuing their master's degrees in natural resources management. Working closely with faculty advisers, they acquire an education in natural resources with a global world view and bring broader impacts to the school, infusing it with an energetic and wider perspective.

**4. Associated Knowledge Areas**

<b>KA Code</b>	<b>Knowledge Area</b>
112	Watershed Protection and Management
123	Management and Sustainability of Forest Resources
608	Community Resource Planning and Development

## **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**

Alaska has been severely impacted by the falling price of crude oil. The university has experienced budget cuts for the last seven years which has dramatically effected programs. SNRE, in particular, has been affected by university administration policy which has prevented the rehire of research and teaching faculty. The resulting atrophy has resulted in the loss of accreditation from the Society of American Foresters for forestry, although SNRE is pursuing Natural Resource accreditation through SAF in spring of 2016. As can be seen by our falling FTEs, it has become increasing difficult to continue research and teaching. The loss of three forestry-related personnel this year has limited but not extinguished the multistate activities in this area.

## **V(I). Planned Program (Evaluation Studies)**

### **Evaluation Results**

The evaluation specialist continues to work with agents as they expand their skills in using survey tools like Qualtrics. The agent that coordinates the Alaska Wood Energy Task Group (AWETG) recently tested using the online platform to do a member survey with that group, and also sent out a post-event survey to participants of a biomass tour. Agents will continue to expand such efforts in FY16 so that we may include those results in our next report.

### **Key Items of Evaluation**

SNRE continues to educate youth on the exciting career opportunities available in natural resources management, and in FY15 we shared the success story of one student who changed her major to natural resources after seeing what it could offer her.



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

**Program # 3**

**1. Name of the Planned Program**

Healthy Individuals, Families and Communities

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
502	New and Improved Food Products	5%		0%	
504	Home and Commercial Food Service	20%		0%	
703	Nutrition Education and Behavior	15%		0%	
724	Healthy Lifestyle	20%		0%	
801	Individual and Family Resource Management	10%		0%	
802	Human Development and Family Well-Being	15%		0%	
804	Human Environmental Issues Concerning Apparel, Textiles, and Residential and Commercial Structures	10%		0%	
805	Community Institutions, Health, and Social Services	5%		0%	
	<b>Total</b>	100%		0%	

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

**1. Actual amount of FTE/SYs expended this Program**

Year: 2015	Extension		Research	
	1862	1890	1862	1890
<b>Plan</b>	7.6	0.0	0.0	0.0
<b>Actual Paid</b>	5.7	0.0	0.0	0.0
<b>Actual Volunteer</b>	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
232476	0	0	0
1862 Matching	1890 Matching	1862 Matching	1890 Matching
308125	0	0	0
1862 All Other	1890 All Other	1862 All Other	1890 All Other
1364869	0	0	0

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

**1. Brief description of the Activity**

- Conduct workshops, presentations, meetings
- Develop and deliver curriculum
- Consult with clients
- Provide training
- Develop products
- Partner with other agencies and organizations
- Write numbered publications, fact sheets, articles
- Work with media
- Facilitate events, activities and teachable moments

**2. Brief description of the target audience**

- Parents and caregivers of children
- Schoolchildren
- School teachers
- Individuals interested in healthy lifestyles
- Low income individuals and families
- Clients interested in food preservation and subsistence lifestyle
- Clients needing assistance with managing finances
- Human development and social work professionals
- Individuals and professionals interested in emergency preparedness
- Food banks
- Housing and energy authorities and organizations
- Home and building owners
- Managers and employees of food-based businesses
- Individuals interested in making or selling foods

**3. How was eXtension used?**

Though not all personnel used eXtension, many did incorporate eXtension resources into their programming. Specifically, eXtension provision of Qualtrics training and access has been critical in increasing our evaluation efforts. Several Extension employees, including Family Nutrition Program agents, signed up for Qualtrics access as a result of eXtension's help. Agents are members of

eXtension communities including Financial Security for All; Families, Food and Fitness; Food Safety; Home Energy; Just in Time Parenting; Community, Local and Regional Food Systems; Cooperatives; Entrepreneurs and their Communities. Some accept and have answered questions through eXtension's Ask an Expert feature. The foods research technician successfully applied for the I-Three Corps.

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

**1. Standard output measures**

2015	Direct Contacts Adults	Indirect Contacts Adults	Direct Contacts Youth	Indirect Contacts Youth
<b>Actual</b>	9576	740100	2313	38952

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

**Patent Applications Submitted**

Year: 2015

Actual: 0

**Patents listed**

**3. Publications (Standard General Output Measure)**

**Number of Peer Reviewed Publications**

2015	Extension	Research	Total
<b>Actual</b>	0	1	1

**V(F). State Defined Outputs**

**Output Target**

**Output #1**

**Output Measure**

- Output 1: Extension faculty will offer workshops in a wide range of home economics and family and consumer science topics.

Year	Actual
2015	247

**Output #2**

**Output Measure**

- Output 2: Extension district offices will update emergency planning for internal operations and constituent communities.

<b>Year</b>	<b>Actual</b>
2015	12

**Output #3**

**Output Measure**

- Output 3: Home energy extension workshops and conferences will provide individuals and families with immediate and long-term actions they can implement for energy conservation.

<b>Year</b>	<b>Actual</b>
2015	32

**Output #4**

**Output Measure**

- Output Target 4: Field faculty will provide physical activity and nutrition programming for teachers and parents. Output is the number of teachers and parents who are trained.

<b>Year</b>	<b>Actual</b>
2015	476

**Output #5**

**Output Measure**

- Output Target 5: Field faculty will provide physical activity and nutrition programming through one-on-one consultations and consultations with other organizations.

<b>Year</b>	<b>Actual</b>
2015	538

**Output #6**

**Output Measure**

- Output Target 6: Extension faculty will offer workshops in harvesting and food preservation techniques. Counting number of workshops.

<b>Year</b>	<b>Actual</b>
2015	109

**Output #7**

**Output Measure**

- Output Target 7: New food products will be developed using Alaska-produced ingredients.

<b>Year</b>	<b>Actual</b>
2015	20

**Output #8**

**Output Measure**

- Output Target 8: Extension faculty will offer workshops in food safety. Counting number of workshops.

<b>Year</b>	<b>Actual</b>
2015	113

**V(G). State Defined Outcomes**

**V. State Defined Outcomes Table of Content**

O. No.	OUTCOME NAME
1	Outcome 1: Participants in healthy lifestyle classes and workshops will adopt knowledge gained to maintain healthy lifestyle practices one year after participation.
2	Outcome 2: Participants will use knowledge gained in parent education classes to increase their application of developmentally appropriate practices.
3	Outcome 3: Increase consumer knowledge about energy conservation.
4	Outcome 4: Awareness gained in workshops will result in increased knowledge of energy conservation.
5	Outcome Target 5: Participants in food preservation and food safety classes will improve their food preservation and food safety practices.
6	Outcome Target 6: New varieties and new uses of animal and plant products will result in increased production of Alaska-based products. Counting number of products and publications.
7	Outcome Target 7: Increase youth and parents' understanding of healthy food choices. Counting contacts with youth and parents.
8	Outcome Target 8: Youth and families have a more positive attitude toward healthful foods and/or willing to try new foods. Counting number of families.
9	Outcome Target 9: Increase knowledge, attitudes, skills and aspirations to increase physical activity habits. Counting number of youth.
10	Outcome 10: Increase knowledge about improving healthy home conditions, including indoor air quality. Counting number of individuals in healthy home workshops.
11	Outcome 11: Prepare small food producers in Alaska for the marketplace and improve regulatory compliance. Counting individuals who attend training or receive technical assistance on starting a small food business.

**Outcome #1**

**1. Outcome Measures**

Outcome 1: Participants in healthy lifestyle classes and workshops will adopt knowledge gained to maintain healthy lifestyle practices one year after participation.

**2. Associated Institution Types**

- 1862 Extension

**3a. Outcome Type:**

Change in Action Outcome Measure

**3b. Quantitative Outcome**

<b>Year</b>	<b>Actual</b>
2015	300

**3c. Qualitative Outcome or Impact Statement**

**Issue (Who cares and Why)**

Alaska's senior population must remain active and healthy in a difficult environment. Alaska, per capita, has one of the fastest-growing populations of seniors in the nation, and the state expects the number of seniors to double in the next 30 years. All of Alaska is considered medically underserved, and costs to individuals for medical care are higher than the national average. It is imperative that Alaskans focus on health strategies to maintain health and independence throughout life.

**What has been done**

New sites were also added for the StrongWomen Stay Young and StrongWomen Strong Bones programs. In total, over 50 StrongWomen volunteers reached over 400 participants in FY15. The Anchorage district of CES disseminates the Chronic Disease Self Management Program in Alaska. One agent conducted a leader course with 11 new trainees that will offer workshops in new locations. About 150 participants attended Living Well Workshops this year offered in seven different cities. StrongWomen volunteer leaders in ten different locations performed 1957 hours of service, which carries an estimated value of over \$52,000.

**Results**

StrongWomen is a national evidence-based program in which participants regularly report improved bone density and fewer or less debilitating falls every year. In the Tanana District, six of the groups have been active for more than a year. In Anchorage, seven StrongWomen groups have almost 100 participants that have continued over a year. The StrongWomen programs have been so successful that they have been adopted into the communities they were started in. Extension-trained leaders now work under the umbrella of other local agencies. One agent reported the Kenaitze Indian Tribe group has been meeting since 2004, the Kenai Senior Center since 2009 and the Homer Senior Center since 2010. For the Chronic Disease Self-Management Program, CES-trained leaders had 75 continuing participants in 2015. Since 2007, over 380

Living Well leaders have been trained and have reached more than 2,000 seniors and others with chronic health conditions.

#### 4. Associated Knowledge Areas

KA Code	Knowledge Area
703	Nutrition Education and Behavior
724	Healthy Lifestyle

#### Outcome #2

##### 1. Outcome Measures

Outcome 2: Participants will use knowledge gained in parent education classes to increase their application of developmentally appropriate practices.

##### 2. Associated Institution Types

- 1862 Extension

##### 3a. Outcome Type:

Change in Action Outcome Measure

##### 3b. Quantitative Outcome

Year	Actual
2015	97

##### 3c. Qualitative Outcome or Impact Statement

###### **Issue (Who cares and Why)**

Alaska is a dangerous place for women and children with high rates for violence and abuse. Opportunities for parent education and training for child-care providers are lacking in many communities, particularly in rural Alaska, where many communities are accessible only by air. Transportation costs to deliver programs also limit what is offered. Because Alaska communities often suffer from high rates of substance abuse and related violence, education is a desperate need.

###### **What has been done**

The Nome agent delivered Green Dot Violence Prevention training to 29 adults and 39 youth in the community. The Nome agent also trained 13 individuals to teach Knowing Who You Are, a curriculum that trains personnel who work with foster children or serve their families. In addition she offered a Historic Trauma workshop to 55 adults at the Anchorage Prevention Summit, which was a meeting focused on preventing domestic violence and assault.

###### **Results**

This year one of the Knowing Who You Are trainings was a train-the-trainer facilitator for participants from rural communities. Past trainings have not always resulted in workshops being offered in rural communities, but that is changing. In the latest training there were several



members from a community that agreed to hosting future workshops after the training.

**4. Associated Knowledge Areas**

<b>KA Code</b>	<b>Knowledge Area</b>
801	Individual and Family Resource Management
802	Human Development and Family Well-Being

**Outcome #3**

**1. Outcome Measures**

Outcome 3: Increase consumer knowledge about energy conservation.

**2. Associated Institution Types**

- 1862 Extension

**3a. Outcome Type:**

Change in Knowledge Outcome Measure

**3b. Quantitative Outcome**

<b>Year</b>	<b>Actual</b>
2015	104

**3c. Qualitative Outcome or Impact Statement**

**Issue (Who cares and Why)**

Alaska historically has some of the highest energy prices in the country, and interest in energy conservation remains high. It is a pocketbook issue, particularly in rural areas, where energy costs are the highest.

**What has been done**

The energy specialist offered 10 energy courses in five different communities resulting in 104 contacts. The workshops covered topics including camping energy, greenhouse heat, home heating, log home energy efficiency, and remote energy.

**Results**

Participants learned about what potential sources of energy they might use to lower traditional oil or wood heating costs. Evaluations and further information on energy classes offered by the energy specialist, including rocket stoves and alternative energy sources, are reported in the sustainable energy section.

**4. Associated Knowledge Areas**

<b>KA Code</b>	<b>Knowledge Area</b>
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804 Human Environmental Issues Concerning Apparel, Textiles, and Residential and Commercial Structures

**Outcome #4**

**1. Outcome Measures**

Outcome 4: Awareness gained in workshops will result in increased knowledge of energy conservation.

Not Reporting on this Outcome Measure

**Outcome #5**

**1. Outcome Measures**

Outcome Target 5: Participants in food preservation and food safety classes will improve their food preservation and food safety practices.

**2. Associated Institution Types**

- 1862 Extension

**3a. Outcome Type:**

Change in Action Outcome Measure

**3b. Quantitative Outcome**

<b>Year</b>	<b>Actual</b>
2015	1170

**3c. Qualitative Outcome or Impact Statement**

**Issue (Who cares and Why)**

Many Alaskans live a subsistence lifestyle or supplement their diets with fish and game meat. Alaska also has a large military population, and most have not previously preserved game meat or fish. Our state has one of the nation's highest rates of botulism, which occurs in low-acid foods such as fish and game meat. It is particularly important that we teach residents how to safely preserve these Alaska staples. An estimated 90 to 95 percent of Alaska's food is imported, so food preservation training increases Alaska's food security.

**What has been done**

Agents delivered 115 food preservation and food safety classes to 35 communities and one military installation. Of those, 85 were hands-on classes in which 1181 participants practiced food preservation/safety skills. Extension offers a series of 23 online food preservation modules and 10 DVDs about preserving local foods, ranging from canning fish in jars and cans to drying herbs. Agents also tested 875 pressure canner gauges used by community members. Food safety instruction required by the state for food workers was offered through certified food protection manager (CFPM) training in 15 of the communities to 158 people, many of whom were reached

through distance education.

### Results

Flash modules reached users who may not have access to food preservation classes. Between 2009 and 2015, 128 users filled out the survey with an average of over 90 percent agreeing they will use the information or share it with others. In the 10 new responses from 2015, 80 percent of users indicated they feel more confident about using a boiler water canner or a pressure canner. Checking pressure canner gauges means that foods will be preserved safely within recommended ranges. In addition to testing gauges, nine people were taught how to test to increase community capacity to keep canning safe. The majority of tested gauges required adjustment or replacement, demonstrating the continued need for the service. Follow up surveys of the CFPM training indicated participants saved money and time by having a distance delivery option, and 43 indicated that receiving the training and passing the exam resulted in them either getting a job, keeping a job, receiving a promotion, or starting their own food business.

### 4. Associated Knowledge Areas

KA Code	Knowledge Area
504	Home and Commercial Food Service

### Outcome #6

#### 1. Outcome Measures

Outcome Target 6: New varieties and new uses of animal and plant products will result in increased production of Alaska-based products. Counting number of products and publications.

#### 2. Associated Institution Types

- 1862 Extension

#### 3a. Outcome Type:

Change in Action Outcome Measure

#### 3b. Quantitative Outcome

Year	Actual
2015	21

#### 3c. Qualitative Outcome or Impact Statement

##### Issue (Who cares and Why)

A greater interest by Alaskans in eating local foods, combined with state programs that encourage school districts to purchase foods harvested in Alaska, have led to increased interest in recipes using Alaska-grown foods that school districts can use and that students like. This may also lead to new markets for local producers.

##### What has been done

In 2015, the food research technician and a research and development chef worked with the Alaska Department of Health and Social Services (DHSS) to produce a cookbook with 20 recipes for salad bars in Alaska schools. The recipe book is called "The Alaska School Salad Book." The food technician says the cookbook includes innovative recipes to use year-round in our arctic climate. It includes family size portions to use in one's own home too, including Curried Barley Salad and recipes with kale, such as Two-Bean Salad and Superfood Salad.

#### **Results**

The cookbook was posted on the DHSS website in January of 2016, and Extension will inquire about its popularity and use in schools after stakeholders have had a chance to download the cookbook and try the recipes.

#### **4. Associated Knowledge Areas**

<b>KA Code</b>	<b>Knowledge Area</b>
502	New and Improved Food Products
504	Home and Commercial Food Service

#### **Outcome #7**

##### **1. Outcome Measures**

Outcome Target 7: Increase youth and parents' understanding of healthy food choices. Counting contacts with youth and parents.

##### **2. Associated Institution Types**

- 1862 Extension

##### **3a. Outcome Type:**

Change in Knowledge Outcome Measure

##### **3b. Quantitative Outcome**

<b>Year</b>	<b>Actual</b>
2015	1286

##### **3c. Qualitative Outcome or Impact Statement**

###### **Issue (Who cares and Why)**

Childhood obesity is a major concern in Alaska, as elsewhere. In 2011, 65 percent of Alaskan adults were overweight or obese. A 2013 State of Alaska report says that 26 percent of Alaska high school students were overweight or obese. Helping parents and students learn about better nutrition and eating habits is essential to combating obesity in youth and in adults.

###### **What has been done**

Six nutrition educators in Anchorage, Bethel, Fairbanks, Mat-Su Valley, Tok and Soldotna presented USDA-approved curricula and activities in single and multipart programs in nine

different public schools and two Head Start programs as well as at shelters, WIC programs, community centers, public housing and libraries. Adults in each community also received nutrition education. Agents provided information on healthy eating to children's agencies, schools and other community audiences. Other programs emphasized adding vegetables, shopping and making healthy foods such as whole wheat bread and yogurt. An agent also published the Alaska Kids' Healthy Harvest Cookbook.

### Results

Nutrition educators with the SNAP-Ed Program presented nutrition education programs that reached 1071 youth and 215 adults. There were 14 different series offered lasting between five to nine sessions. Pre and post tests were given to participants asking if they think about healthy food choices. On the pretest only 13% indicated they think about healthy food choices, while on the posttest 38% indicated they did. For reading nutritional labels, 19% said they did on the pretest, which rose to 38% on the posttest.

## 4. Associated Knowledge Areas

KA Code	Knowledge Area
703	Nutrition Education and Behavior
724	Healthy Lifestyle
802	Human Development and Family Well-Being

### Outcome #8

#### 1. Outcome Measures

Outcome Target 8: Youth and families have a more positive attitude toward healthful foods and/or willing to try new foods. Counting number of families.

#### 2. Associated Institution Types

- 1862 Extension

#### 3a. Outcome Type:

Change in Action Outcome Measure

#### 3b. Quantitative Outcome

Year	Actual
2015	42

#### 3c. Qualitative Outcome or Impact Statement

##### Issue (Who cares and Why)

Aside from an increased likelihood of becoming overweight adults, children and adolescents who are overweight or obese are at increased risk for a variety of negative physical, social and emotional problems. According to one survey, 77 percent of Alaska elementary students eat breakfast every day. Families have an important influence on making healthy food choices

available and enticing to youth.

**What has been done**

Agents provided training on healthy food choices and nutrition in hands-on food preparation classes. SNAP-Ed worked with multiple families on hands-on cooking skills on how to prepare nutritious meals on a lean budget. Our SNAP-Ed program teaches individuals and addresses policy, systems and environmental factors. Staff also serve on coalitions and wellness councils.

**Results**

Evaluations from the SNAP-Ed course showed that for the 42 survey respondents completing pre and post tests, the number answering "Almost always eat vegetables" was 0% prior to nutrition education, but post-education the number rose to 40%. The information that youth learn in school programs is shared at home. For example, a middle-school teacher who hosted an educator for a series in her classroom wrote, "Parents have emailed me to ask for the site she recommended, MyPlate, so they can start eating healthier at home."

**4. Associated Knowledge Areas**

KA Code	Knowledge Area
504	Home and Commercial Food Service
703	Nutrition Education and Behavior
801	Individual and Family Resource Management

**Outcome #9**

**1. Outcome Measures**

Outcome Target 9: Increase knowledge, attitudes, skills and aspirations to increase physical activity habits. Counting number of youth.

**2. Associated Institution Types**

- 1862 Extension

**3a. Outcome Type:**

Change in Action Outcome Measure

**3b. Quantitative Outcome**

Year	Actual
2015	7461

**3c. Qualitative Outcome or Impact Statement**

**Issue (Who cares and Why)**

Alaska youth spend a lot of time indoors during the long winters. According to a 2009 state health report, only 19 percent of high school students meet the U.S. Department of Social Services

guidelines of 60 minutes of exercise a day. Lack of exercise is tied to higher rates of obesity. Increased physical activity relates to physical and emotional health.

**What has been done**

Nutrition educators discuss the importance of being active every day as well as lead physical activity demonstrations with school youth. Educators also work with teachers and staff to encourage activity among youth at eligible low income sites. Additionally, the Alaska 4-H program offered youth across the state a number of projects that emphasized physical activity, including fitness and sports skills and outdoor education. Activities included hiking, dance, shooting sports, rock climbing, skiing, camping, martial arts, dog mushing, sailing, luge and more.

**Results**

4-H enrollment numbers indicate that 5066 youth participated in health activities, which include a strong focus on staying physically active, and 2395 youth participated in foods and nutrition projects which have a physical fitness component. Nutrition educators documented that their programming increased physical activity among parents, which can have a positive modeling effect for youth. When asked if they have 30 minutes of physical activity daily, on a pretest only 13 percent said they did participate, while on the posttest 40 percent of adults in nutrition programming did participate.

**4. Associated Knowledge Areas**

<b>KA Code</b>	<b>Knowledge Area</b>
724	Healthy Lifestyle

**Outcome #10**

**1. Outcome Measures**

Outcome 10: Increase knowledge about improving healthy home conditions, including indoor air quality. Counting number of individuals in healthy home workshops.

**2. Associated Institution Types**

- 1862 Extension

**3a. Outcome Type:**

Change in Knowledge Outcome Measure

**3b. Quantitative Outcome**

<b>Year</b>	<b>Actual</b>
2015	228

**3c. Qualitative Outcome or Impact Statement**

**Issue (Who cares and Why)**

Poorly ventilated homes and negative pressure inside homes can lead to respiratory problems and also worsen radon levels. Radon is a colorless, odorless, radioactive gas that is present in

Alaska, particularly in Interior Alaska uplands and parts of the Matanuska and Susitna valleys. The Environmental Protection Agency says that radon is the second leading cause of lung cancer. Awareness of radon, radon testing and mitigation are important health issues to Alaskans.

**What has been done**

Agents offered seven workshops in seven communities that addressed radon prevention, testing and mitigation. Extension also makes kits available statewide for radon testing. Seven additional workshops addressed healthy homes and the importance of ventilation, indoor air quality, carbon monoxide testing and the relationship between moisture and mold.

**Results**

Over 220 individuals received healthy homes, air quality or radon testing and mitigation education through workshops. Five of six participants in an Anchorage radon workshop returned post-workshop surveys. and all five agreed the workshop met their expectations and named at least one new skill learned including use of insulation, radon testing, and how to put in mitigation piping. All five participants who returned a survey after a healthy homes workshop in Juneau indicated they intend to use the information. One person wrote, "The vapor barrier and ventilation ideas were very helpful- will implement at my home." Continued interest in these topics was also shown through the 17 copies of an Extension-produced radon DVD sold during FY15 as well as 52 radon kits. In addition, 495 radon and 603 carbon monoxide publications were distributed. A YouTube video developed to explain radon and steps to mitigate it has received 104 hits since it was posted in 2014.

**4. Associated Knowledge Areas**

<b>KA Code</b>	<b>Knowledge Area</b>
724	Healthy Lifestyle
804	Human Environmental Issues Concerning Apparel, Textiles, and Residential and Commercial Structures

**Outcome #11**

**1. Outcome Measures**

Outcome 11: Prepare small food producers in Alaska for the marketplace and improve regulatory compliance. Counting individuals who attend training or receive technical assistance on starting a small food business.

**2. Associated Institution Types**

- 1862 Extension

**3a. Outcome Type:**

Change in Knowledge Outcome Measure

**3b. Quantitative Outcome**

<b>Year</b>	<b>Actual</b>
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### 3c. Qualitative Outcome or Impact Statement

#### Issue (Who cares and Why)

Small food producers in Alaska do not have access to technical assistance when starting their food businesses. Many are out of regulatory compliance because they do not know the requirements, and the Alaska Department of Environmental Conservation is not able to provide public outreach and education on the rules.

#### What has been done

Our food research technician and Southeast agent conducted 11 workshops reaching 98 people. The Southeast agent reached eight different locations, many remote, including Juneau, Klukwan, Hollis, Hoonah, Hydaburg, Petersburg, Sitka, and Skagway. The workshops covered starting and operating a specialty food business; cottage foods; and food rules, permitting and regulations for specialty food businesses. The food research technician also helped nine individuals with nutrition labeling, four with pH testing, 36 with product testing and three with test kitchen rental.

#### Results

Thirteen people returned surveys for cottage foods classes in Sitka, Skagway and Hoonah. Of the 11 who answered a question about intent to start their own business, two moved from the "neutral" rating to the agreement range after the class (five point scale ranging from strongly disagree to strongly agree). Of the 10 answering a question about their confidence in navigating DEC and other regulations, on average the participants felt more confident after the class, with five neutral responses before and only one after. The class also helped raise awareness about Extension; one participant wrote, "I plan on using UAF as a resource. Didn't know I could do that."

### 4. Associated Knowledge Areas

KA Code	Knowledge Area
502	New and Improved Food Products
504	Home and Commercial Food Service

### 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

The Home, Health and Family Development Program staff in Alaska is small and agents cover large geographic areas. Travel dollars are an issue because air and ferry travel is often necessary, along with travel accommodations, for most agents to travel beyond their

district offices. Though agents have been successful in partnering with other governmental and private entities to make each travel dollar go farther, they are still unable to travel as often as requested. Travel is also hampered by time constraints as traveling in rural Alaska takes time. Distance delivery has been used more and sometimes there have been technical issues. Staff vacancies and funding fluctuations have also been issues. Staff vacancies have also been a factor in the Alaska Nutrition Education Program (formerly FSNE). We have had difficulties finding nutrition aides who were willing to work 20 hours a week at the pay rate. Even when we have been successful in rehiring, the time for recruiting and filling positions has left positions open in the Alaska Nutrition Education Program (SNAP-Ed) and EFNEP and has pulled agents away from their normal duties to complete the process.

## **V(I). Planned Program (Evaluation Studies)**

### **Evaluation Results**

The evaluation specialist is working with agents to create statewide measures of commonly taught skills including food safety and preservation procedures.

In a Juneau school presentation, seven participants rated their understanding of the elements of preserving food safely as an average of 3 on a 5 point scale (strongly disagree to strongly agree) before the workshop, which rose to 4.71 afterwards. Their inspiration to preserve at home also improved from an average of 3.86 to 4.86, and respondents cited their intent to do pickling and use a pressure canner and herbs. Similarly, in a canning salmon workshop, 11 participants went from an average of 3.27 to 4.64 on understanding, and 4.18 to 4.73 on inspiration. Twenty-four combined evaluations from canning soups and sauces classes in four communities showed that participants improved their understanding, moving from 3.04 to 4.75, of how to find and follow tested recipes and USDA approved guidelines for home-canned food. Several feel more inspired to can at home, with an average movement in agreement of almost two units, from 2.87 to 4.83. Twenty-four combined evaluations from pickling and fermenting classes in Sitka, Skagway and Klukwan showed that participants rated their understanding of how to safety waterbath process acidified foods as an average of 2.64 before the workshop and 4.54 after, and their confidence levels for making the products at home rose from an average of 2.05 to 4.54. Several mentioned they were excited to try the recipes and mentioned they plan to preserve foraged and home garden produce.

Thirteen people returned surveys for cottage foods classes in Sitka, Skagway and Hoonah. Of the 11 who answered a question about intent to start their own business, two moved from the "neutral" rating to the agreement range after the class (five point scale ranging from strongly disagree to strongly agree). Of the 10 answering a question about their confidence in navigating DEC and other regulations, on average the participants felt more confident after the class, with 5 neutral responses before and only 1 after. One wrote, "I plan on using UAF as a resource. Didn't know I could do that." Follow up surveys of the CFPM training garnered 54 responses from past participants from 11 different communities around the state, representing food workers in a diverse array of settings from fast food, food trucks and restaurants to hospitals, nursing homes, daycare centers and processing plants. When asked if completion of the class and exam helped them with employment, 80% said yes; for 43 it helped them keep their job, 28 get a new job, three get a promotion at a food establishment, and nine start a new food business. For those respondents who took advantage of the distance delivery option, they mentioned time saved as well as estimated travel costs savings ranging from the hundreds to thousands. The lead agent on the CFPM program uses participant responses to plan future classes.

### **Key Items of Evaluation**

Feedback on the courses, trainings and online tools we offer is overwhelmingly positive. Forty-three participants in the Certified Food Protection Managers training reported that receiving the training and passing the exam helped them find or keep a food industry job or start their own food business. Extension is responsive to community needs, and agents have changed their focus areas based upon client feedback. For example, the Nome agent meets regularly with community groups and says that in her region, violence is a concern and area residents support programs like Green Dot violence prevention. We have increased our mediated outreach as well, and often receive feedback through multiple channels including Facebook, where clients will see a flier for an event and request that the topic be offered in their area too. Agents use client feedback to continuously improve workshops. The StrongWomen programs have been so successful that they have been adopted into the communities they were started in. Extension-trained leaders now work under the umbrella of other local agencies. One agent reported the Kenaitze Indian Tribe group has been meeting since 2004, the Kenai Senior Center since 2009 and the Homer Senior Center since 2010.

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

**Program # 4**

**1. Name of the Planned Program**

Climate Change and Ecosystem Management

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
101	Appraisal of Soil Resources	10%		10%	
122	Management and Control of Forest and Range Fires	10%		0%	
123	Management and Sustainability of Forest Resources	0%		70%	
132	Weather and Climate	70%		20%	
605	Natural Resource and Environmental Economics	10%		0%	
	<b>Total</b>	100%		100%	

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

1. Actual amount of FTE/SYs expended this Program

Year: 2015	Extension		Research	
	1862	1890	1862	1890
<b>Plan</b>	1.0	0.0	8.0	0.0
<b>Actual Paid</b>	0.4	0.0	7.7	0.0
<b>Actual Volunteer</b>	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
16428	0	0	0
1862 Matching	1890 Matching	1862 Matching	1890 Matching
21774	0	201011	0
1862 All Other	1890 All Other	1862 All Other	1890 All Other
96449	0	810479	0

## **V(D). Planned Program (Activity)**

### **1. Brief description of the Activity**

Research and outreach strategies included data bases and data management systems necessary for:

- Forest stand characterization of the Alaska boreal and coastal rain forest
- Long-term ecosystem monitoring and GIS modeling of the taiga forest dynamics
- Discovery of and complete predictive relationships between weather factors and growth of climate sensitive forest species in Alaska
  - Remote sensing to investigate landscape level responses in response to burn severity within black spruce ecosystems in Alaska
  - Land-based data sets to correlate animal distributions on the landscape with remote images
  - Precipitation controls on soil moisture recharge and its effect on boreal forest growth and carbon balance
  - Agricultural land characterization including soils and crop types

High latitude soil research centered on the following research topics and activities:

- Characterization of northern forest soils in boreal regions of Alaska in terms of the organic carbon pool and relationship with forest management practices
  - Soil carbon balance and nitrogen dynamics following disturbance by wildfire and logging
  - Evaluation of the relationship between local climate and soil carbon balance
- Research, education and outreach activities include:
- Land-based information correlation with remotely sensed images for forestry and agriculture
  - Maps and spatial data sets of long-term value
  - Climate change adaptation as it relates to emergency preparedness in communities

### **2. Brief description of the target audience**

The target audiences included producers and consumers, communities and small business entrepreneurs, individuals and groups concerned about the quality of the Alaska environment, public resource agencies, public and private resource managers, other faculty and researchers, and undergraduate and graduate students. Our efforts were directed toward environmentally and economically sustainable development and conservation of our natural resources that benefit all citizens to adapt and become resilient as the climate changes. Specifically, this program provides information on soil properties and classification to the USDA Natural Resource Conservation Service, the USDA Forest Service, the Alaska Department of Natural Resources, borough governments and Alaska Native corporations. Information on impact of fires on soil organic matter will assist the Department of Natural Resources Division of Forestry and private landowners and managers.

### **3. How was eXtension used?**

Though not all personnel used eXtension, many did incorporate eXtension resources into their programming. Specifically, eXtension provision of Qualtrics training and access has been critical in increasing our evaluation efforts. Several Extension employees, including those doing climate related work, signed up for Qualtrics access as a result of eXtension's help. One CES employee is a member of the Climate, Forests and Woodlands Community of Practice. The employee also has an Ask an Expert account and accepts questions tagged for climate change and emergency preparedness. Other agents are connected to the Extension Disaster Education Network (EDEN).

## **V(E). Planned Program (Outputs)**

**1. Standard output measures**

2015	Direct Contacts Adults	Indirect Contacts Adults	Direct Contacts Youth	Indirect Contacts Youth
Actual	540	15200	88	800

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

**Patent Applications Submitted**

Year: 2015

Actual: 0

**Patents listed**

**3. Publications (Standard General Output Measure)**

**Number of Peer Reviewed Publications**

2015	Extension	Research	Total
Actual	2	10	12

**V(F). State Defined Outputs**

**Output Target**

**Output #1**

**Output Measure**

- Output 1. Soils research will concentrate on the classification of permafrost soils, soil carbon properties in relation to climate change and soil disturbance dynamics in upland and lowland forest ecosystems. Publications and presentations are output measures.

Year	Actual
2015	3

**Output #2**

**Output Measure**

- Output 2. Long-term forest productivity data sets will be converted to formats compatible with existing megadata systems for compatibility with long-term ecological research, fire management and forest disturbance dynamics. Outputs measured will be publications and data sets converted.

Year	Actual
2015	11

**Output #3**

**Output Measure**

- Output 3. Development of data sets providing information on wildlife and domestic (traditional and alternative) livestock impact on rangelands will continue. Output measures will be data sets developed and publications.  
Not reporting on this Output for this Annual Report

**Output #4**

**Output Measure**

- Output 4. Curricula that train future and present land managers in ecosystem stability and geospatial technology will be developed and implemented. Output measure will be curricula implemented and updated.

<b>Year</b>	<b>Actual</b>
2015	8

**Output #5**

**Output Measure**

- Output 5. Research related to product development to include timber products and nontimber products including energy will continue. Forest management specific to fuel/energy demand will be initiated. Measurable outputs will be publications and presentations.

<b>Year</b>	<b>Actual</b>
2015	2

**Output #6**

**Output Measure**

- Output 6. Recreation opportunities are important in urban and rural forests and are a part of ecosystem services. Recreation management in northern ecosystems is a part of management of ecosystems research. Measurable outputs are publications and presentations.

<b>Year</b>	<b>Actual</b>
2015	5

**V(G). State Defined Outcomes**

**V. State Defined Outcomes Table of Content**

O. No.	OUTCOME NAME
1	Outcome 1. Increase knowledge of arctic and subarctic soils and forest productivity among peer scientists, managers and governments. Knowledge outcome measures will be publications, conferences and workshops.
2	Outcome 2. Increase animal producer and wildlife manager knowledge on range use and animal impact. Measurable outcomes are publications, workshops and conferences.
3	Outcome 3. Increase knowledge through classroom and field course delivery. The outcome measures will be curricula delivered and number of students reached.
4	Outcome 4. Increase community and individual knowledge on the impact of climate change in northern ecosystems and effects on cultural lifeways, economies and individual well-being. Outcome measures will be publications, workshops and conferences.
5	Outcome 5. Provide research information that leads to product development and recreational opportunities. Outcome measures will be publications, conferences and workshops.
6	Outcome 6: Increase collaboration and partnerships which benefit stakeholders. Measure is number of participants.
7	Outcome 7. Increase knowledge of the impact of climate change in northern ecosystems on forest productivity. Outcome measure will be publications, workshops and conferences.
8	Outcome 8: Demonstrate effective collaboration between research and Extension to resolve issues. Measure will be number of participants reached.
9	Outcome 9: Increase collaboration and partnerships which benefit stakeholders. Measure is number of participants.



**Outcome #1**

**1. Outcome Measures**

Outcome 1. Increase knowledge of arctic and subarctic soils and forest productivity among peer scientists, managers and governments. Knowledge outcome measures will be publications, conferences and workshops.

**2. Associated Institution Types**

- 1862 Extension
- 1862 Research

**3a. Outcome Type:**

Change in Knowledge Outcome Measure

**3b. Quantitative Outcome**

<b>Year</b>	<b>Actual</b>
2015	3

**3c. Qualitative Outcome or Impact Statement**

**Issue (Who cares and Why)**

Climate warming is projected to continue for at least the next decade. Soil warmth, moisture and stability will impact agriculture, homeowners and forest land managers. Basic research provides information about weather, soil nutrients, moisture stress and insect predation.

**What has been done**

Researchers are collecting data on permafrost, volcanic and farmed soils. They continue to study disturbed soil through fire events, moisture stress and 30 years of land clearing and farming. Climate parameters have been collected from NOAA, and databases have been maintained on the LTER website. The weather station at the Matanuska Experiment Farm has collected National Weather Service data since 1917, providing the longest available weather record from a single location in Alaska. A documentary on arctic soils was filmed and is planned for release on public television.

**Results**

Texas Tech University Public Media traveled to Alaska to produce a documentary about an annual arctic soils field tour and climate change. The tour, in its 23rd year, is also known as NRM 489, the Alaska Soil Geography Field Trip. The 11-day field tour focused on frozen permafrost soils. Four soil scientists, a three-member camera crew and 20 students examined soils and ecology from Fairbanks to Prudhoe Bay, with stops at Marion Creek near Coldfoot and Toolik Lake. Film production took place in August 2015 and the documentary has a tentative release date of 2017.

**4. Associated Knowledge Areas**

<b>KA Code</b>	<b>Knowledge Area</b>
101	Appraisal of Soil Resources
123	Management and Sustainability of Forest Resources
132	Weather and Climate

**Outcome #2**

**1. Outcome Measures**

Outcome 2. Increase animal producer and wildlife manager knowledge on range use and animal impact. Measurable outcomes are publications, workshops and conferences.

Not Reporting on this Outcome Measure

**Outcome #3**

**1. Outcome Measures**

Outcome 3. Increase knowledge through classroom and field course delivery. The outcome measures will be curricula delivered and number of students reached.

**2. Associated Institution Types**

- 1862 Extension
- 1862 Research

**3a. Outcome Type:**

Change in Knowledge Outcome Measure

**3b. Quantitative Outcome**

<b>Year</b>	<b>Actual</b>
2015	124

**3c. Qualitative Outcome or Impact Statement**

**Issue (Who cares and Why)**

Alaska is a great natural classroom and attracts students who love the outdoors. To reverse the effects of man-made climate change it is essential to educate youth to care for the environment.

**What has been done**

Many faculty in the School of Natural Resources and Extension hold a tripartite appointment that requires research, teaching and outreach, which is far from an easy task. Faculty bring their research experiences and results into the classroom bringing the changing climate and resource management issues to life for students. Faculty, in our school, have an open door policy so that students have easy and direct access to faculty.

### Results

The 30 percent increase in students majoring in natural resources management in the last three years, in spite of faculty and budget reductions, is a direct result of a faculty and staff who are highly engaged with students providing a rich hands-on education combined with direct interaction. This type of environment isn't easily achieved in large schools and departments. The Resource Management Society, an undergraduate club, has been influential reaching new students through current students.

#### 4. Associated Knowledge Areas

KA Code	Knowledge Area
101	Appraisal of Soil Resources
123	Management and Sustainability of Forest Resources
132	Weather and Climate

#### Outcome #4

##### 1. Outcome Measures

Outcome 4. Increase community and individual knowledge on the impact of climate change in northern ecosystems and effects on cultural lifeways, economies and individual well-being. Outcome measures will be publications, workshops and conferences.

##### 2. Associated Institution Types

- 1862 Extension

##### 3a. Outcome Type:

Change in Knowledge Outcome Measure

##### 3b. Quantitative Outcome

Year	Actual
2015	8

##### 3c. Qualitative Outcome or Impact Statement

###### Issue (Who cares and Why)

Over the past 50 years, Alaska has warmed at over twice the rate of the rest of the United States. Alaska continues to see hundreds of wildfires each summer that result in millions of acres burned. Each year some of those fires encroach on populated areas. Alaska has also seen substantial flooding in populated areas, and the state experiences earthquakes on a frequent basis. As the climate warms, Alaska's coastlines recede and permafrost melts. Extreme weather events may increase in both frequency and severity, hence a need for continuing emergency and disaster preparedness training for the public to mitigate potential damages to property and life.

###### What has been done

Extension personnel across program areas help Alaskans plan for and manage the aftermath of extreme weather events such as floods and fires with research-based information to help people prepare for emergencies and return to their homes safely after emergencies. Seven workshops covering topics from emergency preparedness for tsunamis to flood emergency recovery were offered in seven different locations, reaching 151 people.

**Results**

A recently published article in the Disaster Recovery Journal details how Extension is an important resource in Alaska during responses to emerging events like floods. Extension personnel help build community knowledge by presenting at locations like an emergency preparation fair, public library, and local festival to reach broad audiences. Extension keeps abreast of research-based best practices through its relationship with the Extension Disaster Education Network with three agents from three different districts representing Alaska from Nome to Kenai.

**4. Associated Knowledge Areas**

KA Code	Knowledge Area
132	Weather and Climate

**Outcome #5**

**1. Outcome Measures**

Outcome 5. Provide research information that leads to product development and recreational opportunities. Outcome measures will be publications, conferences and workshops.

**2. Associated Institution Types**

- 1862 Extension
- 1862 Research

**3a. Outcome Type:**

Change in Action Outcome Measure

**3b. Quantitative Outcome**

Year	Actual
2015	2

**3c. Qualitative Outcome or Impact Statement**

**Issue (Who cares and Why)**

In Alaska, federal agencies control 65% of the land. When the Bureau of Land Management assesses user demand for recreation areas, it frequently turns to an SNRE researcher for help. The associate professor of outdoor recreation management with the School of Natural Resources and Extension at UAF, has conducted surveys for BLM for 10 years.

**What has been done**

The work is part of a Cooperative Ecosystem Studies Unit collaboration between public agencies and universities. The researcher and UAF students have conducted more than a dozen surveys of visitors to BLM managed lands and scenic rivers near the Dalton, Steese, Denali and Taylor highways, the Iditarod Trail, and the Western Interior and Bering Sea areas. The surveys ask visitors about their travels, experiences and the perceived benefits of activities, which range from berry picking and hiking to hunting and gold panning. To better understand the economic impact of visitors, some surveyors ask them about their expenditures.

**Results**

The assistant field manager for the Eastern Interior BLM field office, said the agency does not have the staff or expertise to conduct and analyze the on-site visitor surveys. It's an extremely valuable tool for us, she said. She said BLM uses the visitor information for planning and to inform management decisions.

**4. Associated Knowledge Areas**

<b>KA Code</b>	<b>Knowledge Area</b>
123	Management and Sustainability of Forest Resources

**Outcome #6**

**1. Outcome Measures**

Outcome 6: Increase collaboration and partnerships which benefit stakeholders. Measure is number of participants.

**2. Associated Institution Types**

- 1862 Extension
- 1862 Research

**3a. Outcome Type:**

Change in Knowledge Outcome Measure

**3b. Quantitative Outcome**

<b>Year</b>	<b>Actual</b>
2015	279

**3c. Qualitative Outcome or Impact Statement**

**Issue (Who cares and Why)**

Connections which result in continuity between the university and K-12 education is desirable. Legislators and administrators recognize the advantages of these partnerships. These partnerships are facilitated through OneTree, a community outreach and research project, Project Learning Tree and STEM/STEAM projects.

**What has been done**

The OneTree project aims to show the unique value of woodlands and wood products by demonstrating the volume and quality of work that can be made from one tree. Through university and school support new space in a renovated commercial kitchen is being used by this program for several research and demonstration projects. Project Learning Tree advances environmental literacy and promotes stewardship through excellence in environmental education, professional development, and curriculum resources that use trees and forests as windows on the world.

**Results**

Open houses have been hosted open to the community to show research on birch seedlings concerning length of dormancy, demonstrations include a knitting needle hand turned machine, tree ring timeline, birch sap reverse osmosis, and an elementary school project using photography to track chlorophyll loss in leaves. Products from birch bark on display include woven baskets, shoes, Christmas ornaments, and jewelry to name a few. In terms of classroom involvement during the school year, there were intensive interactions with 250 K-8 students and 8 teachers. In the summer, intensive interactions with 14 high school students from rural villages in a month-long Upward Bound course. And in K-12 professional development, 15 hours' contact time during an education research project was conducted with 7 K-12 teachers.

**4. Associated Knowledge Areas**

<b>KA Code</b>	<b>Knowledge Area</b>
123	Management and Sustainability of Forest Resources

**Outcome #7**

**1. Outcome Measures**

Outcome 7. Increase knowledge of the impact of climate change in northern ecosystems on forest productivity. Outcome measure will be publications, workshops and conferences.

**2. Associated Institution Types**

- 1862 Extension
- 1862 Research

**3a. Outcome Type:**

Change in Knowledge Outcome Measure

**3b. Quantitative Outcome**

Year	Actual
2015	12

**3c. Qualitative Outcome or Impact Statement**

**Issue (Who cares and Why)**

Scientists say the average temperature across Alaska has increased by approximately 3 degrees Fahrenheit in the last 60 years and additional warming is expected, along with drier conditions.

Researchers with the School of Natural Resources and Extension are studying how the changing climate affects the distribution of vegetation, forest productivity, regrowth and management, and arctic and subarctic soils.

**What has been done**

Research published last summer indicates that the Interior has become too hot and dry to be an ideal climate for lowland white spruce, which is the most prized commercial species in the region. For 25 years, a silviculture researcher has been studying what effect limiting moisture has on forest productivity. He has created artificial drought conditions by using plastic platforms to exclude rainfall and removing snow to reduce snowmelt. Another researcher has been using Geographic Information Systems (GIS) and remote sensing to analyze historic trends in the boreal forest, mostly recently on how vegetation is affected by changing climatic factors such as the spring snowpack, length of the growing season, date of the spring bud burst and summer moisture. And agronomy researcher noted that higher temperatures could lead to a longer growing season and, potentially, new crops that could be grown in Alaska. He is identifying and selecting spring wheat and malting and hulless barley cultivars that can be grown under dryland conditions.

**Results**

All current research suggests that if the current climate warming and drying trend continues for the next 10 years, Interior Alaska could experience devastation effects. Current tree species will continue to be stressed through moisture stress and through insect predation, forest fires and permafrost melting could add considerable to the carbon in the atmosphere. Resource management planners will need this research to help make timely and informed decisions.

**4. Associated Knowledge Areas**

<b>KA Code</b>	<b>Knowledge Area</b>
101	Appraisal of Soil Resources
122	Management and Control of Forest and Range Fires
123	Management and Sustainability of Forest Resources
132	Weather and Climate

**Outcome #8**

**1. Outcome Measures**

Outcome 8: Demonstrate effective collaboration between research and Extension to resolve issues. Measure will be number of participants reached.

**2. Associated Institution Types**

- 1862 Extension
- 1862 Research

**3a. Outcome Type:**

Change in Knowledge Outcome Measure

**3b. Quantitative Outcome**

<b>Year</b>	<b>Actual</b>
2015	44

**3c. Qualitative Outcome or Impact Statement**

**Issue (Who cares and Why)**

Current funding and rehiring restrictions impact the ability of the School of Natural Resources and Extension to teach its courses.

**What has been done**

Due to the merger between the school and Extension, and the willing support of Extension faculty, classes have been enriched and augmented.

**Results**

Even though retiring, one faculty member has been able to team teach the NRM 277 conservation biology class with an Extension invasive plants instructor. Through Zoom technology, the class has been able to connect the class in Fairbanks with the instructor in Anchorage. Other Extension personnel have enriched the NRM 290 field course and guest lectured for the graduate seminar, NRM 692.

**4. Associated Knowledge Areas**

<b>KA Code</b>	<b>Knowledge Area</b>
123	Management and Sustainability of Forest Resources

**Outcome #9**

**1. Outcome Measures**

Outcome 9: Increase collaboration and partnerships which benefit stakeholders. Measure is number of participants.

**2. Associated Institution Types**

- 1862 Extension
- 1862 Research

**3a. Outcome Type:**

Change in Knowledge Outcome Measure

**3b. Quantitative Outcome**

<b>Year</b>	<b>Actual</b>
2015	40



### 3c. Qualitative Outcome or Impact Statement

#### Issue (Who cares and Why)

Alaska has experienced the greatest amount of warming of the forest regions of the world. All Alaska rural villages depend on subsistence harvest and resource-related jobs and activities. During the summer of 2015, Alaska experienced the second greatest area burned in wildland fire in the record that extends back to 1950, and some communities need to be relocated because of permafrost thaw, accelerated coastal erosion, or shifting resource opportunities related to climate change. Religious institutions inform ethical values that form the basis of the larger social response to climate change disruptions, and also strengthen and support the adaptive capacity of communities.

#### What has been done

A Professor Emeritus of forest ecology has been involved for over 7 years in explaining the science of climate change and its ethical implications to various organizations in the faith community at the Alaska, national, and international level, including Catholic institutions examining the issue. In FY15 the papal encyclical 'Laudato Si' was issued, which included a careful review of the scientific and empirical issues incorporating such input, as well as providing ethical guidance. The professor gave a number of presentations explaining the encyclical and its relationship to empirical findings to both general public and classroom audiences.

#### Results

The faith community is actively interested in obtaining information on the nature and degree of climate change issues, and the specific impacts to resources expected from climate change in Alaska. The Diocese of Fairbanks sponsored three evening lectures on climate change and the encyclical and video recorded and posted it for further distribution. He also spoke on the encyclical at the campus-wide graduate seminar which is the main interdisciplinary forum for integrating findings on climate change at the University of Alaska Fairbanks. Attendance was about 40 people, including natural resource agency staff across Alaska connected online. These four presentations provided a forum for discussion that presented solid scientific analysis from a faith-based perspective.

### 4. Associated Knowledge Areas

KA Code	Knowledge Area
101	Appraisal of Soil Resources
122	Management and Control of Forest and Range Fires
123	Management and Sustainability of Forest Resources
132	Weather and Climate

## **V(H). Planned Program (External Factors)**

### **External factors which affected outcomes**

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

### **Brief Explanation**

Alaska has been severely impacted by the falling price of crude oil. The university is funded largely through the state legislature and has experienced budget cuts for the last seven years, which has dramatically affected programs. SNRE, in particular, has faced difficulties with university policy preventing the rehire of research and teaching faculty who retire. The resulting atrophy has resulted in the loss of accreditation for forestry, although SNRE is pursuing natural resource accreditation through the Society of American Foresters in spring 2016. As can be seen by our falling FTEs, it has become increasingly difficult to continue research and teaching in some areas. University policy favors external grants but fails to appreciate the benefit of land grant funds.

## **V(I). Planned Program (Evaluation Studies)**

### **Evaluation Results**

Surveys conducted for work completed at the end of FY14 were processed at the start of FY15 and are thus being reported here. Workshop participants at eight different sites rated their knowledge gained on flood and wildfire preparedness, how climate change affects the likelihood of natural disasters, how to put together emergency kits, and more. Participants in each workshop showed a positive change in knowledge, for example moving from unsure to agreeing that they know the steps to safely reenter a home after a flood or find an emergency power source.

### **Key Items of Evaluation**

Extension continues to build community capacity for emergency preparedness through strategic relationships. Participants in Extension workshops indicate they gain knowledge and awareness and they intend to implement best practices when facing natural disasters.

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

**Program # 5**

**1. Name of the Planned Program**

Youth Development

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
607	Consumer Economics	5%		0%	
801	Individual and Family Resource Management	5%		0%	
806	Youth Development	90%		0%	
	<b>Total</b>	100%		0%	

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

**1. Actual amount of FTE/SYs expended this Program**

Year: 2015	Extension		Research	
	1862	1890	1862	1890
<b>Plan</b>	8.5	0.0	0.0	0.0
<b>Actual Paid</b>	6.9	0.0	0.0	0.0
<b>Actual Volunteer</b>	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
282302	0	0	0
1862 Matching	1890 Matching	1862 Matching	1890 Matching
374165	0	0	0
1862 All Other	1890 All Other	1862 All Other	1890 All Other
1657401	0	0	0

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

**1. Brief description of the Activity**

- Collaborate with other youth-serving agencies and organizations
- Collaborate with Alaska Native associations
- Train volunteers, teachers and after-school providers
- Collaborate with military installations, National Guard and Reserve
- Conduct workshops, contests, forums and camps
- Utilize distance technology and social media
- Support life skill development of youth through experiential learning in science, healthy living and citizenship
  - Offer experiential learning activities at the local, state, regional and national levels

**2. Brief description of the target audience**

- Grades K-12
- Parents of school-age children
- Adults interested in positive youth development
- 4-H Extension educators
- Other Extension educators
- 4-H Adult volunteers
- Military youth educators
- Community leaders
- Federal and state agency representatives
- Native corporations and tribal representatives
- Youth-serving organizations, including FFA

**3. How was eXtension used?**

One agent recently joined the Makers community and has presented in the past for the Military Families Learning Network. The evaluation specialist has found the support of eXtension's Evaluation community of practice very helpful when troubleshooting as the point person for 4-H Common Measures, which are also housed in Qualtrics.

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

**1. Standard output measures**

2015	Direct Contacts Adults	Indirect Contacts Adults	Direct Contacts Youth	Indirect Contacts Youth
<b>Actual</b>	11655	60837	27131	26073

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

Year: 2015  
 Actual: 0

**Patents listed**

**3. Publications (Standard General Output Measure)**

**Number of Peer Reviewed Publications**

<b>2015</b>	<b>Extension</b>	<b>Research</b>	<b>Total</b>
<b>Actual</b>	1	0	0

**V(F). State Defined Outputs**

**Output Target**

**Output #1**

**Output Measure**

- Output 1: 4-H educators will train volunteer organizational leaders in the Essential Elements of Youth Development

<b>Year</b>	<b>Actual</b>
2015	213

**Output #2**

**Output Measure**

- Output 2: Extension will offer relevant workforce skill development projects for youth 15-18.

<b>Year</b>	<b>Actual</b>
2015	21

**Output #3**

**Output Measure**

- Output 3: 4-H will offer opportunities for membership or involvement for underserved and minority youth.

<b>Year</b>	<b>Actual</b>
2015	37

**Output #4**

**Output Measure**

- Output 4: Youth Development will offer programming in science, engineering and technology.

<b>Year</b>	<b>Actual</b>
2015	42

**Output #5**

**Output Measure**

- Output 5: 4-H educators will offer inter and intra-district educational and service collaborations.

<b>Year</b>	<b>Actual</b>
2015	19

**V(G). State Defined Outcomes**

**V. State Defined Outcomes Table of Content**

O. No.	OUTCOME NAME
1	Outcome 1: 100% of faculty and staff associated within the program area will understand the Essential Elements of Youth Development
2	Outcome 2: After receiving training in the Essential Elements of Youth Development, volunteer leaders and youth will apply at least two of the Essential Elements in their interactions during programming.
3	Outcome 3: 4-H educators will expand programming to underserved and minority youth by 5% in each year of the five-year plan of work.
4	Outcome 4: 4-H educators will offer programming to underserved youth that addresses Alaska's high youth suicide rate.
5	Outcome 5: 4-H will increase participation in international exchange programs. Counting number of youth who participate in exchanges or host international students.

## **Outcome #1**

### **1. Outcome Measures**

Outcome 1: 100% of faculty and staff associated within the program area will understand the Essential Elements of Youth Development

### **2. Associated Institution Types**

- 1862 Extension

### **3a. Outcome Type:**

Change in Knowledge Outcome Measure

### **3b. Quantitative Outcome**

<b>Year</b>	<b>Actual</b>
2015	17

### **3c. Qualitative Outcome or Impact Statement**

#### **Issue (Who cares and Why)**

Positive youth development through 4-H is made possible through a cadre of caring adult leaders. Creating environments in which youth have a sense of belonging, experience independence, master skills and give back to the community through generosity becomes more complex each year with changing environments and demographics. Faculty and staff must increase their understanding of positive youth development and the Essential Elements of 4-H in order to deliver quality programs and train volunteer leaders.

#### **What has been done**

All Alaska 4-H agents and others with 4-H responsibilities have been trained in Essential Elements. The Alaska 4-H program uses four primary delivery modes in fostering positive youth development clubs, special interest classes, school enrichment and camping. All are designed using the Essential Elements. Agents, staff and leaders participate in trainings that emphasize delivery of the subject matter within the context of the Essential Elements. An annual state volunteer forum and audio conferences also include Essential Elements.

#### **Results**

All of the 4-H staff in the Alaska program trained and presented information to their constituents about the Essential Elements of 4-H. Training has been given in these areas and they are part of everyday 4-H language. All 4-H activities are grounded in the Essential Elements.

### **4. Associated Knowledge Areas**

<b>KA Code</b>	<b>Knowledge Area</b>
806	Youth Development



## **Outcome #2**

### **1. Outcome Measures**

Outcome 2: After receiving training in the Essential Elements of Youth Development, volunteer leaders and youth will apply at least two of the Essential Elements in their interactions during programming.

### **2. Associated Institution Types**

- 1862 Extension

### **3a. Outcome Type:**

Change in Action Outcome Measure

### **3b. Quantitative Outcome**

<b>Year</b>	<b>Actual</b>
2015	276

### **3c. Qualitative Outcome or Impact Statement**

#### **Issue (Who cares and Why)**

The 4-H Essential Elements of belonging, mastery, independence and generosity are based on research that the youth development field recognizes as a source for best practices in fostering positive development. Applying the Essential Elements in program development and delivery is what makes 4-H unique from other programs. The elements define volunteer roles in the lives of 4-H members as mentors, role models and coaches.

#### **What has been done**

Sixty-three leaders were trained through an online program and 213 adult and youth volunteers were trained in face-to-face workshops. Leaders are asked to provide information on events throughout the 4-H year for their clubs showing connections to Essential Elements. A step in the club chartering form includes the identification of Essential Elements in club activity planning, making it an intentional step in the planning of club activities. The increased use of 4-H Common Measures will also assist clubs in assessing whether youth are being effectively engaged in the areas of belonging, mastery, independence and generosity.

#### **Results**

A number of service projects reflect the application of the element of generosity, including the Pillow Patrol which sews pillowcases for foster children. 4-H'ers across districts also engage in livestock projects that foster mastery and independence, culminating in exhibits at various local and state fairs. 4-H'ers volunteer in many ways that build responsibility and a sense of belonging in their community and state, and attend camps that encourage an appreciation of Alaska. Overall, 1554 adult volunteers and 33 youth volunteers in 2015 provided opportunities for engagement of all kinds, from gardening to science programming.

### **4. Associated Knowledge Areas**

**KA Code**    **Knowledge Area**  
806           Youth Development

**Outcome #3**

**1. Outcome Measures**

Outcome 3: 4-H educators will expand programming to underserved and minority youth by 5% in each year of the five-year plan of work.

**2. Associated Institution Types**

- 1862 Extension

**3a. Outcome Type:**

Change in Action Outcome Measure

**3b. Quantitative Outcome**

<b>Year</b>	<b>Actual</b>
2015	5

**3c. Qualitative Outcome or Impact Statement**

**Issue (Who cares and Why)**

Alaska is a uniquely diverse state. For example, CNN reported in 2015 that Anchorage, Alaska has the the top three most diverse census tracks in all of America. Outside of cities, there are many areas with minority youth that can only be reached by boat or plane. Thus, in many rural communities, activities for youth are limited. As the 4-H Essential Elements note, the youth development field recognizes that positive development requires structure, support, skill-building, and "strong links between families, schools, and broader community resources." 4-H is uniquely positioned in Alaska to provide such opportunities to underserved youth.

**What has been done**

4-H is advantageous in its ability to leverage partnerships and resources, harnessing the power of carefully screened volunteers and evidence-based curricula to provide mentorship and guidance from caring adults in locations that other youth programs cannot reach. New activities that have expanded programming include polycultural and diversity themed workshops. In FY15, rural locations for programming included Tanana, Dillingham, Eagle and Lower Kalskag.

**Results**

Alaska 4-H was successful in increasing the number of youth identifying as American Indian or Alaska Native by just over 5%. They also increased the number of enrolled youth identifying as Native Hawaiian or Pacific Islander by 1%. For all minority groups, parity is met or exceeded in overall 4-H programming relative to state demographics. Of particular note are the leadership skills 4-H provided to Geneva Wright, who credits 4-H for helping her gain confidence: "I learned to be a leader and speak out." Wright traveled to the White House in 2015 as part of a 4-H delegation and spoke to President Obama about rural poverty in Tanana, her home village.

Wright recently graduated high school and is attending our land grant, UAF, intending to become a teacher in Alaska.

**4. Associated Knowledge Areas**

<b>KA Code</b>	<b>Knowledge Area</b>
806	Youth Development

**Outcome #4**

**1. Outcome Measures**

Outcome 4: 4-H educators will offer programming to underserved youth that addresses Alaska's high youth suicide rate.

**2. Associated Institution Types**

- 1862 Extension

**3a. Outcome Type:**

Change in Action Outcome Measure

**3b. Quantitative Outcome**

<b>Year</b>	<b>Actual</b>
2015	189

**3c. Qualitative Outcome or Impact Statement**

**Issue (Who cares and Why)**

The strength and future of Alaska is in its youth, families and communities. Connections to Life responds to research which indicates that youth/adult connections provided through programs such as 4-H are likely prevention measures to address the alarming rates of youth suicide in Alaska villages. The overarching goal is for youth to be engaged in activities which help them feel good about who they are, to have hope for the future, and to see themselves as active participants in their future. The Alaska regions selected for the project currently experience lower prevalence of youth suicide than other areas of the state, thus the need for a true prevention program.

**What has been done**

One hundred eighty-nine youth, in partnership with 30 adult mentors, continued to develop project-related skills as well as social competencies through engagement in regular physical activities. At least 20 percent were from a single parent family, at least 35 percent were Alaska Native, and approximately 16 percent are Coast Guard-related families. Youth resided in remote rural Alaska with some participating in the program in their home village and others through attendance at Alaska Native culture and values-based charter schools.

**Results**

End-of-project surveys indicated all 189 participants felt equipped to resist negative social pressures. The majority of participants felt supported by their friends, set goals for themselves, knew positive ways to deal with stress, and could identify caring friends and adults in their life they could go to for help. Behavioral effects were shown through the number of youth that formed stronger connections with others and their communities by volunteering for leadership and service roles. Examples include youth harvesting berries and making jam for a senior center; campers and club members signing up to serve as future counselors and mentors; and youth volunteering at the start of the 2015 Iditarod sled dog race. 4-H youth continue to distribute suicide prevention business cards they designed, and work with other youth across the state.

#### 4. Associated Knowledge Areas

KA Code	Knowledge Area
806	Youth Development

#### Outcome #5

##### 1. Outcome Measures

Outcome 5: 4-H will increase participation in international exchange programs. Counting number of youth who participate in exchanges or host international students.

##### 2. Associated Institution Types

- 1862 Extension

##### 3a. Outcome Type:

Change in Action Outcome Measure

##### 3b. Quantitative Outcome

Year	Actual
2015	31

##### 3c. Qualitative Outcome or Impact Statement

###### **Issue (Who cares and Why)**

The U.S. Department of Education believes that to succeed in the 21st Century workplace, students must develop knowledge and understanding of other countries, cultures, language and perspectives. Youth benefit by hosting international students in homestays and living with families in other countries to experience different cultures. Such experiences can ultimately inspire fulfillment of 4-H'er promises to not only better themselves, their clubs, communities and countries but also their world.

###### **What has been done**

A team of volunteers, leaders, and Extension faculty from across the state collaborated in order to increase participation in the 4-H global citizenship and exchange program. A statewide Tomodachi 4-H Global Citizenship and Exchange club was successfully launched. Youth participants elect their own leadership board and have a club mission statement, set club values,

and agree to adopt an annual global-citizenship project to work on together throughout the year.

### Results

Alaska 4-H was able to send 10 youth abroad: seven youth to Japan, two to Finland, and one to Costa Rica. In addition, 21 youth served as host siblings for inbound exchange youth from Norway and Japan. This represents a 25% increase over 2014 where 24 youth participated in exchanges or hosted international students. Summative satisfaction surveys indicated that all of the 18 LABO participants who responded felt satisfied with their experience and agreed they were "well cared for and felt safe" during their homestays.

## 4. Associated Knowledge Areas

KA Code	Knowledge Area
806	Youth Development

### 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

Communities are often separated by vast distances and/or are connected only by air or boat. This presents a challenge for program delivery and development and maintenance of relationships between club leaders and 4-H staff. It also presents challenges for groups of 4-H youth from different communities getting together. There is also a notable lack of adults in many remote communities who are willing to serve as 4-H volunteers. Travel time is also a factor in being able to meet face to face. Some of our local offices lack adequate technology resources to effectively use distance delivery methods to offset geographic and travel barriers. Better tech, especially in form of videoconferencing, mobile computing and video equipment, would help with this problem. Many communities lack resources and capacity for youth opportunities. At the same time, we see increasing need for out-of-school time activities, especially for teens. Many areas of the state lack sufficient job opportunities for youth to demonstrate job readiness skills. Internet resources for the training of leaders and links to curriculum available through other states have improved training, as has audio conferencing.

### V(I). Planned Program (Evaluation Studies)

#### Evaluation Results

The inclusion of up to two units for evaluation planning, data collection and analysis for FY15 has positively impacted data collection efforts. Below are descriptions of some of the

youth program-related outreach data our agents reported.

The use of 4-H Common Measures is also something we are working on at a statewide level. The state 4-H program leader piloted an end-of-year survey for youth in October 2014. There were 14 responses from youth in grades 4-7 and 12 responses from youth grades 8-12. Though a small survey, it was informative about how youth oriented to the measures, and gave us feedback on potential areas of success and potential areas of improvement. For example, all of the older youth agreed that "Being active is good for me" and "Physical activity will help me stay fit," and no youth answered "Never" when asked if they exercise at least 60 minutes a day and do moderate physical activities. Ten out of 12 said that to eat fruit or vegetables for a snack was "not hard at all." Two youth did indicate that eating smaller servings and lower fat foods was "very hard." For the younger group, respondents agreed or strongly agreed they encourage families to eat meals together but some disagreed that they are in touch with what their body needs or make healthy food choices whenever they can, pointing to an area where youth may need more support.

Common measures (CM) were also integrated into a post-camp evaluation. The Alaska Experience Camp has a skill building and sustainability focus, and CM questions related to science and diversity were asked, as well as some questions specific to camp learning objectives about safety and appreciation of nature. Of the 27 youth responding, all youth agreed or strongly agreed that they like to see how things are made or invented, and 22 agreed or strongly agreed that they want to learn more about science. Twenty-three agreed or strongly agreed they learned things that helped them make a difference in the community; three disagreed and one strongly disagreed. All 27 youth agreed or strongly agreed that they learned about people who are different than them, and they respect people from different cultures. Twenty-six agreed or strongly agreed that they understand better the importance of keeping natural areas healthy so people can enjoy them; only one disagreed. Twenty-five agreed or strongly agreed that as a result of the camp, they are more confident in their ability to be safe outdoors in Alaska, including in emergency situations; only two disagreed. Youth were also asked about barriers that may prevent them from engaging in related outdoors activities like hunting, fishing or target shooting. Youth reported challenges like costs involved and time devoted to school and homework, or personal distaste for hunting. The results will be used for future program planning. We often receive positive comments from our volunteers. For the online training, one participant stated, "What a wonderful program to build strong communities through teaching resilience." 4-H offers post-activity surveys for many of our programs. For example, the Tanana District periodically conducts evaluations on programs with the public, such as buyers in the market livestock program. Buyers are asked to evaluate the quality of the meat they are buying and their interaction with the youth.

Summative satisfaction surveys for the global exchange program indicated that all of the 18 LABO participants who responded felt satisfied with their experience and agreed they were "well cared for and felt safe" during their homestays.

## Key Items of Evaluation

Alaska 4-H is increasing its use of Common Measures (CM) to document the positive impact we are making on youth. Initial uses of CM questions show that the vast majority of youth providing feedback on programming are learning important life skills, staying active, gaining confidence, and appreciating other cultures.

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

**Program # 6**

**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
123	Management and Sustainability of Forest Resources	20%		0%	
125	Agroforestry	10%		0%	
131	Alternative Uses of Land	10%		0%	
205	Plant Management Systems	10%		0%	
511	New and Improved Non-Food Products and Processes	10%		0%	
803	Sociological and Technological Change Affecting Individuals, Families, and Communities	40%		0%	
	<b>Total</b>	100%		0%	

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

1. Actual amount of FTE/SYs expended this Program

Year: 2015	Extension		Research	
	1862	1890	1862	1890
<b>Plan</b>	1.0	0.0	2.1	0.0
<b>Actual Paid</b>	1.5	0.0	0.0	0.0
<b>Actual Volunteer</b>	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
60328	0	0	0
1862 Matching	1890 Matching	1862 Matching	1890 Matching
79960	0	0	0
1862 All Other	1890 All Other	1862 All Other	1890 All Other
354188	0	0	0

## V(D). Planned Program (Activity)

### 1. Brief description of the Activity

CES worked with communities on use of biomass products and with producers to develop value-added forest products. AFES/CES researchers will seek to assimilate all existing information on the total forest and crop biomass available in Alaska into one database, determine the gaps in the database and the information needed to fill the gaps. AFES research is reported in the Climate Change and Ecosystem Planned Program. Outreach will continue to work with communities and organizations regarding the use of biomass and with producers interested in biomass production.

### 2. Brief description of the target audience

The target audiences included producers and consumers, communities, agriculture and forestry businesses, industry leaders, entrepreneurs, individuals and groups concerned about the quality of the Alaska environment, public resource agencies, public and private resource managers, other faculty and researchers, and undergraduate and graduate students. Our efforts were directed toward environmentally and economically sustainable development and conservation of our natural resources that will benefit all citizens and help them adapt and become resilient as the climate changes. Advisors and the target audience include: State Board of Forestry, Society of American Foresters, Alaska Farm Bureau, and the Alaska Energy Authority, USDA Natural Resource Conservation Service, the USDA Forest Service, the Alaska Department of Natural Resources, borough governments, and Alaska Native corporations. Outreach efforts will address public education on the sustainability of biomass harvesting, new technologies and community planning.

### 3. How was eXtension used?

One CES employee is a member of the Extension Wildfire Information Network, Forest Health and Stewardship, and Wood Energy communities. The energy specialist is a member of the Home Energy community. Both are set up to accept questions through Ask an Expert.

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

### 1. Standard output measures



2015	Direct Contacts Adults	Indirect Contacts Adults	Direct Contacts Youth	Indirect Contacts Youth
Actual	918	0	366	0

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

Year: 2015  
 Actual: 0

**Patents listed**

**3. Publications (Standard General Output Measure)**

**Number of Peer Reviewed Publications**

2015	Extension	Research	Total
Actual	0	0	0

**V(F). State Defined Outputs**

**Output Target**

**Output #1**

**Output Measure**

- Output 1: Workshops, demonstrations, short courses, classes, field days and conferences organized and conducted.

Year	Actual
2015	48

**Output #2**

**Output Measure**

- Output 3: Bioenergy research projects conducted.  
 Not reporting on this Output for this Annual Report

**Output #3**

**Output Measure**

- Output 4: Bioenergy crop and technology publications submitted.  
 Not reporting on this Output for this Annual Report

**Output #4**

**Output Measure**

- Output 5: Community, organizations and one-on-one consultation concerning bio-based energy opportunities conducted.

<b>Year</b>	<b>Actual</b>
2015	161

**V(G). State Defined Outcomes**

**V. State Defined Outcomes Table of Content**

O. No.	OUTCOME NAME
1	Outcome 1: Identify crops suitable for sustainable production of bio-based energy in Alaska.
2	Outcome 2: Identify new value-added by-products from bio-based energy crops and woody species.
3	Outcome 3: Compile a forestry biomass database.
4	Outcome 4: Monitor adoption of bioenergy technologies.
5	Outcome 5. Increase community awareness about the use of biomass and other sustainable energies.
6	Outcome 6. Encourage adoption of do-it-yourself sustainable energy solutions. Measure is number of participants completing hands-on workshops.

**Outcome #1**

**1. Outcome Measures**

Outcome 1: Identify crops suitable for sustainable production of bio-based energy in Alaska.

Not Reporting on this Outcome Measure

**Outcome #2**

**1. Outcome Measures**

Outcome 2: Identify new value-added by-products from bio-based energy crops and woody species.

Not Reporting on this Outcome Measure

**Outcome #3**

**1. Outcome Measures**

Outcome 3: Compile a forestry biomass database.

Not Reporting on this Outcome Measure

**Outcome #4**

**1. Outcome Measures**

Outcome 4: Monitor adoption of bioenergy technologies.

**2. Associated Institution Types**

- 1862 Extension

**3a. Outcome Type:**

Change in Action Outcome Measure

**3b. Quantitative Outcome**

<b>Year</b>	<b>Actual</b>
2015	30

**3c. Qualitative Outcome or Impact Statement**

**Issue (Who cares and Why)**

Energy costs remain high, particularly in rural communities. Oil production in Alaska is slowing. Biomass can offer a lower-cost source of heat in areas where the forest supply is plentiful. Alaska communities want to see investment in local resources that are renewable, and that harvest and management of resources is compatible with local lifestyles and traditions.

**What has been done**

The Extension agent in Thorne Bay has broad experience working in rural communities on Prince of Wales Island and in Southern Southeast Alaska. The agent works with multiple stakeholders across such topics as biomass, natural resource management, tourism, economic development and community development, and chairs the Alaska Wood Energy Development Task Group (AWEDTG). The agent is able to stay informed on adoption of biomass technologies across the state because of both the AWEDTG and collaborations with agencies and organizations including the Alaska Energy Authority, US Forest Service and SeaAlaska.

**Results**

The AWEDTG facilitated by an Extension agent has funded over 70 prefeasibility studies since 2006 resulting in over 30 wood heat installations across the state, which represents a significant displacement of fossil fuels and costs savings to the entities adopting the technology. The Coffman Cove School in Thorne Bay installed a cordwood boiler in 2010 and in the past five years has only paid roughly \$25,000 heating the building, whereas before the school was spending \$45,000 per year.

**4. Associated Knowledge Areas**

<b>KA Code</b>	<b>Knowledge Area</b>
123	Management and Sustainability of Forest Resources
511	New and Improved Non-Food Products and Processes

**Outcome #5**

**1. Outcome Measures**

Outcome 5. Increase community awareness about the use of biomass and other sustainable energies.

**2. Associated Institution Types**

- 1862 Extension

**3a. Outcome Type:**

Change in Knowledge Outcome Measure

**3b. Quantitative Outcome**

<b>Year</b>	<b>Actual</b>
2015	133

**3c. Qualitative Outcome or Impact Statement**

**Issue (Who cares and Why)**

In the face of declining oil prices and production, there is a need for Alaska to invest in alternative energies. A fundamental shift in the state's energy focus requires constituent support to gain momentum. Community-level change begins with improving knowledge and awareness at the individual level, and Extension is uniquely situated as source of research-based information that can provide outreach across Alaska on relevant energy topics.

**What has been done**

Eleven workshops reaching 133 people were conducted covering topics including solar and wind renewables, wind for home use, solar for home, log home energy efficiency, responsible wood burning and biomass case studies.

**Results**

Post workshop evaluations indicated an increase in knowledge for participants regarding renewable energy sources such as biomass, wind and solar. Sixteen of 23 attendees returned surveys from three workshops in Anchorage. Four participants in an alternative energy workshop all rated it as "better than most" and listed at least one new skill they learned related to topics like safety and efficiency. Eight participants in a wind power workshop rated the experience average or above and half listed at least one new skill learned. Four participants in a remote energy workshop rated the value of the information an average of 4.75 out of 5 and all listed at least one example of how they can use the information.

**4. Associated Knowledge Areas**

<b>KA Code</b>	<b>Knowledge Area</b>
123	Management and Sustainability of Forest Resources
803	Sociological and Technological Change Affecting Individuals, Families, and Communities

**Outcome #6**

**1. Outcome Measures**

Outcome 6. Encourage adoption of do-it-yourself sustainable energy solutions. Measure is number of participants completing hands-on workshops.

**2. Associated Institution Types**

- 1862 Extension

**3a. Outcome Type:**

Change in Action Outcome Measure

**3b. Quantitative Outcome**

<b>Year</b>	<b>Actual</b>
2015	265

### 3c. Qualitative Outcome or Impact Statement

#### Issue (Who cares and Why)

Sustainable energy is an increasingly popular issue in Alaska where transportation and heating costs are prohibitive. Camping is a popular activity in Alaska, and there is always a need for alternative heat sources in emergency situations. Rocket stoves are a portable, efficient technology that make use of wood. Increasing knowledge and adoption of this technology will help address needs in Alaska for sustainable energy use.

#### What has been done

The Extension energy specialist held 15 workshops in 7 different areas across Interior, Southcentral and Southeast Alaska on building rocket stoves for off grid, home or emergency heat using inexpensive materials which burn small diameter or waste wood. Participants were given the opportunity to immediately put knowledge into practice by building rocket stoves during the workshops.

#### Results

Participants built their own rocket stoves in the workshops. Post workshop evaluations from 152 participants in workshops from Anchorage, Fairbanks, Delta, Juneau, Kenny Lake, Tok and Valdez indicated 150 respondents intend to use the information learned in the workshops and gave examples including for camping, hunting, emergencies, greenhouse or shop or home heating. Several participants also said they intended to teach the technique to others, or planned to build more smaller or larger stoves themselves. Two youth workshops in Bethel and Fairbanks resulted in 15 of 17 respondents agreeing they intend to use the information for camping, cooking or emergencies.

### 4. Associated Knowledge Areas

KA Code	Knowledge Area
123	Management and Sustainability of Forest Resources
803	Sociological and Technological Change Affecting Individuals, Families, and Communities

### 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

Alaska has been severely impacted by the falling price of crude oil. The university is funded largely through the state legislature, and has experienced budget cuts for the last seven years which dramatically affects programs. SNRE, in particular, has been impacted by

university policies that prevent the rehire of research and teaching faculty who move or retire. The resulting atrophy has resulted in the inability to rehire the faculty who were conducting this research. Extension continues to provide outreach on sustainable energy to the state.

## **V(I). Planned Program (Evaluation Studies)**

### **Evaluation Results**

The inclusion of up to two units for evaluation planning, data collection and analysis for FY15 has positively impacted the quantity and quality of data being collected on our programs. Below are descriptions of some of the alternative energy-related outreach data our agents reported. Post workshop evaluations indicated an increase in knowledge for participants regarding renewable energy sources such as biomass, wind and solar. Sixteen of 23 attendees returned surveys from three workshops in Anchorage. Four participants in an alternative energy workshop all rated it as "better than most" and listed at least one new skill they learned related to topics like safety and efficiency. Eight participants in a wind power workshop rated the experience average or above and half listed at least one new skill learned. Four participants in a remote energy workshop rated the value of the information an average of 4.75 out of 5 and all listed at least one example of how they can use the information.

### **Key Items of Evaluation**

All sixteen survey respondents from workshops on biomass, wind and solar energy indicated an increase in knowledge and over half listed at least one new skill learned. Our agents continue to collaborate and consult with local and statewide stakeholders to guide their program content and choices of topics and locations in order to meet client demand and knowledge needs of the state.



## VI. National Outcomes and Indicators

### 1. NIFA Selected Outcomes and Indicators

<b>Childhood Obesity (Outcome 1, Indicator 1.c)</b>	
0	Number of children and youth who reported eating more of healthy foods.
<b>Climate Change (Outcome 1, Indicator 4)</b>	
0	Number of new crop varieties, animal breeds, and genotypes with climate adaptive traits.
<b>Global Food Security and Hunger (Outcome 1, Indicator 4.a)</b>	
0	Number of participants adopting best practices and technologies resulting in increased yield, reduced inputs, increased efficiency, increased economic return, and/or conservation of resources.
<b>Global Food Security and Hunger (Outcome 2, Indicator 1)</b>	
0	Number of new or improved innovations developed for food enterprises.
<b>Food Safety (Outcome 1, Indicator 1)</b>	
0	Number of viable technologies developed or modified for the detection and
<b>Sustainable Energy (Outcome 3, Indicator 2)</b>	
0	Number of farmers who adopted a dedicated bioenergy crop
<b>Sustainable Energy (Outcome 3, Indicator 4)</b>	
0	Tons of feedstocks delivered.