

2015 University of Alaska Combined Research and Extension Plan of Work

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I. Plan Overview

1. Brief Summary about Plan Of Work

Alaska is recognized for its immense size and 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 national forest. The state also contains an array of mineral deposits, including gold, zinc, boron and molybdenum. 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 any teaching, research, extension and engagement programs.

The School of Natural Resources and Agricultural Sciences and the Agricultural and Forestry Experiment Stations (SNRAS/AFES) and the Cooperative Extension Service (CES) have successfully worked jointly as partners at UAF for many years. As of July 1, 2014, SNRAS/AFES and CES will officially merge and become known as the School of Natural Resources and Extension (SNRE) at UAF. While CES and AFES will be integral parts of SNRE, both will also maintain an identity based on purpose, CES as the outreach and engagement arm and AFES as the research arm of the new school. This formal association at UAF provides a direct link between faculty involved teaching, research and outreach under a single SNRE leadership. The finite nature of the state's nonrenewable resources and local and national controversies surrounding resource extraction and related environmental concerns affect the activities of the newly formed unit. UAF in general and SNRE, in particular, meet the challenges of increasing demands for research, education, outreach and community engagement that are relevant to sustainable management of Alaska's resources and bring communities' ideas to the university for further development of the state's resources.

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. 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 between researchers and natural resource users to deliver the latest research findings, educational and outreach opportunities.

Planned programs for purposes of this report will 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.

While Alaska imports a high percentage of foods and other agricultural products, 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.

Livestock enterprises will include dairy, beef, goat, swine, reindeer, poultry and nontraditional livestock species such as muskoxen, elk and wood bison. Producers need information specific to northern latitudes and plant production systems; protecting our rich natural resources and environment; ensuring an abundant and safe food supply through agriculture and food preservation education; preparing for and responding to economic as consumer demand increases due to changing preferences. As the population grows, more locally and regionally produced food will be needed to provide greater food security.

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. With the nation's highest rate of botulism, it is 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, where fuel oil runs \$8 or \$9 a gallon. Research and outreach has focused on new and alternative sources of energy, wood and biomass and energy conservation.

The mission of AFES 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 will be 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 correspond to the national priorities of enhanced 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 will publish research in scientific journals, conference proceedings, books, and in experiment station bulletins, circulars, newsletters, research progress reports and miscellaneous publications. Scientists will also disseminate their findings through conferences, public presentations, workshops and other public information programs like websites and blogs.

Cooperative Extension's mission is to educate, engage and support the people and communities of Alaska, connecting them with their university. It 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, nonformal education, including conferences, workshops and cooperative work with community, regional and tribal partners. . Outreach is also provided through more than 375 numbered publications; faculty consultations, newsletters and 18 Facebook sites dedicated to district information and subject matter such as gardening

and food preservation.

CES priorities address national priorities through helping families, youth and individuals be physically, mentally and emotionally healthy; enhancing workforce preparation and life skills; strengthening the profitability of animal 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, various regional and subject matter advisory groups, surveys and needs assessments.

There are strong linkages between CES and AFES through agriculture, forestry, and rural and economic development. The units work cooperatively as well as separately with other units within UAF, the University of Alaska statewide system, federal and state agencies, nongovernmental organizations, private industry, and through multistate collaborations with other universities. They will collectively and individually generate and disseminate knowledge to stakeholders who include K-12 students, higher education students, individuals, businesses, industry, government, nongovernmental organizations and families and communities throughout Alaska and the circumpolar North and the nation. CES will bring the university to Alaskans while bringing community concerns and issues back to the university.

STRATEGIC PLANNING PROCESS

State-defined planned programs address in more specific and concrete terms the different aspects of our mission to allow the concentration of resources (money and people) that will promote high-quality work. Planned programs will be used to provide guidance for faculty and administrators to direct new and current programs and find or retain faculty expertise. The identification of planned programs also represents a decision about topics that will not be emphasized. This POW provides assumptions that justify the adoption of each planned program and provides knowledge areas, specific long- and short-term goals, and measurements to access success in meeting these goals.

State-defined planned programs include Agriculture and Food Security, Natural Resources and Community Development, Healthy Individuals, Families and Communities, Youth Development, and Climate Change and Management of Ecosystems. Three planned programs listed in our previous Plans of Work have been combined with other planned programs for this report. Food Safety and Childhood Obesity are now part of the Healthy Individuals, Families and Communities planned program. Work in our former Agriculture and Horticulture and Global Food Security planned programs will be reported under the Agriculture and Food Security planned program.

The plan reflects ideas and advice given by client user groups, students, state advisory councils, state and national peers and cooperators, and UAF administration. The partnership with CES will strengthen the outreach component of AFES to meet the many needs for knowledge about Alaska and circumpolar resources and geography as opportunities for expansion present themselves.

The Plan of Work will strengthen the working relationship between the school, station and extension. Strong and growing relationships are essential to the success of our newly merged unit. We share goals and missions in our commitment to excellence in research, education, extension and outreach. With finite resources, we will achieve more by working together.

PLANNED PROGRAMS

Agriculture and Food Security

Alaska imports as much as 90 percent of foods and other agricultural products consumed in the state. Growers' products are primarily for in-state consumption and use, including fresh market potatoes and

vegetables, forages, grains and other livestock feeds, greenhouse flowers and vegetables and a variety of "niche market" crops and products. Commercial horticulture includes ornamentals, greenhouse operations, turf management, lawn maintenance and sod production. Proper knowledge and planning of soil-disturbing activities can prevent major impacts on other resources. Our soil laboratories provide information about Alaska soil fertility needs, microbial nutrients, moisture stress and more. Animal enterprises include dairy, beef, swine, reindeer, poultry and alternative non-traditional livestock such as muskox, elk and bison.

Agriculture research and outreach address areas of animal agriculture, home animal production, agronomic crops including cereal grains and forages, and home and commercial vegetable production. Agricultural soils, fertilizer and compost research and outreach are also part of this program area. Our statewide IPM education program has operated since 1981 assisting individuals to understand invasive pests and control options. Agriculture outreach includes the areas of animal agriculture, agroforestry and companion animals.

As Alaska expands its in-state consumption and export markets, producers will require increasing access to research-derived information specific to northern latitude environments as well as adoption of some knowledge derived from research in other states.

Natural Resources and Community Development

Communities will increasingly depend on Alaska's natural resources for viable economic development. Policies to sustain this growth that mirror sociological and technological change will be critical. Major Alaska resource development activities are now centered in the oil and gas industries. Headquarters for these industries are located in the urban centers where there is access to various transportation and advanced communication systems. However, urban communities lack infrastructure to engage in value-added activities that would enhance development of nonpetroleum industry. Most rural communities are off the road/rail system and communication is still somewhat limited. Some rural communities lack basic amenities such as adequate sanitation and efficient energy sources that would attract resource developers. Research is needed that will afford both urban and rural communities the opportunity to diversify their economies. Additionally, these efforts should provide underserved populations in rural areas real options for economic development and improved quality of life. Outreach addresses stakeholders' need for unbiased, science-based information about natural resource management issues in forestry, mining, water and community development.

The reduction of sea ice has generated great interest in marine shipping in the Arctic. The potential for community and economic development has initiated research assessments in the areas of safety, shipping trends, shipping lanes and regulations and climate trends. The goal will be to define global market demand, needed infrastructure development, navigation safety and affordable energy.

-Healthy Individuals, Families, and Communities

The Healthy Individuals, Families and Communities Program includes exercise and fitness, healthy lifestyle choices, nutrition, and diet and nutrition issues. Food safety programming will encompass food preservation, safety, preparation and product development. Food safety will utilize various resources and strategies to ensure that all types of foods are properly stored, prepared and preserved so that food is safe for consumption. Programming involves safety and preparation and preservation, including Alaska indigenous foods. In the area of human development, activities include lifespan development, transitions, grief and loss, and caregiver training. Consumer resource management includes areas such as estate planning, budgeting, transitions, financial management, time management and stress reduction. Home and energy Extension programming addresses indoor air quality, home maintenance and repair, building science and energy use and conservation. Emergency preparedness impacts such areas as families and

communities responding to natural and man-made disasters.

Increases in obesity have occurred rapidly. Changes in weight that have occurred over the past 15 years will have lasting impacts on the health of individuals and of the health-care system for decades to come. Outreach will address childhood obesity with nutrition education in the schools and nutritional and food budget programs in community venues as well as cooking programs that emphasize preparing healthy foods. Partnering with the Center for Alaska Native Health Research (CANHR), we will continue to address the challenge with a program that focuses on making healthy food choices and increasing physical activity. Training is conducted with youth, teachers, 4-H leaders, youth group organizers, parents and community partners to provide techniques for working directly with youth in the area of obesity. The outreach focuses on risk and protective factors influencing health of youth and adults. A new program funded by NIFA, Childhood Healthy Living (CHL) in cooperation with Hawaii and the American Pacific Islands brings this work to the indigenous people of the island nations who face similar issues. To provide youth and adults with the technology to produce healthy foods for healthy eating, We will prepare students for careers in agriculture and related fields such as economics, horticulture, marketing and nutrition with awareness of the conditions and demands required for sustainable high latitude food production. It will provide academic training in community-based food production and nutrition by building upon existing UAF degree programs in natural resources management and sustainability. A new course will be developed which will prepare students to work directly with families with young children in home, subsistence harvest and local food production settings.

Youth Development

This program promotes positive youth development through education with a focus on leadership skills, using 4-H Mission Mandates: Science, Engineering, and Technology; Healthy Lifestyles; and Citizenship. Organized 4-H clubs, school enrichment programs, after-school activities and summer camps will achieve youth development goals. The goal of Alaska's 4-H program is to support the maturation of youth from childhood to adulthood. Training throughout the state, using the Essential Elements of youth development, will be the foundation of all youth development programming. FFA is a large youth organization in the United States with diverse interests in the food, fiber and natural resource industries, encompassing science, business and technology in addition to production agriculture.

Climate Change and Ecosystem Management

Alaskans live in an environment that is unlike any other in the United States with unique features such as permafrost, the boreal forest and continuous summer daylight alternating with sustained winter darkness. Alaska's resources must be properly managed and cared for so its people can survive socially and economically in this harsh environment, and for the long-term health of its living systems. The soils, forests, tundra, grasslands and animals of Alaska have long been valued by its people, who have lived close to these resources for many generations and now face the need to adapt to a changing environment. Alaska's resources offer many opportunities, but also many natural limitations that must be known and respected if they are to be developed and used successfully and in a way that can be sustained over the long term. This planned program will play a pivotal role in teaching and providing information about management of Alaska and northern ecosystems. Knowledge of permafrost soils will be essential to maintain existing ground transportation corridors, plan for new corridors and determine appropriate building technologies as the climate changes and permafrost-laden soils become more discontinuous. Management of the boreal and Southeast Alaska forests will play an increasing role in fire disturbance and adaptation to climate change. Their understory and tree species will be instrumental in providing market products developed from botanicals. Alaska's forests will have an important role in Alaska's energy future. Geographical Information Systems (GIS) and climate change modeling assist natural resource managers and a broad array of stakeholders, who need to understand the concepts and practice of creating,

analyzing and displaying spatially referenced natural resource and human community data and plan for new dynamics in ecosystems, both physical and human as well as climate change.

Sustainable Energy

Alaska's forest and agricultural resource potential for bioenergy production is immense but largely unknown. The economic potential of Alaska's forests is under-realized in timber and nontimber products. The potential for Alaska to develop new agricultural land is also under-realized. Furthermore, agricultural lands that are currently in the Conservation Reserve Program (CRP) may lend themselves to sustainable production of bioenergy. The forest ecosystem and agricultural lands can play a role in diversifying the economy of Alaska.

State leaders are developing both renewable and nonrenewable natural resources to contribute to the economic well-being of their citizens without compromising ecological integrity and biodiversity. To be sustainable, any development activities require production practices that balance technologies and economic necessity with environmental imperatives. Concern for the health and survival of resource biodiversity will continue to be a central issue in resources management in Alaska and elsewhere.

As energy continues to become a growing concern throughout the world, the boreal forest has the potential to provide products for the production of fuel alternatives to petroleum and coal. Economic development efforts continue with the goal to offset high energy costs and provide local alternatives to petroleum products, especially for rural communities.

Estimated Number of Professional FTEs/SYs total in the State.

Year	Extension		Research	
	1862	1890	1862	1890
2015	41.8	0.0	23.0	0.0
2016	41.8	0.0	23.0	0.0
2017	41.8	0.0	23.0	0.0
2018	41.8	0.0	21.0	0.0
2019	44.8	0.0	21.0	0.0

II. Merit Review Process

1. The Merit Review Process that will be Employed during the 5-Year POW Cycle

- 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 (AFES) uses an established scientific peer review process to review and evaluate proposals, publications and specific annual reports that could 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.

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, peer-reviewed publications and specific annual reports that could include annual progress of work accomplished under this Plan of Work. All new and revised Hatch (and McIntire-Stennis) project proposals within the Agricultural and Forestry Experiment Station undergo scientific peer review. All proposals are submitted for director approval. 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 specific review process can be found in the Section I.G. "Summary of the Western Review Process" in the Supplementary Manual of Procedures for Western Regional Research and also found at <http://www.colostate.edu/Orgs/WAAESD/>. All faculty in AFES 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 in which they are a member. The associate director of AFES is a member of the MRC.

Extension's evaluation specialist will conduct program outcome and impact evaluations and work with faculty to evaluate individual programs. Strategic plan committees are reviewing how programs reflect goals stated in its 2010 Strategic Plan. Many individual programs are evaluated, including workshops and conferences. Extension will examine particular programs on a more regular basis in the future.

Peer review of the Extension components of the POW consist of internal and external reviews. Internal review of the Extension components of the POW is achieved by a panel of University of Alaska Fairbanks faculty and administrators. Extension's State Advisory Council conducted external reviews of programs. The different review panels assessed how well the activities and resources proposed in the plan contribute to achieving the proposed goals and established emphasis on climate change, chronic health issues, food security and safety, economic development, positive youth development and renewable energy as priorities for the future. Collective feedback from reviews is incorporated into the future iterations of the Extension components of the Plan of Work.

Extension developed outreach metrics in 2010 for the 2011 accreditation of the university by the Northwest Accreditation Commission. The accreditation covers Extension's outreach process, indicators and outcomes. The next round in the accreditation process is developing a strategic plan for the university, where engagement is a major theme. Extension outreach

processes and measurements will be embedded in the new strategic plan. CES provides information to the university annually as part of its accreditation process.

III. Evaluation of Multis & Joint Activities

1. How will the planned programs address the critical issues of strategic importance, including those identified by the stakeholders?

AFES and CES are centric to carrying out the land-grant mission for the University of Alaska. The school, CES and experiment station have a statewide mission and operate major facilities in Fairbanks and Palmer, have three research sites in Delta, Nome and Bonanza Creek along with research projects throughout Alaska. CES operates nine district offices around the state along with three affiliated offices. Planned programs were developed based on needs expressed by stakeholder groups.

AFES is funded by state general funds that include appropriations, indirect cost recovery and tuition, federal land grant program dollars, competitive research grants and income from sales and leases. Research is carried out in response to identified needs for fundamental and practical knowledge. Some indications of the demand for AFES research are: 1) topics consistently found in calls for research proposals, 2) research considered especially important in the natural resources field by society at large, and 3) research problems identified by many different funding sources as important over the long term. Some of the sponsors and partners that define research priorities are the stakeholders: the Alaska Legislature, the Alaska Department of Natural Resources, which includes the Division of Agriculture and Division of Forestry, and Alaska natural resource industries. Federal stakeholders include the U.S. Forest Service, and the National Institute of Food and Agriculture, National Science Foundation, Bureau of Land Management, Bureau of Indian Affairs, U.S. Geological Survey, National Park Service, U.S. Biological Survey, EPA and the Department of Energy. The new unit will be developing a strategic plan that reflects research and outreach priorities. The strategic plan developed by the former School of Natural Resources and Agricultural Sciences continues to emphasize sustainable agriculture, energy, climate change, and community and workforce development. It will incorporate work in ecosystem management, high latitude agriculture and soils, community development and recreation.

Extension outreach programming is conducted in response to identified stakeholder needs and interests. On a statewide level, the CES State Advisory Council is an important mechanism for gathering stakeholder input. Faculty and staff also routinely conduct formal and informal stakeholder needs assessments within their local communities to determine appropriate program priorities. The strategic plans of the University of Alaska Fairbanks were developed with extensive public input and provide guidance for CES. While developing a new five-year strategic plan in 2010, Extension surveyed stakeholders who attended its classes, advertised and conducted an online survey and commissioned a statewide random telephone poll. These needs assessments provided direction for Extension programs through 2015. Areas of focus include food safety and security; health; climate change; energy; youth, family and community; and economic development. These priorities must be addressed in faculty workloads.

The NIFA priorities of climate change, sustainable energy, childhood obesity, food safety and global food security are incorporated into our Plan of Work. Other important organizational stakeholders that influence CES programming include, but are not limited to the Alaska Legislature, the Alaska Departments of Natural Resources, Commerce, Community & Economic Development, Health and Social Services, and Environmental Conservation. Also,

the U.S. Department of Agriculture, National Institute of Food and Agriculture, U.S. Forest Service, Rural Development, U.S. Department of the Interior, Bureau of Land Management, U.S. Fish and Wildlife Service and U.S. Department of Energy. Many community partners guide Extension's work.

2. How will the planned programs address the needs of under-served and under-represented populations of the State(s)?

Multistate research projects and committees include (W-2112) Reproductive Performance in Domestic Ruminants; NE1962: Outdoor Recreation, Parks and Other Green Environments: Understanding Human and Community Benefits and Mechanisms; WERA 1008: Rangelands West Partnership; NCERA 101: Controlled Environment Technology and Use; WERA1004: Agricultural and Community Development in the American Pacific; WERA 1016: Adaptation, Quality and Management of Sustainable Cellulosics Biofuel Crops in the West; NC1179: Food, Fuel, and Fiber: Security Under a Changing Climate.

NE1037: Wood Utilization Research: Biofuels, Bioproducts, Hybrid Biomaterials Composites Production, and Traditional Forest Products; WDC28: Coordination of Western Regional Extension Forestry Activities; WERA1017: Coordination of Integrated Pest Management Research and Extension/Educational Programs for the Western States and Pacific Basin Territories; and WERA1020: Western Region Multistate Coordinating Committee on Water Resources.

Agricultural projects bring research and outreach to rural residents who are transitioning from hunter gatherers alone, to subsistence producers and consumers, as well as developing agricultural industries.

Indigenous people make up about 16 percent of Alaska's population. Despite urbanization, many Alaska Natives live in isolated rural villages that are often inaccessible by surface

transportation. A whole or partial subsistence lifestyle is practiced by many Alaska Natives as well as many rural residents. CES has extensive resources related to safe food preparation and preservation that supplement traditional methods. A series of 22 online food preservation modules and a DVD series provide residents of underserved communities a way to access programming. A predominant focus of the CES Natural Resource and Community Development program will be on rural and urban community development, often with an emphasis on Alaska Native communities.

CES has a tradition of working with underserved populations. One-fifth of our 4-H participants live in remote or rural Alaska and nearly one-fifth are Alaska Native. The Alaska 4-H Program will work with the rural communities in the Interior, Southwest and Southeast Alaska to provide mentoring and positive youth development programs. 4-H works with volunteers in rural villages to provide youth programming.

CES has a successful Expanded Food and Nutrition Education Program (EFNEP) and it is Alaska's Supplemental Nutrition Assistance Program-Education (SNAP-Ed) provider. Extension works with other agencies to coordinate an annual in-service training for rural teachers aimed at improving math and science literacy in rural Alaska. The training revolves around a salmon incubation project. More than half the Anchorage School District is comprised of minority populations and our agent has provided training on 4-H curriculum to teachers at low-income schools. A refugee gardening program in Anchorage teaches immigrants how to garden in a new environment and sell their produce at farmers markets.

All CES agents strive to work with underserved populations, but agents in Nome and

Bethel, particularly, serve a large Native constituency. CES and the City of Bethel have an 19-year partnership to run a Bethel youth center with youth programming. Many agents offer programs in rural Alaska, in the areas of youth programming, agriculture and horticulture, home energy, food preservation and community development. Four Alaska Natives serve on the CES State Advisory Council and Western and Southwest Alaska have seats on the council.

An increased interest in growing local, even in rural Alaska, has led to a number of gardening workshops in those areas and increased interest in the online Master Gardening program. The university videoconference network and a statewide videoconference network at libraries has allowed Extension to reach clients in many underserved communities to offer food safety training, nutrition education, horticultural and other outreach.

JOINT ACTIVITIES: The Reindeer Research Program partners with Kawerak Inc., a non-profit Native association, as well as Reindeer Owners and Breeders Association (ROBA) to provide best management practices as producers enter the commercial high quality meat market. The high quality feed developed and nutritional guidelines being developed aim at producing excellent reindeer meat. A mobile slaughterhouse purchased with funds from a joint grant between AFES and the UAF Northwest Campus in Nome will continue the research and education programs in Savoonga, on a remote island in the Bering Sea. AFES is working with the University of Hawaii community college system's culinary program and has a marketing study in partnership with Alaska Homegrown, a retailer in Fairbanks. A researcher is partnering with the National Park Service to conduct local interviews concerning the effect of a new road into a rural area currently off the road system. Work is continuing with the National Park Service and the Bureau of Land Management to provide information to guide management plans in rural areas. Data collection and analysis continues on growth and yield information on trees involving state, federal and Native partners to agricultural soil nutrition. Collaborative work will continue with federal and state partners, universities, both domestic and international, Native corporations and private landowners to address climate change issues related to agriculture and forestry.

An AFES/CES forester will serve on a Western Development Committee to coordinate Western region Extension forestry activities. The AFES/CES forester advises individuals and organizations on forestry issues and provides wood energy and wood products outreach to underserved communities. The Federally Recognized Tribes Extension Program, (FRTEP) serves over 40 Interior Alaska Native villages, and a second FRTEP agent has begun serving Dillingham and the Bristol Bay Native Association clients. The agents work with the Bristol Bay Native Association and the Tanana Chiefs Conference. 4-H is also involved with a multistate effort regarding culturally responsive programs for youth and a national mentoring network with other institutions that offer programs to Native Americans. CES also partners with Kawarek Inc. on continuing staff training for a day care center in Nome and for energy outreach. Energy outreach is also coordinated through the Tanana Chiefs Conference and Ilisagvik College in Barrow.

3. How will the planned programs describe the expected outcomes and impacts?

Within each planned program we have listed individual research projects that will represent our Hatch general and multistate portfolio. The planned programs will then list outcomes we expect to accomplish over the next five-year period in those specific projects. We will document yearly progress in our annual report of accomplishments. We would expect some projects to have immediate impacts while other may take three to five years to reach a documented impact.

CES is committed to greater program accountability, particularly measuring outcomes and impacts. CES's past experience has focused on measuring outputs (number of workshops offered, number of workshop participants, number of publications distributed, etc.) versus measuring outcomes and impacts. The NIFA plan of work requirement to increase measurement of outcomes and impacts has provided the impetus for CES to strengthen its program evaluation. It will be an evolutionary process in which faculty gain experience and comfort with outcome and impact assessment as well as including planning for evaluation during the program planning phase. CES has an evaluation specialist who will help faculty measure the impacts and outcomes of their programs. Faculty are also asked to assess impacts of their programs on their activity reports.

4. How will the planned programs result in improved program effectiveness and/or

The University of Alaska Fairbanks in general and AFES in particular have a limited number of faculty and limited funds to meet the diverse research and educational needs in Alaska. Our strategic plan of 2013 reconfirmed high priority natural resource-related problems, based primarily on stakeholder input. We use these priorities, combined with current faculty expertise, available physical facilities and funding opportunities, to develop planned programs in four areas of emphasis. The areas of concentration are sustainable agriculture, energy, climate change, and community and workforce development. We are committed to:

- Improving efficiency of resource management in Alaska through improved transfer of critical information to resource users and the public.
- Hiring only new faculty who specifically have expertise to meet the educational and research goals in the strategic plan, thereby increasing capabilities to meet these goals.
- Enhancing distance delivery capabilities.
- Continuing to seek ways to enhance stakeholder input to help identify priority research and education areas, especially as needs shift.
- Enhancing research partnerships with public agencies and private entities.

The POW process that stresses outcomes and impacts is encouraging CES faculty to devote more effort to planning for program evaluation and conducting additional and more thorough post-program assessments. With reliable and valid program assessment information, CES will be better able to determine program effectiveness, social benefit and cost effectiveness of programs, which is critical information for future resource allocation decisions. The NIFA POW requirement to generate outcome and impact-oriented objectives with related accountability expectations has led CES faculty to focus resources on fewer high priority issues.

CES faculty were charged with developing the logic models for each of the CES-focused POW planned programs. Faculty ownership of the planned programs and responsibility for achieving the planned outcomes and impacts goes beyond reporting outputs. CES administration will provide faculty with guidance and support to assist them in their efforts to become better program planners and evaluators to ensure that programming responds to organizational priorities and that programs offered are assessed in relation to expected outcomes and impacts.

Due to limited travel dollars, CES will emphasize distance delivery of programs via the videoconferencing systems operated by the university and by libraries around the state. Trainings that have been offered to clients by videoconference include Master Gardener and gardener training, food safety, pesticide safety certification, certified food protection manager, meal planning, septic safety and more. A recent small business workshop series was videoconferenced to nine communities from Southeast to Kotzebue. The CES director communicates to all of Alaska Extension using the videoconference network several times a year. The videoconference network is also used for faculty training, and faculty and staff in specific program areas regularly communicate by audio conference.

IV. Stakeholder Input

1. Actions taken to seek stakeholder input that encourages 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 (SNRAS Website, Newsletter & Blog, CES Facebook pages)

Brief explanation.

Standard operations procedures from published literature will be used. The techniques used will depend on the appropriateness of the data needed and the type of research or outreach project involved. AFES has traditionally met with regional audiences around the state in both formal and informal settings each year. Examples of these audiences include:

- Regional and Statewide Farm Bureau
- Alaska Community Agriculture Association
- Delta Farm Forum
- Alaska greenhouse growers
- Kawerak Inc.
- Reindeer Herders Association
- Alaska Northern Forest Cooperative
- Alaska Diversified Livestock Association
- Alaska Peony Growers Association
- Economic development associations/corporations in Fairbanks, Juneau and Anchorage
- Soil and water conservation districts
- Borough and city governments
- Alaska Native village and regional corporations and tribal organizations
- On-demand meetings at the request of stakeholders

Traditional meetings will continue to be focal points for listening to and receiving input from stakeholders. As required by the AREERA of 1998 and in cooperation with CES, these will be advertised as broadly as possible and identified as points of contact for public input into research and outreach program development.

CES sponsors agricultural and horticultural conferences and outreach activities with SNRAS/AFES participation where the units gather formal and informal stakeholder input. CES also relies on advisory groups as an important stakeholder needs assessment process. CES has a

Statewide Advisory Council and faculty in districts across the state use local advisory boards to provide them with community input related to local programming. The CES advisory council meets face-to-face twice each year and holds audio conferences several times a year. CES faculty also conduct formal needs assessments within their district as a part of program planning and development.

2(A). A brief statement of the process that will be 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.

AFES relies on stakeholder input from the advisory council, agricultural 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. Major stakeholders include the Fairbanks North Star Borough, Matanuska-Susitna Borough, Alaska Northern Forest Cooperative, USDA/NRCS, U.S. Forest Service, Fairbanks Economic Development Corporation, Soil and Water Conservation Subdistricts, Alaska Department of Natural Resources and industries involved in food, fiber and fuel/energy production.

Members from the public who have participated in or who have an interest in CES program offerings represent one segment of the organization's stakeholders. Stakeholders often identify themselves by emailing or calling Extension faculty or staff. Advisory groups also lead us to stakeholders. Another significant stakeholder group is public and private agencies and organizations that have professional and programmatic relationships with Extension or direct interest in Extension programming. Some of CES's major stakeholder organizations include but are not limited to the Alaska State Legislature, Farm Bureau, Grange, Greenhouse Growers, food banks, schools, Alaska Department of Natural Resources, U.S. Forest Service and Alaska Boys and Girls Clubs.

The 12-member CES State Advisory Council is elected by the council. The council selects candidates from individuals who apply for membership based upon a call for applications advertised to the public and from recommendations from CES employees in all regions.

2(B). A brief statement of the process that will be 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.

Survey information will be collected using formal survey preparation and analysis techniques. Conferences, meetings and workshops are scheduled around themes and to gather specific information. The information generated is collected in meeting minutes and transcripts and is used in strategic planning of research and extension programs. The objective is to generate a feedback loop that provides information to research and outreach programs and from research and outreach programs to stakeholders and individuals.

Extension collects stakeholder input through surveys following conferences and workshops, by email surveys, and through public presentations made to a variety of groups and agencies. Input is also collected individually by agents who work with stakeholders and through advisory groups. More than 20 Facebook pages also provide stakeholder input.

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.

AFES joint research and outreach planned programs are directly related to the strategic plan developed by the faculty in 2007. The plan reflects ideas and advice given by AFES client user groups, students, expert advisors, state and national peers and cooperators and UAF administration. This plan is currently under review and being updated.

During the 2008 reporting period, the four focus areas of energy, climate change, local and regional food production and food safety emerged. The need for adult and

youth education and training to fill Alaskan job and career demands also became more apparent.

While still operating with the NIFA priorities, AFES is undergoing a reorganization and strategic reassessment as the merger transition proceeds. During this process the School of Natural Resources and Extension will continue to serve the needs of the citizens of the state of Alaska.

A new strategic plan for CES was completed in 2010 and incorporated suggestions from stakeholders. Needs assessments help CES faculty identify emerging issues. Individual work plans are generated by faculty using this information and the strategic plan. Based upon information generated by the needs assessments, future programming needs related to hiring have been affected. Stakeholder needs will continue to be a driving factor in determining CES priorities for programming. Requests for specific speakers and topics at conferences guide the conference agenda and requests for programming help shape what is offered.

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