2010 University of Alaska Combined Research and Extension Plan of Work

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I. Plan Overview

1. Brief Summary about Plan Of Work

INTRODUCTION

The University of Alaska Fairbanks' School of Natural Resources and Agricultural Sciences (SNRAS), Agricultural and Forestry Experiment Station (AFES), and Cooperative Extension Service (CES) are dedicated to providing research, education and outreach relevant to the sustainable development and use of Alaska's natural resources; developing new economic opportunities; and improving the quality of life in Alaska and the circumpolar north. The SNRAS, AFES, and CES carry out the land-grant mission for the University of Alaska Fairbanks.

The land-grant system is a partnership between the federal government and the states through matching funds to universities that agree to maintain programs of research, instruction, and public service in planned programs of agriculture, natural resources, and sustaining individuals, families and communities with activities relevant to that state, the nation, and the world. A special characteristic of land-grant programs is their commitment to develop and apply knowledge important in the real world for the successful long-term management of natural resources to meet both human needs and values.

The School and Experiment Station (SNRAS/AFES) operate major facilities in Fairbanks and Palmer, research sites at Delta Junction, Nome, and Bonanza Creek and manage research projects located throughout Alaska. SNRAS/AFES is organized into four departments: Forest Sciences, Geography, High Latitude Agriculture, and Resources Management.

CES is housed in the Office of the Provost at the Fairbanks campus and operates programs in Agriculture/Horticulture, Natural Resources and Community Development, Home/Health/Family Development, and Positive Youth Development/4-H in eight districts around the state.

AFES and CES are funded by federal capacity funds. All units receive state matching funds, as well as other state appropriations, state and federal grant funds, and private funding. SNRAS/AFES is estimating professional SYs on total capacity funds received that includes Hatch, Hatch Multistate and McIntire-Stennis funding sources. CES estimates FTE's on Smith-Lever 3, B and C funding. Although linkage between the units is not administratively mandated at the University of Alaska Fairbanks, they are linked by federal legislation, joint funding, and this joint Plan of Work.

Alaska is recognized for its immense size and sparse population and its cultural, geographic and environmental diversity. Alaska represents a major region of renewable and non-renewable natural resources in the United States. Its 365 million acres include the nation's largest oil reserves and coal deposits. 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 and fiber 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 and shellfish that support thriving commercial, sport and subsistence fisheries. Alaska's natural resources have historically been the foundation of the state's economy. Thus, the use and management of these resources is a predominant force in the planning and delivery of any teaching, research, extension, and outreach programs. The finite nature of the state's non-renewable resources and local and national controversies surrounding resource extraction and related environmental concerns affect the activities of SNRAS/AFES and CES. The University of Alaska Fairbanks in general and SNRAS/AFES and CES in particular, must meet the challenges to fulfill ever increasing demands for research, education and outreach relevant to sustainable management of the development and use of Alaska's resources.

Alaska faces many choices and challenges in the use and development of its resources. In the last three decades of the 20th century, Alaska's economy became dependent upon revenues related to petroleum development. To diversify its economy, the state must begin looking toward non-petroleum natural resources for economic opportunities that are cost-effective, sustainable, and beneficial to Alaska. Facing these challenges and taking advantage of opportunities to properly manage resources for the long term requires the application of special in-depth knowledge. The programs of SNRAS/AFES and CES give Alaska's resource owners and users essential components of this knowledge. CES plays a vital role in linking the knowledge generated by SNRAS/AFES, the University of Alaska Fairbanks, the University of Alaska and other information sources to meet the needs and interests of Alaskans while providing citizens a way to influence future research and education priorities. CES will be a critical partner for the university as a whole in providing a two-way linkage between researchers and producers to deliver the latest research findings and educational and outreach opportunities.

Alaska imports a high percentage of foods and other agricultural products consumed in the state. Growers in the agricultural sector produce products primarily for in-state consumption including fresh market potatoes and vegetables; forages, grains, and manufactured livestock feeds; controlled environment products including bedding plants, florals, landscape ornamentals, short season vegetables and a variety of "niche market" crops. Livestock enterprises include dairy, beef, swine, reindeer, and alternative game animals such as muskoxen, elk, and bison. Producers will require increasing information specific

to northern latitudes as consumer demand increases due to changing preference and a growing population. Futhermore, as transport cost increase and Alaska population grows, more food will need to be produced locally.

MISSION STATEMENTS

The mission of SNRAS/AFES is to "generate and provide knowledge and train students for successful long-term management of natural renewable resources in Alaska and the circumpolar world, and to discover, describe, explain, and interpret the spatial characteristics of the northern regions of the earth." The School and Experiment Station are committed to assisting and training natural resource managers who make and implement decisions to develop, sustain, or protect natural systems to meet human needs and values.

The mission of CES is "to interpret and extend relevant research-based knowledge in an understandable and usable form; to encourage the application of this knowledge to solve the problems and meet the challenges that face the people of Alaska; and to bring the concerns of the community back to the university." CES is committed to promoting the sustainability and economic security of individuals, families and communities by providing practical, non-formal education services that promote the wise use of natural resources, respect for cultural and ethnic diversity, and being responsive to emerging stakeholder needs and interests.

LINKAGES

There are strong linkages between CES and SNRAS/AFES to support agriculture, horticulture, forestry, and rural and economic development. The units work cooperatively as well as separately with other units within UAF, the University of Alaska state-wide system, federal and state agencies, non-governmental organizations, private industry; and through multi-state collaborations with other land-grant universities. They collectively and individually generate and disseminate knowledge to stakeholders who include higher education students, individuals, businesses, industry, government, non-governmental organizations and communities throughout Alaska and the circumpolar north and the nation. CES brings the university to Alaskans and community concerns back to the university.

MERIT REVIEW PROCESS

The SNRAS/AFES uses an established scientific peer review process to review and evaluate narratives that are required to report activities related to the POW. CES uses the merit review process and will use a general review process for this joint POW.

EVALUATION OF MULTISTATE AND JOINT ACTIVITIES

When state and national research priorities match the SNRAS/AFES programmatic focus and capabilities, our research programs direct their attention to these topics and seek support or partnerships. Outreach and extension programming carried out by CES are conducted in response to identified stakeholder needs and interests.

STAKEHOLDER INPUT

CES jointly sponsors many agricultural and horticultural conferences and outreach activities with SNRAS/AFES where the units share mechanisms to 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 that use local advisory committees to provide them with community input related to local program stakeholder needs and interests. The SNRAS/AFES Board Of Advisors meets with the Dean, Director, Department Chairs, and selected faculty and students to assist in establishing priorities and developing program direction in consultation with appropriate constituencies.

STRATEGIC PLANNING PROCESS

Planned programs define 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.

Planned programs include Agriculture and Horticulture, Natural Resources and Community Development, Sustainable Individuals, Families, and Communities, Youth Development, and Management of Ecosystems. The Plan reflects ideas and advice given by AFES and CES client user groups, students, the Board of Advisors/State Advisory Council, panels of expert advisors representing clientele, 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, both as opportunities for expansion present themselves.

The Agriculture and Horticulture program contains the integrated pest management activities which were separated out in the 2008 POW High Latitude Agriculture and relevant components of High Latitude Soils. CES is taking the lead in crafting Alaska’s response to invasive weeds, noxious plants and pest management before they become the problems they are in the 48 contiguous states of the United States. This planned program seeks closer ties between extension programming with research, education and outreach activities in the High Latitude Agriculture Department in SNRAS/AFES. Sustainable Individuals, Families, and Communities contains research and outreach elements that compliment research projects in SNRAS/AFES,

where collaboration will assist in food product development and economic impact analysis. A multi-disciplinary approach will highlight Alaska local-grown, high quality food products. Youth Development is changing with the complexion of the state in terms of participation and interests. Focus group sessions for the Natural Resources and Community Development program area resulted in a community-driven problem-solving design based on themes. We are also merging this planned program with the AFES Natural Resource Use and Allocation program to create synergy between faculty and activities. Community development is a critical need for rural Alaska and is dependent upon the development of natural resources abundant in rural areas. Management of Ecosystems is inclusive of the former Geographic Information Systems and High Latitude Soils activity that is not included in Agriculture and Horticulture, and supports agency clientele and others studying climate change.

This Plan of Work will help strengthen the working relationship between SNRAS/AFES and CES. Strong and growing relationships between SNRAS/AFES and CES are essential to the success of both units. 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 Horticulture

Currently, Alaska imports a high percentage (at least 90 %) of foods and other agricultural products consumed in the state. Growers in the agricultural sector produce products primarily for in-state consumption and use including fresh market potatoes and vegetables, forages, grains, and other livestock feeds, greenhouse vegetables, flowers, and ornamentals, and a variety of 'niche market' crops and products. Animal enterprises include dairy, beef, swine, reindeer, and alternative game animals such as muskox, elk, and bison.

As Alaska expands its in-state consumption and export markets, our producers will require increasing access to research derived information specific for our northern latitude environment as well as adoption of knowledge derived from research in other states. Cost of energy and consumption of petroleum products is a growing concern. Energy crops will be important in Alaska as will crop response to climate change and a focus on local food production. Agriculture and horticulture outreach includes the areas of animal agriculture, agro-forestry, home animal production and companion animals. Service in agronomy includes cereal grains, forages, and land management. CES has operated a collaborative, statewide IPM education program since 1981, helping individuals understand invasive pests and control options. Commercial horticulture includes fruit and vegetable production, 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. AFES operates soil laboratories in Alaska as a major source of information about Alaska soils.

Sustainable Individuals, Families, and Communities

CES’s Sustainable Individuals, Families and Communities Program include food preservation, food safety, food preparation, food product development, Alaska indigenous foods, exercise and fitness, healthy lifestyle choices, nutrition, and diet and nutrition issues. 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, stress reduction. Homes and Energy CES includes indoor air quality, home maintenance and repair, building science and energy use and conservation. Emergency Preparedness includes areas such as families and communities responding to natural and manmade disasters.

Management of Ecosystems

Alaskans live in an environment, the circumpolar north 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 in order for its people to survive socially and economically, 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 either lived close to these resources for many generations, or who 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 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. 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 as a part of ecosystem management assists natural resource managers, and increasingly 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.

Natural Resource and Community Development

Communities will increasingly depend on Alaska’s natural resources for viable economic development. Policy to sustain this growth that mirrors sociological and technological change will be critical. Major Alaska resource development activities are centered in the oil and gas industries. These are located in the urban centers where there is access to multi-modal transportation and advanced communication systems. However, urban communities lack infrastructure to engage in

value-added activities that would enhance development of non-petroleum 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 issues in forestry, mining, water and community development.

Youth Development

This program promotes positive youth development through education with a focus on leadership skills, using4-H Mission Mandates: Science, Engineering, and Technology; Healthy Lifestyles; and Citizenship. 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.

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

Year	Extension		Research	
	1862	1890	1862	1890
2010	30.0	0.0	20.4	0.0
2011	30.0	0.0	21.8	0.0
2012	30.0	0.0	21.8	0.0
2013	30.0	0.0	22.0	0.0
2014	30.0	0.0	22.0	0.0

II. Merit Review Process

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

- {NO DATA ENTERED}

2. Brief Explanation

The School of Natural Resources and Agricultural Sciences and the Agricultural and Forestry Experiment Station uses its 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 will use a general review process for this joint POW.

The Agricultural and Forestry Experiment Station 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 that could include annual progress of work accomplished under this POW. All new and revised Hatch (and McIntire-Stennis) project proposals within the Agricultural and Forestry Experiment Station undergo scientific peer review. At present we are using the process established by NSF and NRI. Previously we had used the Hatch and McIntire-Stennis Administrative Manual's Appendix F "Essentials of a Project Proposal", which is less stringent. All proposals are submitted to the Director of the Agricultural and Forestry Experiment Station. The blind peer review panel is composed of a minimum of three members who are appointed by the Director. The panel consists of competent authorities in the discipline of the proposal/publication/annual report or related disciplines and includes at least one authority in a supporting discipline. 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 Director for transmittal to the author(s). The author(s) review all comments and recommendations of the reviewers and make adjustments

or explanations in the document. The Director reviews all comments and recommendations from the reviewers along with the revised proposal/publication/report. The signature of the Director on form AD 416 submitted to CSREES, USDA, will indicate approval of the project by the Director and will certify that the proposal has been recommended for approval by a majority of the members of the Peer Review Panel. Scientific peer review of multi-state research projects are carried out for individual projects under the aegis of the Regional Coordinating and Implementation Committee (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. This can be found on-line at http://www.colostate.edu/Orgs/WAAESD/. All faculty in SNRAS/AFES who are participants in Hatch multi-state projects are required to have an approved Hatch General project that is related to the field of study of the Hatch multi-state project in which they are a member.

Peer review of the CES components of the POW will consist of internal and external reviews. Internal review of the CES components of the POW will be achieved by a panel of University of Alaska Fairbanks faculty and administrators. External reviews of the POW will be by CES's State Advisory Council. At least one peer land grant institution in the Western Region will be recruited to review the Extension components of the POW. The different review panels will be charged with assessing how well the activities and resources proposed in the plan will contribute to achieving the proposed goals. Collective feedback from the peer reviews will be incorporated into future iterations of the Extension components of the POW.

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?

SNRAS/AFES and Extension carry out the land-grant mission for the University of Alaska. The school and experiment station have a statewide mission and operate major facilities in Fairbanks and Palmer, with research projects throughout Alaska. CES operates eight district offices around the state along with several affiliated offices. Planned programs were developed based on needs expressed by stakeholder groups.

SNRAS/AFES is funded by state appropriations, federal land grant program dollars, and competitive research grants. The school is organized into four departments: Forest Sciences, Geography, High Latitude Agriculture, and Resources Management. Research is carried out in response to identified needs for fundamental and practical knowledge. Some indications of the demand for SNRAS/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 of SNRAS and AFES research that define research priorities are the Alaska Legislature, the U.S. Dept of Agriculture (especially the Agricultural Research Service, Economic Research Service, Forest Service, and National Institute of Food and Agriculture), Alaska resource industries, National Science Foundation, Alaska Dept of Natural Resources, Bureau of Land Management, U.S. Geological Survey, National Park Service, U.S. Biological Survey, EPA, and Dept of Energy.

Outreach and extension programming carried out by CES are 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 and the University of Alaska that were developed with extensive public input provide guidance for CES. In addition, CSREES provided a review of CES, SNRAS/AFES, and the land grant operations of UAF. Those recommendations were adopted by the University Board of Regents in total, resulting in a more autonomous CES placement with higher visibility for outreach and engagement operations. Other important organizational stakeholders that influence CES programming include, but are not limited to the Alaska Legislature, Dept of Natural Resources (Alaska), Dept of Commerce, Community & Economic Development (Alaska), Dept of Health and Social Services (Alaska), U.S. Dept of Agriculture, National Institute of Food and Agriculture, U.S. Forest Service, Rural Development, U.S. Dept of the Interior, Bureau of Land Management, U.S. Fish and Wildlife Service, and U.S. Dept of Energy.

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

The multi-state project (W-1112) has assisted reindeer and muskox herds which represent primarily Alaska Native enterprises and offers economic opportunity for native herders. Examples include bull management effects on time of breeding which is expected to improve reproductive success in native-owned reindeer herds. 2.) Hatch project ALK 08-02 "Alaska Natural Resources and Economic Sustainability" and "Seafood Marketing and the Management of Marine and Aquatic Resources" (WERA 109) and other new projects will investigate the application of input-output methodologies for ongoing impact assessment. Models will include subsistence production, regional economic models particularly involving fisheries enterprises. 3.) The multi-state project (W-192) Changing land management alternatives means changing the allocation of economic resources regionally and locally, and the alteration of the social and cultural importance of public lands to local communities and villages. The redirection of resources away from traditional uses has been most controversial. The question of direct and indirect economic impacts to the citizens of rural communities in public land states is of great concern.

JOINT ACTIVITIES Research is examining plant propagation and the nutraceutical properties of blueberries and other berries as joint activities between AFES, CES, the UAF Chemistry department and Scientific Neurology Research Program (SNRP) and a private industry partner, the Alaska Berry Growers. Extension efforts are providing consumers with information on home berry processing. Quality reindeer meat production research involves rural reindeer herders in Nome, Alaska who seek to enter the commercial high quality meat market. Researchers at AFES have developed a high quality feed which is producing excellent quality reindeer meat. CES is working with researchers to demonstrate reindeer meat products.

Indigenous people make up a large proportion of Alaska's population. Despite urbanization, many Alaska Natives live in isolated rural villages with small populations and 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 it provides related to safe food preparation and preservation that supplement traditional methods. A predominate 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. The Federally Recognized Tribal Education Program, (FRTEP) serves over 40 native villages. CES has a tradition of working with underserved populations. It has a successful Expanded Food and Nutrition Education Program (EFNEP) and it has successfully competed to be Alaska' Supplemental Nutrition Assistance Program- Education (SNAP-Ed) provider. In cooperation with the College of Rural and Community Development, CES is part of the NIFA-sponsored Higher Education Project for Alaska Native / Native Hawaiian Serving Institutions.

In addition, the following programs and projects contriute to our service to underserved populations:

- Agricultural development in Asia Pacific region (ADAP)
- NCERA 101
- W1192
- NE Temp 1521
- WCC 1003
- WERA 1005

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. Research impacts are difficult to measure.

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 to move CES to strengthen its program evaluation. It will be an evolutionary process where faculty gains experience and comfort with outcome and impact assessment as well as including planning for evaluation during the program planning phase. CES provides ongoing training through the university's Institute for Social and Economic Research (ISER), NIFA training and individual mentoring for faculty in measuring impacts in communities as a result of outputs.

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

The University of Alaska Fairbanks in general and SNRAS/AFES in particular have a limited number of faculty and limited funds to meet the diverse research and educational needs in Alaska. Thus, in order to improve efficiency in meeting these needs we recently developed a strategic plan which identified high priority natural resource related problems, based primarily on stakeholder input. We used these priorities combined with current faculty expertise, available physical facilities, and expected funding opportunities to develop planned programs in five emphasis areas. Within these five emphasis areas, the strategic plan

commits SNRAS/AFES to:

•Improve efficiency of resource management in Alaska through improved transfer of critical information to resource users and the public.

•Hire 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.

•Enhance distance delivery capabilities.

•Continue to seek ways to enhance stakeholder input to help identify priority research and education areas, especially as needs shift.

•Enhance research partnerships with public agencies and private entities.

The POW process that stresses outcomes and impacts is leading 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, 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 its 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.

IV. Stakeholder Input

1. Actions taken to seek stakeholder input that encourages their participation

- Targeted invitation to selected individuals from general public
- Survey of traditional stakeholder individuals
- Targeted invitation to non-traditional stakeholder groups
- Survey of traditional stakeholder groups
- Use of media to announce public meetings and listening sessions
- Survey of the general public
- Targeted invitation to traditional stakeholder groups
- Targeted invitation to traditional stakeholder individuals
- Targeted invitation to non-traditional stakeholder individuals
- Other (SNRAS Website, Newsletter & Blog)

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. SNRAS 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
- Mat-Su Potato and Vegetable Growers
- Delta Farm Forum
- Greenhouse Growers
- Reindeer Herders Association
- Alaska Northern Forest Cooperative
- Alaska Diversified Livestock Association
- Association of Peony Growers
- On-Demand meetings at the request of stakeholders

These 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 jointly sponsors manu agricultural and horticultural conferences and outreach activities with SNRAS/AFES where the units share mechanisms to 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 State Advisory Council meets face-to-face twice each year and holds audio conferences on a monthly basis. 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

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

Brief explanation.

The SNRAS/AFES Board of Advisors is being redeveloped. The Dean and Director, Associate Deans and Director, and Department Heads, and selected faculty and students will meet with the Board of Advisors for assistance in establishing priorities and developing program direction for SNRAS/AFES in consultation with appropriate constituencies. The membership of the Board of up to 11 members is appointed by the UAF Chancellor on recommendations provided by the Dean and Director and represents a broad range of scientific, industry, governmental, student, and citizen interests. By-laws for the Board of Advisors and minutes of all meetings are available upon request. Major stakeholders include the Fairbanks North Star Borough, Matanuska-Susitna Borough, Alaska Northern Forest Cooperative, USDA/NRCS, USDA/ARS, U.S. Forest Service, Fairbanks Economic Development Corporation, 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. Another significant stakeholder group is public and private agencies and organizations that have professional and programmatic relationships with CES or direct interest in CES programming. Some of CES's major stakeholder organizations include but are not limited to the Alaska State Legislature, Farm Bureau, Grange, Reindeer Herders Association, Greenhouse Growers, Food Banks of Alaska, Department of Natural Resources (Alaska), U.S. Forest Service, Alaska Boys and Girls Clubs, and Future Farmers of America.

The nine members of the CES State Advisory Council are appointed by the Vice-Provost of Outreach/Director of Cooperative Extension Service based upon recommendations provided 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 invited selected individuals from the general public
- Meeting with traditional Stakeholder groups
- Survey of the general public
- Meeting with traditional Stakeholder individuals

Brief explanation

Survey information will be collected using formal survey preparation and analysis techniques. 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 feed-back loop that provides information to research and outreach programs and from research and outreach programs to stakeholders and individuals.

3. A statement of how the input will be considered

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

Brief explanation.

The SNRAS/AFES joint research and outreach planned programs are directly related to the SNRAS/AFES Strategic Plan that was produced by the faculty of SNRAS and AFES. The Plan reflects ideas and advice given by SNRAS and AFES client user groups, students, the board of advisors, expert advisors, state and national peers and cooperators, and UAF administration. During the 2008 reporting period the four focus areas of energy, climate change, local and regional food production and food safety, and the need for adult and youth education and training to fill Alaskan job and career demands began to emerge. These focuses will be used to set priorities in meeting the many needs for knowledge about Alaska and circumpolar resources and geography. Input will be considered in the budget process. Capacity funds will be used in response to research needs based on the four emerging focus areas.

Needs assessments help CES faculty identify emerging issues in the five planned programs, generating plans based on logic models. The faculty use this information to generate their individual work plans. 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.

V. Planned Program Table of Content

V(A). Planned Program (Summary)

Program #1

1. Name of the Planned Program

Agriculture and Horticulture

2. Brief summary about Planned Program

Information about High Latitude agriculture and horticulture is increasingly being sought by urban Alaskan's, those in traditional farming areas, rural communities, and new businesses primarily in horticulture and landscaping. These are also areas of close collaboration between the Agricultural and Forestry Experiment Station and the Cooperative Extension Service. The emphasis areas of high latitude agriculture and high latitude soils in research blend well with the agriculture and horticulture which are the backbone of the Land Resources program in outreach and extension. Agriculture and horticulture encompass animal agriculture including production species and companion animals, agronomic crops for food, feed, and fuel, agro-forestry and non-timber products and forest uses including energy production, landscape and turf materials, and controlled environment/extended season and field horticulture such as bedding plants, florals, and food crops. The concentration of research and outreach is in best management practices for the production of food, feed and fuel in the short arctic and subarctic growing season and resilience and adaptation to potential impacts of climate change.

Agriculture and horticulture outreach includes the areas of animal agriculture, agronomy, agro-forestry, and horticulture. Service within animal agriculture includes production and home animals. Agronomy includes cereal grains, forages, and Conservation Reserve Program (CRP) land management. Agro-forestry includes Christmas tree production, livestock-related forestry uses, and other food products produced via forest or woodlot management. Horticulture is divided into commercial and consumer horticulture. Commercial horticulture includes production of fruits and vegetables for sale off-farm, nursery production of woody and herbaceous ornamentals, greenhouse production of bedding plants, hanging baskets, and potted plants, landscape installation and maintenance services, golf course turf management, commercial lawn maintenance, and sod production. Consumer horticulture includes home and community gardening and landscaping and lawn maintenance by the homeowner.

Another important focus in outreach is pest management for community forestry, home horticulture, invasive plants, greenhouse production, structural pests, agriculture and the green industry such as turf, tree, and ornamental plant producers. Integrated pest management (IPM) is the primary approach, in collaboration with other agencies, to assist its stakeholders when providing pest management information and educational outreach. The IPM team works closely with Master Gardeners and Community Tree Stewards, expanding the volume of the public provided pest management education. Collaboration includes IPM, Pesticide Safety Education Program, Western Region IPM (WRIPM), and the Western Plants Diagnostics Network (WPDN), Natural Resources Conservation Service (NRCS),USDA Farm Service Agency (FSA), Rural Development, Western Rural Development Center (WRDC), and Pacific Land Grant Association (PLGA).

Both CES and AFES collaborate with the USDA/Agricultural Research Service's Alaska SubArctic Agricultural Research Unit collocated with AFES on the University of Alaska Fairbanks campus.

3. Program existence : Mature (More then five years)

4. Program duration : Long-Term (More than five years)

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

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

V(B). Program Knowledge Area(s)

1. Program Knowledge Areas and Percentage

KA Code	Knowledge Area	%1862 Extension	%1890 Extension	%1862 Research	%1890 Research
102	Soil, Plant, Water, Nutrient Relationships	0%		15%	
203	Plant Biological Efficiency and Abiotic Stresses Affecting Plants	0%		7%	
204	Plant Product Quality and Utility (Preharvest)	0%		8%	
205	Plant Management Systems	0%		25%	
212	Pathogens and Nematodes Affecting Plants	0%		3%	
213	Weeds Affecting Plants	25%		0%	
216	Integrated Pest Management Systems	25%		0%	
301	Reproductive Performance of Animals	0%		10%	
302	Nutrient Utilization in Animals	0%		10%	
307	Animal Production Management Systems	0%		8%	
308	Improved Animal Products (Before Harvest)	25%		0%	
401	Structures, Facilities, and General Purpose Farm Supplies	0%		5%	
405	Drainage and Irrigation Systems and Facilities	0%		4%	
502	New and Improved Food Products	0%		2%	
504	Home and Commercial Food Service	25%		0%	

601	Economics of Agricultural Production and Farm Management	0%		3%	
	Total	100%		100%	

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

1. Situation and priorities

Alaska imports 95% of the food it consumes, has minimal agricultural infrastructure and processing capability.

Biological and physical overview: Agricultural lands in Alaska include both continental and maritime zones. On average the growing season is 100 days, soils are cool, day length approximately 22 hours in some areas, and the sun-angle is low.

Horticultural crops: Cabbage, carrots, and lettuce dominate field vegetable production. Bedding plants and landscape materials are produced in structures that extend the growing season and dominate the farm-gate value of horticultural crops. Tomatoes and cucumbers occupy these structures after the bedding-plant season. Cabbage, carrots, and lettuce move to the consumer through the wholesale/retail chain. All other products go directly to retail markets that include grocery chains. Subsistence is important for rural areas. Imported foods are supplemented with locally grown products as the cost of transportation rises. The tourist industry offers a significant marketing opportunity when crops are available. Organic farming presents challenges to research and outreach. Horticulture is a high-demand workforce industry and there is currently not a trained labor force in the state. Controlled environment (CEA) research aims to increase vegetable crop production in Alaska.

Agronomic crops: Grass hay predominates but no data exists on specific market segments. The horse owner market is believed to be the highest. Potatoes are a major crop supplying the retail table market. A seed potato industry is emerging with potential for export. Small grain production has fallen as livestock numbers in the road/rail belt have dropped. There is a new potential for production of non-food and feed crops, including oilseed and woody species for energy. Lands that are nearing the end of enrollment in CRP programs present a potential area for production of these crops. Resilience to climate change with potential changes in season length and water supply are critical additions to new research and outreach.

Landscape crops: There is a growing interest in hardy varieties that respond to low fertilizer, water, and pesticide use including native species. Sports turf is an economic opportunity with work continuing on golf greens and fairways. Sustainability of sports turf as energy and input costs rise is important.

Subsistence gardens: There are anecdotal indications that home garden production, local food production in Community Sustainable Agriculture (CSAs), community garden production, and sales through farmers' markets are increasing. Outreach to these producers concerning best varieties to use and best management practices is critical.

Animal industry: Predominant livestock are beef cattle and reindeer with research support in place. Other traditional animal enterprises in the road/rail belt region include hogs, goats, sheep, and poultry. Appropriate outreach information from research centers outside Alaska is provided. Dairy cattle numbers have fallen in relation to a diminishing milk and animal processing sector in Alaska. The industry is supported by outreach in information from outside Alaska. Horses and dogs are very visible in Alaska. There is a demand for veterinary practitioners/technicians throughout the state.

2. Scope of the Program

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

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

1. Assumptions made for the Program

Limited food, feed, and non-petroleum/coal resources are a challenge for a large state with a small population, making support for and research and outreach in agriculture and horticulture activities more similar to Pacific Island communities than more traditional operations in the continental United States. Changes in the status of CRP lands in Alaska will precipitate assistance to landowners in changing land use with an eye toward use of the lands for non-food and non-feed crops including crop production that can be used for fuels. An increased interest in native species for both agricultural and horticultural activities will present a challenge for outreach, as growers look more toward the rest of the United States for information in these areas. Energy will be a growing concern in food, feed, and fuel production as well as agricultural inputs produced from petroleum resources. Regional food supply in the face of rising transportation costs and from the aspect of food safety will be important in

Alaska, a state that now imports roughly 95% of its food supplies and processes virtually none. To support these new directions, education and training of youth and adults to supply a newly shaped workforce will be critical.

2. Ultimate goal(s) of this Program

Sustainable agriculture for community food security will become a bigger priority in the next five years. Small scale agriculture for home and professional growers will remain a focus area as will research in agricultural science and industry development, that includes pesticide education, crop development, and farming efficiencies for individuals, families and communities. The Integrated Pest Management program will continue to be a center of excellence on information for Alaskans to mitigate invasive species, keeping pest species below economic threshold levels. The AFES and CES will become prominent in information and research on alternative energy supplies and technology and energy conservation. Resilience and adaptability to climate change will be a focus in rural and urban areas as it affects Alaska's lands and forests. Finally, youth and adult continuing education will increasingly become an integrated component of both AFES and CES to supply an increasing demand for the labor force in Alaska as workers retire and new opportunities become available.

V(E). Planned Program (Inputs)

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

Year	Extension		Research	
	1862	1890	1862	1890
2010	9.0	0.0	12.0	0.0
2011	10.0	0.0	12.0	0.0
2012	10.0	0.0	12.0	0.0
2013	10.0	0.0	12.0	0.0
2014	10.0	0.0	12.0	0.0

V(F). Planned Program (Activity)

1. Activity for the Program

Research and outreach will be integrated to assure that best management practices appropriate to Alaska and tailored to Alaska are provided to the target audience. There will be new directions in energy crops, resilience and adaptability of crops and animals to changes in the subarctic and arctic climate, and a revitalization in research and extension programs relevant to regional and local food production and the safety of the foods produced and processed. An emphasis will also be placed on educating and training youth and adults in new fields opening in the Alaska workforce and continuing education and training programs that emphasize current needs as an aging workforce retires.

Group and one-on-one educational activities with specific sectors of the pest management industry, the agricultural community, and the horticultural industry will provide individuals and businesses with important information. Increased reliance on the internet will enhance delivery to more people. Increasing partnerships will become important strategies in maintaining pest species below threshold levels. Outreach will also include forums, tours, response to emails, phone calls and walk-in stakeholders.

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

Extension	
Direct Methods	Indirect Methods
• Education Class • Demonstrations • One-on-One Intervention • Group Discussion	• Other 1 (Publications) • Newsletters • TV Media Programs • Web sites

- Other 1 (Consultations)
- Workshop
- Public Service Announcement

3. Description of targeted audience

Arborists, botanical garden volunteers, child care centers, farmers, food service organizations, garden and plant associations, public and commercial greenhouses, homeowner associations, landscapers, state and federal park employees, master 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.

V(G). Planned Program (Outputs)

1. Standard output measures

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

	Direct Contacts Adults	Indirect Contacts Adults	Direct Contacts Youth	Indirect Contacts Youth
Year	Target	Target	Target	Target
2010	13500	1800	250	500
2011	14000	1800	300	500
2012	14500	1800	300	500
2013	15000	1800	300	500
2014	15000	2000	300	500

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

Expected Patent Applications

2010 : 1 **2011 :** 0 **2012 :** 0 **2013 :** 0 **2014 :** 0

3. Expected Peer Review Publications

Year	Research Target	Extension Target	Total
2010	21	0	0
2011	29	0	0
2012	31	0	0
2013	34	0	0
2014	34	0	0

V(H). State Defined Outputs

1. Output Target

- Output Target 1: Field faculty will provide agricultural and horticultural workshops and conferences, including information on invasive weeds, noxious plants and integrated pest management.

2010 : 190 **2011 :** 195 **2012 :** 195 **2013 :** 200 **2014 :** 225

- Output Target 2: Field faculty will provide agricultural, horticultural and pest management information through one-on-one consultations and consultations with other organizations (in contact hours).

  2010 2700 **2011** 2800 **2012** 2850 **2013** 2900 **2014** 2950

- Output Target 3. Horticultural field crop research will concentrate on home and commercial varieties appropriate to Alaska and crops that fill niche markets with high-end values. Business starts and publications are the output measures.

  2010 3 **2011** 4 **2012** 4 **2013** 4 **2014** 4

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

  2010 4 **2011** 5 **2012** 5 **2013** 5 **2014** 5

- Output Target 5. Focus will be on best management practices for feed crops, evaluation of crops and varieties for fuel production. Output measures will be publications.

  2010 6 **2011** 7 **2012** 7 **2013** 7 **2014** 8

- Output Target 6. Potato varieties will be evaluated for niche market sales, disease resistance, and yield and best management practices determined. Output measures will be number of varieties selected and publications.

  2010 3 **2011** 6 **2012** 8 **2013** 10 **2014** 12

- Output Target 7. Turf research will continue including variety selection and expansion into multiple use. Output measure will be publications.

  2010 2 **2011** 3 **2012** 3 **2013** 3 **2014** 2

- Output Target 8. Animal research will continue to concentrate on alternative livestock emphasizing diet, meat quality and reproductive biology. Output measure will be publications.

  2010 4 **2011** 5 **2012** 5 **2013** 6 **2014** 6

V(I). State Defined Outcome

O. No	Outcome Name
1	Outcome Target 1: Increase agronomic crop producers' ability to understand and assess optimum production practices.
2	Outcome Target 2: Increase traditional and alternative livestock producers' ability to understand and assess optimum production practices.
3	Outcome Target 3: Increase participants' commercial and home horticulture optimum techniques and improve management practices.
4	Outcome Target 4: Increase participants' crop and livestock optimum production techniques and management practices.
5	Outcome Target 5: Increase the number of activities that monitor and control invasive species that threaten agriculture and natural ecosystems.

Outcome #1

1. Outcome Target

Outcome Target 1: Increase agronomic crop producers' ability to understand and assess optimum production practices.

2. Outcome Type : Change in Action Outcome Measure

2010 20	**2011 :** 20	**2012 :** 20	**2013** 20	**2014 :** 20

3. Associated Institute Type(s)

•1862 Extension
•1862 Research

4. Associated Knowledge Area(s)

- 102 - Soil, Plant, Water, Nutrient Relationships
- 205 - Plant Management Systems
- 213 - Weeds Affecting Plants
- 216 - Integrated Pest Management Systems
- 601 - Economics of Agricultural Production and Farm Management

Outcome #2

1. Outcome Target

Outcome Target 2: Increase traditional and alternative livestock producers' ability to understand and assess optimum production practices.

2. Outcome Type : Change in Action Outcome Measure

2010 20	**2011 :** 20	**2012 :** 20	**2013** 20	**2014 :** 20

3. Associated Institute Type(s)

•1862 Extension
•1862 Research

4. Associated Knowledge Area(s)

- 301 - Reproductive Performance of Animals
- 302 - Nutrient Utilization in Animals
- 307 - Animal Production Management Systems
- 308 - Improved Animal Products (Before Harvest)
- 502 - New and Improved Food Products
- 601 - Economics of Agricultural Production and Farm Management

Outcome #3

1. Outcome Target

Outcome Target 3: Increase participants' commercial and home horticulture optimum techniques and improve management practices.

2. Outcome Type : Change in Action Outcome Measure

2010 50	**2011 :** 50	**2012 :** 50	**2013** 50	**2014 :** 50

3. Associated Institute Type(s)

•1862 Extension
•1862 Research

4. Associated Knowledge Area(s)

- 102 - Soil, Plant, Water, Nutrient Relationships
- 203 - Plant Biological Efficiency and Abiotic Stresses Affecting Plants
- 204 - Plant Product Quality and Utility (Preharvest)
- 205 - Plant Management Systems
- 212 - Pathogens and Nematodes Affecting Plants
- 213 - Weeds Affecting Plants
- 216 - Integrated Pest Management Systems
- 401 - Structures, Facilities, and General Purpose Farm Supplies
- 405 - Drainage and Irrigation Systems and Facilities
- 502 - New and Improved Food Products
- 601 - Economics of Agricultural Production and Farm Management

Outcome #4

1. Outcome Target

Outcome Target 4: Increase participants' crop and livestock optimum production techniques and management practices.

2. Outcome Type : Change in Action Outcome Measure

2010 :50	**2011** : 50	**2012** : 50	**2013** :50	**2014** :50

3. Associated Institute Type(s)

•1862 Extension
•1862 Research

4. Associated Knowledge Area(s)

- 102 - Soil, Plant, Water, Nutrient Relationships
- 204 - Plant Product Quality and Utility (Preharvest)
- 301 - Reproductive Performance of Animals
- 302 - Nutrient Utilization in Animals
- 307 - Animal Production Management Systems
- 308 - Improved Animal Products (Before Harvest)
- 601 - Economics of Agricultural Production and Farm Management

Outcome #5

1. Outcome Target

Outcome Target 5: Increase the number of activities that monitor and control invasive species that threaten agriculture and natural ecosystems.

2. Outcome Type : Change in Condition Outcome Measure

2010 :5	**2011** : 5	**2012** : 5	**2013** :5	**2014** :5

3. Associated Institute Type(s)

•1862 Extension

4. Associated Knowledge Area(s)

- 212 - Pathogens and Nematodes Affecting Plants
- 213 - Weeds Affecting Plants
- 216 - Integrated Pest Management Systems

V(J). Planned Program (External Factors)

1. External Factors which may affect Outcomes

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

Description

Alaska is the harbinger of climate change in the north. The region is already seeing impacts of the changing climate in its sea ice degradation, the ecology of the boreal forest, and its ice-impregnated northern soils. This will influence the thrust of agriculture in coming years. Policy and regulation and competing public priorities are already coming to the fore as endangered species affect land use and food and feed crops are increasingly used for fuels. Programmatic challenges will occur as consideration is given to the production of crops and the management of the forests for fuels to mitigate demands on petroleum and coal supplies. A continuing rise in transportation costs is already drawing attention to regional and local food production and processing. Food safety is a rising concern as well if costs for chemical disease controls increase and integrated pest management systems are not fully in place.Finally, as demographics of the population change and demographics of the agricultural industry change, there will be a need for continuing adult education and higher education to fill workforce vacancies or new positions that are created to meet demands in energy, medical, and resource management fields.

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

1. Evaluation Studies Planned

- Retrospective (post program)
- Comparison between locales where the program operates and sites without program intervention
- Before-After (before and after program)
- After Only (post program)
- During (during program)
- Comparisons between different groups of individuals or program participants experiencing different levels of program intensity.

Description

The objective of the AFES and CES is to set in place a feed-back loop that brings information from our units to our clientele and bring clientele input back to us to enable us to continue to adjust our work, within the capabilities of our space and budgets, to meet the needs of the people of Alaska. Reports to CES from greenhouses removing potentially invasive plants from sales inventory and cities/agencies/producers developing and implementing management plans for invasive species would provide data on effectiveness of education through change in behavior. We are continuing ongoing monitoring for gyspsy moth and emerald ash borer.

2. Data Collection Methods

- Unstructured
- Sampling
- Observation
- Journals
- On-Site
- Telephone
- Tests
- Case Study
- Mail
- Structured

Description
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.

V(A). Planned Program (Summary)

Program #2

1. Name of the Planned Program

Natural Resources and Community Development

2. Brief summary about Planned Program

Alaska is a state with an urban core and rural periphery. Major resource development activities are located in the urban centers that have access to multi-modal transportation and advanced communication systems. These activities primarily focus on oil and gas exploration, development and export. Processing for instate use is limited to gasoline, home-heating fuel, and aviation fuels. Urban communities lack infrastructure to engage in value-added activities that would enhance development of resources not directly related to the petroleum industry. Most rural communities are off the road/rail system and communication infrastructure is still somewhat limited. Many smaller rural communities, with populations under 500 may not have even the most basic amenities such as adequate sanitation and efficient energy sources that would attract appropriate resource developers. Many of these communities are in need of enhanced facilitation skills as a mechanism to translate local cultural values into the dominant cultural policymaking activities across the state.

Research is needed that will provide knowledge to afford both urban and rural communities the opportunity to diversify their economies. Both research and outreach should provide underserved populations in rural areas real options for economic development and improved quality of life. Research and outreach priorities will be determined through joint collaboration with stakeholders in communities, industry, and state and federal agencies. Focus will be on identifying emerging natural resource issues in energy, climate change, agriculture and horticulture, forestry, mining, water and community development for stakeholders and provide them with unbiased, science-based information for both urban and rural populations to assist in understanding issues and making informed decisions. AFES and CES will continue to provide traditional programs in education and outreach, but will enhance these programs with a focus on energy, adaptation to climate change, youth and a sustainable quality of life for individuals, families and communities, including engagement with those communities. These communities will be encouraged to bring ideas back to the university to assist in establishing future research and education activities.

3. Program existence : Mature (More then five years)

4. Program duration : Long-Term (More than five years)

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

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

V(B). Program Knowledge Area(s)

1. Program Knowledge Areas and Percentage

KA Code	Knowledge Area	%1862 Extension	%1890 Extension	%1862 Research	%1890 Research
111	Conservation and Efficient Use of Water	10%		0%	
112	Watershed Protection and Management	20%		5%	
122	Management and Control of Forest and Range Fires	10%		20%	
123	Management and Sustainability of Forest Resources	10%		20%	
131	Alternative Uses of Land	10%		5%	
134	Outdoor Recreation	5%		15%	
605	Natural Resource and Environmental Economics	15%		15%	
608	Community Resource Planning and Development	15%		10%	
610	Domestic Policy Analysis	5%		10%	
	Total	100%		100%	

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

1. Situation and priorities

The scope of the issues addressed in the Natural Resources and Community Development planned program is larger than any one organization or school or college within UAF is capable of addressing. Therefore effectively addressing natural resources issues will depend on forming partnerships with credible, research-based organizations and other land grant institutions as well as schools and colleges within UAF. Other units within the University of Alaska Fairbanks include the Schools of Management, Fisheries and Ocean Sciences, and the College of Engineering and Mines. Partnership interests include providing multi-resource planning and the process of determining public resource policy, resource economics and policy impact assessment, rural community culture and economic development analysis, environmental law and policy, and outdoor recreation. The AFES also provides expertise in basic and applied research in agriculture and horticulture and ecosystem management including basic soils research. In planning public resource policy most agencies tend to use methods of involving the public that were developed over 30 years ago; i.e. public meetings, open houses, and public hearings. This planned program will increase the level of awareness of new public involvement techniques as well as their advantages and disadvantages. Alaska federal land management policies are set by national priorities which may conflict with Alaskan interests. 44 million acres of Alaska's lands are private lands owned by Alaska Native Regional and Village Corporations wholly owned by Alaska Natives and use of the resources on them is tightly controlled. Less than 1% of Alaska's total land mass is in private ownership. As Alaska matures there will be changes in the State's demographics, economy, social structure and land use.

The CES Natural Resources and Community Development planned program will provide information for stakeholders on issues related to forest and land resources, mineral and non-petroleum energy resources, water resources and rural

communities; provide skill training in topics such as agriculture and horticulture, alternative energy, water quality monitoring, management of local water resources, identification of rocks and minerals of economic importance, use of global positioning systems and geographic information systems to locate, inventory, and monitor important resources, reviewing economic analysis information to assist in planning and managing natural resources, evaluating economic options for rural communities, and use of natural resource micro-business opportunities for rural and urban communities.

2. Scope of the Program

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

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

1. Assumptions made for the Program

Resource management in Alaska will continue to be constrained by expectations and perceptions of the public. Despite public opinion, these desires must follow processes that meet the substantive requirement of state and federal law and policy. The following constraints remain when consideration is given to natural resources and community development.

- Costs of extracting, harvesting and processing Alaska resources must be evaluated in the context of global markets.
- Energy sources are a major concern in extracting, harvesting, and processing Alaska resources and must be considered in remote communities that will require a local source of energy supply.
- Multiple use of Alaska's lands is necessary for a diversified economy and infrastructure is minimal to support this goal.
- Global competitiveness will remain an issue and Alaska must exploit its competitive advantage in transportation routes and raw natural resources.
- Conflict resolution will continue to be necessary in a state whose land is primarily federal parks, reserves or preserves and where urban versus rural needs continue to conflict.
- World markets for mineral resources have spurred mineral exploration and mine development in Alaska.
- Resource extraction and population growth will affect Alaska's water resources, also influenced by other regions' increased need for water resources.
- Rural communities will increasingly look to nearby forest and land resources for economic and personal use.

2. Ultimate goal(s) of this Program

- Develop regional economic models for Alaska resource development impact on communities.
- Develop and examine public involvement processes that meet public expectations.
- Determine the effectiveness of natural resource and environmental laws.
- Create and develop long term partnerships both in and outside Alaska.
- Assist stakeholders in making informed decisions regarding utilization of valued natural resources.
- Increase number of Alaska youth receiving basic natural resource skill training for early entry into natural resource management jobs, and who will choose careers managing Alaska’s natural resources.
- Establish CES as a clearinghouse of unbiased, research-based, consumer friendly information in the areas of agriculture and horticulture, alternate energy and energy conservation, water quality, mineral resources, GIS, economic analysis, small business start-ups, and options for facilitation training for rural communities based on community interest.

V(E). Planned Program (Inputs)

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

Year	Extension		Research	
	1862	1890	1862	1890
2010	4.0	0.0	2.0	0.0
2011	4.0	0.0	2.0	0.0
2012	4.0	0.0	2.0	0.0
2013	4.0	0.0	2.0	0.0
2014	4.0	0.0	2.0	0.0

V(F). Planned Program (Activity)

1. Activity for the Program

Research products will provide science-based information in resource planning, economic and environmental impact of natural resource use, market and non-market value of resources, and conflict resolution in rural communities and villages along with basic information in agriculture and horticulture, forest sciences, and soil sciences for use by planners, economists, and policy makers. Measurable outcomes will include peer reviewed publications, lay publications, rural community business/development plans, and citizen participation. Extension activities involve partners from other UAF units including AFES to assure that there is a feedback loop that will continue to make the information provided to stakeholders relevant to their needs. These activities will develop integrated and/or multi-state projects concerning natural resources stewardship within the University of Alaska Fairbanks and with other land grant institutions; develop criteria to broadly define the temporal natural resource interests of stakeholders so the program's activities address the needs of those Alaskans most directly impacted by specific natural resource matters; develop partnerships with government agencies to identify and address stakeholder needs; regularly assess stakeholder needs and emerging natural resources issues impacting stakeholders; conduct literature reviews and review contemporary research relevant to this program; develop culturally and educationally relevant CES publications (including fact sheets, bulletins, and newsletters) that provide unbiased, scientific information about natural resource issues; develop, review, and revise a web site to be the electronic portal for UAF CES information on natural resources stewardship matters of concern to stakeholders; develop, plan, deliver, evaluate and revise as needed extension workshops, demonstrations and basic skill trainings; facilitate discussions and other meetings that address stakeholder needs in or near their communities; develop, conduct and review 4-H projects related to the natural resource stewardship program; develop, plan, conduct, evaluate and revise as needed young adult stakeholder workforce readiness trainings that prepare youth for entry-level positions in natural resource management positions; develop, deliver, facilitate and evaluate natural resource stewardship informational discussions with urban populations to increase their awareness of natural resource issues and the values and needs of stakeholders relative to natural resources; coordinate and assist the UAF School of Natural Resources and Agricultural Sciences and other units of the University of Alaska in recruiting and graduating young Alaskans with endorsements, certificates and degrees that result in careers in managing, using and protecting natural resources.

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

Extension	
Direct Methods	**Indirect Methods**
• Workshop • Other 2 (Consulting) • Demonstrations • One-on-One Intervention • Education Class • Other 1 (Youth and natural resource camps) • Group Discussion	• Newsletters • Web sites • Other 1 (Publications)

3. Description of targeted audience

This program will focus on industry and entrepreneurs including communities, families, and newly forming cooperatives and businesses, non-profit and for-profit development corporations. Efforts will be 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, young adults wanting entry level skills needed for employment in natural resource related businesses, agencies or organizations, and persons in natural resource related occupations who wish to increase their skill and/or knowledge level.

V(G). Planned Program (Outputs)

1. Standard output measures

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

	Direct Contacts Adults	Indirect Contacts Adults	Direct Contacts Youth	Indirect Contacts Youth
Year	Target	Target	Target	Target
2010	300	875	450	1000
2011	350	1000	500	1200
2012	375	1000	550	1250
2013	400	1000	600	1300
2014	425	1000	650	1300

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

Expected Patent Applications

2010 :0 **2011 :**0 **2012 :** 0 **2013 :** 0 **2014 :** 0

3. Expected Peer Review Publications

Year	Research Target	Extension Target	Total
2010	6	0	6
2011	8	0	8
2012	9	0	9
2013	11	0	11
2014	9	0	12

V(H). State Defined Outputs

1. Output Target

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

  2010 5 **2011** 6 **2012** :6 **2013** 6 **2014** 6

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

  2010 25 **2011** 30 **2012** :35 **2013** 35 **2014** 35

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

  2010 :1 **2011** :1 **2012** :1 **2013** :1 **2014** :1

- Output Target 4: Conduct at least two formal needs assessments per year of stakeholders with interest in natural resource management.

  2010 2 **2011** 2 **2012** :2 **2013** 2 **2014** 2

- Output Target 5. Develop regional economic models that depict the impact of Alaska resource management scenarios on Alaskan communities. Output will be electronic and written publications.

  2010 2 **2011** 3 **2012** :3 **2013** :4 **2014** :4

- Output Target 6. Develop, adapt, and implement public involvement processes that meet public expectations. Output measure will be public input sessions conducted and publications.

  2010 2 **2011** 3 **2012** :3 **2013** :4 **2014** :4

- Output Target 7. Provide analyses of the effectiveness of natural resource and environmental laws. Output measure will be publications.

  2010 2 **2011** 2 **2012** :3 **2013** 3 **2014** :3

V(I). State Defined Outcome

O. No	Outcome Name
1	Outcome Target 1: Increase the number of partnerships with stakeholder groups, government agencies, and other institutions that will enhance the land grant mission.
2	Outcome Target 2: Increase the number of integrated and multi-state research-Extension activities to 25% within five years.
3	Outcome Target 3: Increase the recruitment and retention of youth appreciating and considering natural resource management careers.
4	Outcome Target 4. Increase the number of communities and organizations participating in public involvement processes that target community economic development and policy and law. Out come measure will be the increase in number of communities.

Outcome #1

1. Outcome Target

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

2. Outcome Type : Change in Action Outcome Measure

2010 :5	**2011 :** 6	**2012 :** 7	**2013** :7	**2014 :**7

3. Associated Institute Type(s)

•1862 Extension
•1862 Research

4. Associated Knowledge Area(s)

- 112 - Watershed Protection and Management
- 122 - Management and Control of Forest and Range Fires
- 123 - Management and Sustainability of Forest Resources
- 605 - Natural Resource and Environmental Economics
- 608 - Community Resource Planning and Development
- 610 - Domestic Policy Analysis

Outcome #2

1. Outcome Target

Outcome Target 2: Increase the number of integrated and multi-state research-Extension activities to 25% within five years.

2. Outcome Type : Change in Action Outcome Measure

2010 :2	**2011 :** 2	**2012 :** 3	**2013** :3	**2014 :**4

3. Associated Institute Type(s)

•1862 Extension
•1862 Research

4. Associated Knowledge Area(s)

- 131 - Alternative Uses of Land
- 605 - Natural Resource and Environmental Economics
- 608 - Community Resource Planning and Development
- 610 - Domestic Policy Analysis

Outcome #3

1. Outcome Target

Outcome Target 3: Increase the recruitment and retention of youth appreciating and considering natural resource management careers.

2. Outcome Type : Change in Action Outcome Measure

2010 :30	**2011 :** 35	**2012 :** 35	**2013** :35	**2014 :**35

3. Associated Institute Type(s)

•1862 Extension
•1862 Research

4. Associated Knowledge Area(s)

- 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 Target

Outcome Target 4. Increase the number of communities and organizations participating in public involvement processes that target community economic development and policy and law. Out come measure will be the increase in number of communities.

2. Outcome Type : Change in Action Outcome Measure

2010 3 **2011 :** 3 **2012 :** 4 **2013 :** 4 **2014 :** 4

3. Associated Institute Type(s)

•1862 Extension
•1862 Research

4. Associated Knowledge Area(s)

- 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

V(J). Planned Program (External Factors)

1. External Factors which may affect Outcomes

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

Description

Changes in state and federal policy and regulation will affect appropriations to the university and the economy of the state of Alaska. Current energy dialogue in the state centers on oil and gas despite discussions of alternate energy. Should a successful proposal for a gas line be announced, this will inject jobs and dollars into Alaska and most likely change priorities from an increasing focus on using alternative forms of energy that are regionally produced to, once again, export of a raw product. Within the programs of AFES and CES, this would most likely mean refocusing on this change in public priorities at some detriment to the programs proposed here.

However, Alaska is the harbinger of climate change in the north and this will continue to influence the thrust of the Natural Resource and Community Development program in coming years. Policy and regulation and competing public priorities are already coming to the fore as endangered species affect land use and hence resource use for community development. Despite the potential affect of external factors, there will be a need for continuing adult education and higher education to fill workforce

vacancies or new positions that are created to meet demands in energy and community development, and a continuing need for processes that improve the quality of life and economic well-being of communities.

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

1. Evaluation Studies Planned

- Comparison between locales where the program operates and sites without program intervention
- Comparisons between program participants (individuals,group,organizations) and non-participants
- After Only (post program)
- During (during program)
- Before-After (before and after program)
- Comparisons between different groups of individuals or program participants experiencing different levels of program intensity.
- Retrospective (post program)

Description

The objective of the AFES and CES is to set in place a feed-back loop that brings information from our units to our clientele and bring clientele input back to us to enable us to continue to adjust our work, within the capabilities of our space and budgets, to meet the needs of the people of Alaska.

2. Data Collection Methods

- Case Study
- Tests
- Structured
- Mail
- Unstructured
- Observation
- Telephone
- Sampling
- On-Site

Description

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.

V(A). Planned Program (Summary)

Program #3

1. Name of the Planned Program

Sustainable Individuals, Families and Communities

2. Brief summary about Planned Program

Sustainable Individuals, Families and Communities Program includes five outreach emphases:
Health, Nutrition and Foods education and research involves food preservation, food safety, food preparation, food product development, Alaska indigenous foods, exercise and fitness, healthy lifestyle choices, nutrition, and diet and nutrition issues. Human Development activities focus on lifespan development, transitions, grief and loss, and caregiver training. Consumer Resource Management includes estate planning, budgeting, transitions, financial management, time management, stress reduction. Emergency Preparedness includes areas such as families and communities responding to natural and man-made disasters. Homes and Energy provides education on indoor air quality, home maintenance and repair, building science and energy use. This last area is experiencing a rapid growth in interest and resource allocation.

3. Program existence : Mature (More then five years)

4. Program duration : Long-Term (More than five years)

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

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

V(B). Program Knowledge Area(s)

1. Program Knowledge Areas and Percentage

KA Code	Knowledge Area	%1862 Extension	%1890 Extension	%1862 Research	%1890 Research
502	New and Improved Food Products	5%		100%	
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%	
	Total	100%		100%	

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

1. Situation and priorities

One of Alaska's major challenges, given its large geographic area and limited infrastructure, is the rapid growth of the incidence of obesity and associated chronic health-related problems. Along with education on better choices in diet, exercise and care, Alaska has an abundance of nutritious seasonal, wild and homegrown foods that require proper development and preservation methods. New food products will be developed using Alaska produced ingredients. Working with individual youth on financial literacy and nutrition leads to training families on relationships, parenting, marriage/divorce, communication, child and elder care, military deployment, health and retirement. Community participation in research is necessary for helping people cope with stress and changing demands on Alaskans.

Cost of living and energy issues, property taxes and rural unemployment place burdens on sustainability at many levels. Families in rural areas of Alaska tend to be larger and younger, with lower incomes than urban counterparts. Population shifts, especially out-migration from villages, impact the changing demographics across the state. Indoor air quality becomes an issue with a higher impact on the lower income earners, as more time is spent inside during longer winters. Natural disasters are exacerbated by the isolation of many Alaskan communities as well.

2. Scope of the Program

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

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

1. Assumptions made for the Program

Alaskans' health can be improved through healthier lifestyle choices in food, exercise and self or family care. With the variety, quantity, season and location of indigenous food sources, adequate information on preservation is essential in maximizing the value and shelf life of nutrition sources. Developing and improving Alaskan food products is critical in supporting sustainable communities, especially as the demand for information increases.

Human development content areas are taught via distance modalities due to expense of traveling to hundreds of small communities; however, the application of interpersonal skills is still critical to program success. With transportation, food and energy costs being prohibitive, especially in rural regions, families require consumer resource management education to avoid bankruptcy and related legal and social issues. These costs will continue to rise. Energy conservation of built stock inventories of buildings requires investment in weatherization, improved construction techniques, and good science for healthy, efficient, and durable housing and commerce. Renewable energy will become a major topic of interest and concern that will drive future outreach education.

Alaska lies on colliding tectonic plates, raising the likelihood of repeated natural disasters. While many Alaskans have the knowledge and skills to survive an incident, they are less prepared for the long-term effects of a disaster on a large scale. Along with preparation, increased self-reliance will become more important, especially as effects of global warming occur faster in the higher latitudes.

2. Ultimate goal(s) of this Program

Education will improve citizens' lives in making healthier lifestyle choices, strengthen sense of family through individual action, and improve community. With a better understanding of economic and financial issues, citizens have what they need to participate successfully in a complex, global environment, regardless of how rural the setting. Programming will increase access to and sustainability of healthy, affordable housing through renewable energy and conservation. Emergency preparedness will help communities become self-reliant as disaster strikes, allowing for a stronger infrastructure for better response and shorter recovery.

V(E). Planned Program (Inputs)

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

Year	Extension		Research	
	1862	1890	1862	1890
2010	10.0	0.0	0.3	0.0
2011	10.0	0.0	0.3	0.0
2012	10.0	0.0	0.3	0.0
2013	10.0	0.0	0.3	0.0
2014	0.0	0.0	0.3	0.0

V(F). Planned Program (Activity)

1. Activity for the Program

Field faculty will conduct workshops and meetings, deliver educational services, provide training, and conduct consultations with clientele. Researchers will develop products, curricula and resources, provide training and conduct consultations with

clientele

Educators and researchers will conduct needs assessments, work with the media, partner with other agencies and organizations, write articles, publications and fact sheets, and facilitate events, activities, and teachable moments.

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

Extension	
Direct Methods	**Indirect Methods**
• One-on-One Intervention • Workshop • Demonstrations • Other 2 (Phone and email) • Education Class • Other 1 (Distance Delivery) • Group Discussion	• TV Media Programs • Other 1 (Publications) • Web sites • Newsletters • Public Service Announcement

3. Description of targeted audience

The Sustainable Individuals, Families and Communities programming involves parents, care givers of children,school children (public and private), school teachers (public and private), home and building owners, individuals interested in healthy lifestyles, individuals and families needing assistance managing their finances, low- income individuals and families, especially women with young children, individuals interested in a subsistence lifestyle, individuals interested in food preservation, individuals and professionals interested in emergency preparedness, and human development and social work professionals.

Institutional cooperation will include food banks, housing and energy authorities and organizations, and individuals or families experiencing life transitions.

V(G). Planned Program (Outputs)

1. Standard output measures

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

	Direct Contacts Adults	Indirect Contacts Adults	Direct Contacts Youth	Indirect Contacts Youth
Year	Target	Target	Target	Target
2010	7500	82900	710	1080
2011	7750	83400	720	1130
2012	8000	83900	730	1200
2013	8250	84400	740	1270
2014	8500	84500	750	1300

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

Expected Patent Applications

2010 :0 **2011 :**0 **2012 :** 0 **2013 :**0 **2014 :** 0

3. Expected Peer Review Publications

Year	Research Target	Extension Target	Total
2010	1	2	3
2011	1	2	3
2012	1	2	3
2013	1	2	3
2014	1	0	0

V(H). State Defined Outputs

1. Output Target

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

  2010 :130 **2011 :**140 **2012 :**145 **2013 :**150 **2014 :**150

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

  2010 :8 **2011 :**8 **2012 :**8 **2013 :**8 **2014 :**8

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

  2010 :25 **2011 :**30 **2012 :**35 **2013 :**40 **2014 :**40

- Output Target 4: New food products will be developed using Alaska produced ingredients.

  2010 :2 **2011 :**3 **2012 :**3 **2013 :**4 **2014 :**4

V(I). State Defined Outcome

O. No	Outcome Name
1	Outcome Target 1: Participants in food preservation and food safety classes will improve their food preservation and food safety practices.
2	Outcome Target 2: Participants in healthy lifestyle classes and workshops will adopt knowledge gained to maintain healthy lifestyle practices one year after participation.
3	Outcome Target 3: Participants will use knowledge gained in parent education classes to increase their application of developmentally appropriate practices.
4	Outcome Target 4: Awareness gained in workshops and will result in active energy conservation efforts by 20% each year over 2007 levels.
5	Outcome Target 5: Energy efficiency awareness will result in an increase in collaborations for energy conservation by 25% per year over five years.
6	Outcome Target 6: New Varieties and new uses of animal and plant products will result in increased production of Alaska based products. Outcome is number of products and publications

Outcome #1

1. Outcome Target

Outcome Target 1: Participants in food preservation and food safety classes will improve their food preservation and food safety practices.

2. Outcome Type : Change in Action Outcome Measure

2010 :	**2011 :**	**2012 :**	**2013 :**	**2014 :**
190	190	190	190	190

3. Associated Institute Type(s)

•1862 Extension

4. Associated Knowledge Area(s)

- 703 - Nutrition Education and Behavior
- 724 - Healthy Lifestyle

Outcome #2

1. Outcome Target

Outcome Target 2: Participants in healthy lifestyle classes and workshops will adopt knowledge gained to maintain healthy lifestyle practices one year after participation.

2. Outcome Type : Change in Action Outcome Measure

2010 :	**2011 :**	**2012 :**	**2013 :**	**2014 :**
310	310	310	310	310

3. Associated Institute Type(s)

•1862 Extension

4. Associated Knowledge Area(s)

- 703 - Nutrition Education and Behavior
- 724 - Healthy Lifestyle

Outcome #3

1. Outcome Target

Outcome Target 3: Participants will use knowledge gained in parent education classes to increase their application of developmentally appropriate practices.

2. Outcome Type : Change in Action Outcome Measure

2010 :	**2011 :**	**2012 :**	**2013 :**	**2014 :**
80	80	80	80	80

3. Associated Institute Type(s)

•1862 Extension

4. Associated Knowledge Area(s)

- 801 - Individual and Family Resource Management

Outcome #4

1. Outcome Target

Outcome Target 4: Awareness gained in workshops and will result in active energy conservation efforts by 20% each year over 2007 levels.

2. Outcome Type : Change in Knowledge Outcome Measure

2010	2011	2012	2013	2014
500	600	750	900	900

3. Associated Institute Type(s)

•1862 Extension

4. Associated Knowledge Area(s)

- 804 - Human Environmental Issues Concerning Apparel, Textiles, and Residential and Commercial Structures

Outcome #5

1. Outcome Target

Outcome Target 5: Energy efficiency awareness will result in an increase in collaborations for energy conservation by 25% per year over five years.

2. Outcome Type : Change in Action Outcome Measure

2010	2011	2012	2013	2014
6	8	10	12	14

3. Associated Institute Type(s)

•1862 Extension

4. Associated Knowledge Area(s)

- 804 - Human Environmental Issues Concerning Apparel, Textiles, and Residential and Commercial Structures

Outcome #6

1. Outcome Target

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

2. Outcome Type : Change in Knowledge Outcome Measure

2010	2011	2012	2013	2014
6	6	7	7	8

3. Associated Institute Type(s)

•1862 Research

4. Associated Knowledge Area(s)

- 502 - New and Improved Food Products

V(J). Planned Program (External Factors)

1. External Factors which may affect Outcomes

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

Description

A large push towards energy efficiency and related funding from state and federal resources could bring more resources to bear on the energy extension programming. New food products will be developed using Alaska produced ingredients.

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

1. Evaluation Studies Planned

- Before-After (before and after program)
- Comparison between locales where the program operates and sites without program intervention
- Retrospective (post program)
- During (during program)
- After Only (post program)

Description

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.

2. Data Collection Methods

- On-Site
- Telephone
- Observation
- Sampling
- Mail
- Structured

Description

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.

V(A). Planned Program (Summary)

Program #4

1. Name of the Planned Program

Youth Development

2. Brief summary about Planned Program

Extension will promote youth development through *education* with a focus on skills and knowledge targeting individual learners with the goals of developing competency in various knowledge areas and a *content* approach using 4-H follow Mission Mandates: Science, Engineering, and Technology; Healthy Lifestyles; and Citizenship. Clubs, school enrichment programs, after-school activities, and summer camps will be conducted across Alaska to achieve youth development goals.Training throughout the state, using the Essential Elements of Youth Development, will be the foundation of all youth development programming within this contextual framework that include generosity, belonging, independence, and mastery.

3. Program existence : Mature (More then five years)

4. Program duration : Long-Term (More than five years)

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

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

V(B). Program Knowledge Area(s)

1. Program Knowledge Areas and Percentage

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%	
	Total	100%		0%	

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

1. Situation and priorities

Of the nearly 100,000 youth who could benefit from positive youth development programming, currently only 10% of that target population of youth are served by the program (Kids Count Alaska 2004 Data Book, ISER, UAA). Increased administrative function support for 4-H will result in a stronger client find for underserved and minority population activities. The university system strongly supports workforce development, with attention to youth, as a priority in outreach. Alaska is facing increased urbanization and rural outmigration. The graying and browning of the American population is also occurring in Alaska. Military deployment continues to be a major source of stress on a significant percentage of families. The number of youth who participate in 4-H programming drops off in adolescence. The number of agent/field faculty is small in contrast to the distances between communities in a state that, overlaid on a map of the rest of the United States, would stretch from Florida to California and Minnesota to Texas. Transportation off the limited road system requires expensive air or limited sea access.

Such geographic extremes, combined with a high latitude climate, restrict what programs can be offered where. Without an equivalent to county agents, we will continue to develop partnerships with Native corporations, non-profit agencies and state organizations involved in youth programming to strengthen ownership in programming.

2. Scope of the Program

- In-State Extension

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

1. Assumptions made for the Program

When environments include sustained opportunities for youth to gain a sense of belonging, independence, mastery and generosity, youth make positive life choices. Their contribution in leadership and civic engagement productively influence their communities and their futures. Positive youth development relies on science-based program competencies that promote workforce development and personal goal attainment through long-term, caring interactions with mentors, peer support, and experiential learning. Improvements in risk management and volunteer management for volunteer leaders will continue to enhance these youth assets. Increasing membership or involvement in programs has to incorporate new types of club and program activities that meet the relevant needs of single-head of household families, various learning styles, and a wide range of socio-economic strata in the state's diverse populations.

2. Ultimate goal(s) of this Program

Borrowing from the vision of 4-H, Alaskan youth will be productive citizens and catalysts for positive change to meet the needs of a diverse and changing society. Youth development will be a highly respected resource recognized by the state as a leader in creating a sense of belonging, mastery, independence and generosity through club and project programming to any community with a desire to build youth assets.

V(E). Planned Program (Inputs)

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

Year	Extension		Research	
	1862	1890	1862	1890
2010	9.0	0.0	0.0	0.0
2011	9.0	0.0	0.0	0.0
2012	9.0	0.0	0.0	0.0
2013	9.0	0.0	0.0	0.0
2014	9.0	0.0	0.0	0.0

V(F). Planned Program (Activity)

1. Activity for the Program

With the use of a 4-H Volunteer Leaders Training Manual, CD's and accompanying web-based tutorials that incorporate Essential Elements training , various methods of delivery will be developed including district workshops, the development of digital learning platforms, teleconference trainings, highlights for newsletters and web-based tutorials. In addition to redefining the Alaska State 4-H Leaders Training Manual, portions of 4-H 101 will also be added to the training.

Many youth enter the workforce without the key skills needed to advance in the workplace. By creating collaborations with local district schools, area businesses, federal, state and tribal agencies and other civic organizations, training programs will be made available for youth and opportunities for employment can be achieved.

Ideals of entrepreneurship will be presented at the 4-H club level by conducting trainings with local volunteer leaders, junior. leaders, and youth of the 4-H clubs. District agents will assist in promoting the ideals of youth-based enterprises through additional leader and junior leader trainings, providing enterprise opportunities, and collaborate with organizations that can aid such enterprises.

Collaborations with local schools and other youth programs across the state will lead to new volunteer opportunities for 11-18 year olds. Though there are many opportunities for youth of this age, a key to success in this program will be though developing cross-over collaborations with local schools, other youth programs, and area University of Alaska campuses.

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

Extension	
Direct Methods	**Indirect Methods**
• Other 1 (Camps) • Workshop • Group Discussion • Education Class • Demonstrations • One-on-One Intervention	• Public Service Announcement • Web sites • Newsletters

3. Description of targeted 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 and their representatives

University of Alaska faculty

V(G). Planned Program (Outputs)

1. Standard output measures

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

	Direct Contacts Adults	Indirect Contacts Adults	Direct Contacts Youth	Indirect Contacts Youth
Year	Target	Target	Target	Target
2010	575	2300	1160	16500
2011	600	2400	1200	17000
2012	650	2500	1250	17500
2013	700	2600	1300	18000
2014	700	2600	1300	18000

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

Expected Patent Applications

2010 :0 **2011 :**0 **2012 :** 0 **2013 :** 0 **2014 :** 0

3. Expected Peer Review Publications

Year	Research Target	Extension Target	Total
2010	0	0	0
2011	0	0	0
2012	0	0	0
2013	0	0	0
2014	0	0	0

V(H). State Defined Outputs

1. Output Target

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

  2010 :1 **2011 :**1 **2012 :**1 **2013 :**1 **2014 :**1

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

  2010 :3 **2011 :**3 **2012 :**3 **2013 :**3 **2014 :**3

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

  2010 :5 **2011 :**5 **2012 :**5 **2013 :**5 **2014 :**5

- Output Target 4: Youth Development will create initiative programming in science, engineering and technology.

  2010 :5 **2011 :**5 **2012 :**5 **2013 :**5 **2014 :**5

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

  2010 :5 **2011 :**5 **2012 :**5 **2013 :**5 **2014 :**5

V(I). State Defined Outcome

O. No	Outcome Name
1	Outcome Target 1: 100% of faculty and staff associated within the program area will understand the Essential Elements of Youth Development
2	Outcome Target 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 Target 3: 4-H educators will expand programming to underserved and minority youth by 5% in each year of the five-year plan of work.

Outcome #1

1. Outcome Target

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

2. Outcome Type : Change in Knowledge Outcome Measure

2010 :9	**2011 :** 9	**2012 :** 9	**2013** 9	**2014 :**9

3. Associated Institute Type(s)

•1862 Extension

4. Associated Knowledge Area(s)

- 806 - Youth Development

Outcome #2

1. Outcome Target

Outcome Target 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. Outcome Type : Change in Action Outcome Measure

2010 :200	**2011 :** 200	**2012 :** 200	**2013** 200	**2014 :**200

3. Associated Institute Type(s)

•1862 Extension

4. Associated Knowledge Area(s)

- 806 - Youth Development

Outcome #3

1. Outcome Target

Outcome Target 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. Outcome Type : Change in Action Outcome Measure

2010 :5	**2011 :** 5	**2012 :** 5	**2013** 5	**2014 :**5

3. Associated Institute Type(s)

•1862 Extension

4. Associated Knowledge Area(s)

- 806 - Youth Development

V(J). Planned Program (External Factors)

1. External Factors which may affect Outcomes

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

Description

Youth Development programming will build on existing community assets for youth to promote educational opportunities as part of a network of resources in communities as those communities see the value of the resource.

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

1. Evaluation Studies Planned

- During (during program)
- Retrospective (post program)

Description

Systematic collection of data on participation and impacts will focus on formative and summative evaluation tools to study behavior changes that lead to long-term productive impacts on individual development.

2. Data Collection Methods

- Structured
- Telephone
- Observation
- Sampling
- Tests
- On-Site
- Mail

Description

Evaluation tools will be developed as part of youth programming.

V(A). Planned Program (Summary)

Program #5

1. Name of the Planned Program

Management of Ecosystems

2. Brief summary about Planned Program

The Arctic and Subarctic zones are expected to sustain the greatest impact in the wake of global climate change. AFES and CES will play a pivotal role in research, teaching and outreach, providing information about management of Alaska and northern ecosystems. Management of the boreal and southeast Alaska's temperate rainforests will play an increasing role in fire disturbance and adaptation to climate change. The vast acreage in Alaska and the potentially high carbon storage capacity in the boreal forest zone require that an understanding is important for both ecological modeling and for land management. As energy continues to become a growing concern throughout the world, the boreal forest has the potential to provide products for the production of fuels alternative to petroleum and coal. The economic potential of Alaska's forests is under-realized in timber and non-timber products. The forest ecosystem can play a role in diversifying the economy of Alaska. Very little information exists regarding the characteristics of soils associated with Alaska's forests and a there is a great need for a soils information baseline for modeling climate change, boreal forest management, and future soil inventory. Soils are a fundamental resource, and knowledge about the cold-climate soils of Alaska is crucial for most Alaska resource management, production, and construction activities. Proper knowledge and planning of soil-disturbing activities can prevent major impacts on other resources. Under current Alaska climate variability, cold soils are experiencing significant changes that are in turn causing changes in natural and managed ecosystems. Proper knowledge and planning of soil-disturbing activities can prevent major impacts on other resources. Natural resource managers, and increasingly a broad array of stakeholders, need to understand the concepts and practice of creating, analyzing, and displaying spatially referenced natural resource and human community data. Nearly all maps and most data about natural resources are now stored, shared, and analyzed as digital spatial files.

3. Program existence : Mature (More then five years)

4. Program duration : Long-Term (More than five years)

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

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

V(B). Program Knowledge Area(s)

1. Program Knowledge Areas and Percentage

KA Code	Knowledge Area	%1862 Extension	%1890 Extension	%1862 Research	%1890 Research
102	Soil, Plant, Water, Nutrient Relationships	0%		20%	
121	Management of Range Resources	0%		10%	
122	Management and Control of Forest and Range Fires	0%		20%	
123	Management and Sustainability of Forest Resources	0%		25%	
132	Weather and Climate	0%		5%	
134	Outdoor Recreation	0%		10%	
315	Animal Welfare, Well-Being and Protection	0%		10%	
	Total	0%		100%	

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

1. Situation and priorities

The Arctic and Subarctic zones are expected to sustain the greatest impact in the wake of global climate change. Global climate change may result in warmer and dryer conditions in boreal forest regions. The large expanse of public land in Alaska will require skilled and knowledgeable management of natural landscapes into the indefinite future. We will maintain a leadership role in examining the sensitivity of northern resources to climate variability and change and will contribute to integrated assessments of the effects of climate change to Alaska's ecosystems. State leaders plan to develop both renewable and non-renewable natural resources to contribute to the economic well being of its 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. Geographic information is critical to the management of vast natural resource areas. Professionals who will be future land managers will need to be conversant in technology and methodology to obtain both land and remotely sensed information. An excellent training base for these future managers is curricula that incorporate visual learning through electronic media. In view of the vast acreage in Alaska and the potentially high carbon storage capacity in the boreal forest, an understanding of the boreal forest is important for ecological modeling that can enhance the capabilities of land managers.

2. Scope of the Program

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

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

1. Assumptions made for the Program

The condition and productivity of Alaska's forest and wildland resources is strongly influenced by climate, which is highly variable in Alaska. Interest in climate change will remain strong and national assessments of climate and resources will be a national and international priority. We assume that in Alaska's and the circumpolar north's future knowledge of ecosystem resources, a data base and data management system will be critical to allow us to:

- Evaluate and manage disturbance
- Recommend sustainable best management practices for recovery
- Enhance product production and use
- Encourage sustainable economic development.

The teams we have and will assemble include scientists in key program knowledge areas in forest and ecosystem sciences, forest products, range management, recreation, and policy and law, and community development. Funding is increasing through competitive grants and community, state and federal support. Outreach and education are a part of AFES's and Extension's mission to assist clients in sustainable use of natural resources and ecosystem management. Geographic information is critical to the management of vast natural resource areas. Increasingly, geographic information is derived from and transmitted using remote images. Without a reference to ground-based data, indices to relate ground-data to information obtained remotely, and a data management system that allows universal and user-friendly accessibility, remote information is useless. Professionals who will be future land managers will need to be conversant in technology and methodology to obtain both land and remotely sensed information. SNRAS/AFES will maintain programs in soil science, GIS, and ecosystem modeling that will be supported by these assumptions and will follow a number of basic assumptions:

- Global climate will not remain constant and current models predict increases that will impact northern latitudes first and hardest.
- Warming climates will increase incidence and magnitude of forest fires, diseases and insect infestations in the boreal forest of interior Alaska.
- Resource extraction of petroleum and mineral will continue and without proper management will impact Alaska's soil resources in a negative way.
- Forest management will increasingly include multiple forest products including timber, non-timber products, and fuels for energy production.

2. Ultimate goal(s) of this Program

The goal of this program is the management of ecosystems to produce, conserve, and enhance harvestable products and biodiversity in Alaska and the north and to improve understanding of the effects of natural resource policies and regulations on the management of Alaska's ecosystems. This includes:

- Sustaining bio-diversity in undeveloped areas
- Long-term monitoring programs
- Data management systems to support sustainable ecosystems and communities
- Sustainable community growth
- Development of a diversity of forest products

To attain these goals it will be necessary to develop a knowledge base that will address interactions between global warming, wildland fire, forest diseases and insect infestation, soil properties and characteristics in a forest ecosystem regime, soil carbon bioavailability, forest product development, non-extractive forest uses, and community development. Work will focus on:

- Soil properties of the northern forest.
- Origin, formation, and classification of high-latitude soils.
- Soil responses to climate change.
- Long-term forest productivity data conversion and incorporation into mega data systems for compatibility with long term ecological research, fire management, forest health, and forest ecosystem data sets.
- Increasing information available on wildlife and domestic animal ranges.
- Development of curricula that train future land managers in ecosystem stability and geospatial technology.
- Climate change effects on northern forest ecosystems.

- Product development to include timber, non-timber products, and forest management for fuel production.
- Recreation opportunities in Alaska's northern forests.
- Federal, state, and community government policy and regulation concerning ecosystem management.

V(E). Planned Program (Inputs)

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

Year	Extension		Research	
	1862	1890	1862	1890
2010	0.0	0.0	12.0	0.0
2011	0.0	0.0	12.0	0.0
2012	0.0	0.0	12.0	0.0
2013	0.0	0.0	12.0	0.0
2014	0.0	0.0	12.0	0.0

V(F). Planned Program (Activity)

1. Activity for the Program

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

Extension	
Direct Methods	Indirect Methods
• Demonstrations • Group Discussion • Workshop • Education Class • One-on-One Intervention	• Other 1 (Publications) • Newsletters • Public Service Announcement • TV Media Programs • Web sites

3. Description of targeted audience

The target audiences include 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 will be 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: Statewide Board of Advisors, Alaska Forest Association, Society of American Foresters, Alaska Farm Bureau, and the Alaska Northern Forest Cooperative. Specifically, this program will provide new 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 Resource's Division of Forestry and private land owners and managers.

V(G). Planned Program (Outputs)

1. Standard output measures

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

	Direct Contacts Adults	Indirect Contacts Adults	Direct Contacts Youth	Indirect Contacts Youth
Year	Target	Target	Target	Target
2010	60	1200	0	0
2011	60	1200	0	0
2012	60	1200	0	0
2013	60	1200	0	0
2014	60	1200	0	0

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

Expected Patent Applications

2010 :0 **2011 :**0 **2012 :** 0 **2013 :** 0 **2014 :** 0

3. Expected Peer Review Publications

Year	Research Target	Extension Target	Total
2010	12	0	0
2011	13	0	0
2012	13	0	0
2013	14	0	0
2014	15	0	0

V(H). State Defined Outputs

1. Output Target

- Output Target 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 are output measures.

  2010 6 **2011** 7 **2012 :**8 **2013** 8 **2014** 9

- Output Target 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.

  2010 4 **2011** 6 **2012 :**6 **2013** 8 **2014** 8

- Output Target 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.

  2010 4 **2011** 4 **2012 :**5 **2013** 5 **2014** 5

- Output target 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.

  2010 2 **2011** 1 **2012 :**1 **2013** 2 **2014 :**1

- Output Targe 5. Climate change will affect northern forest ecosystems that will impact economic development of communities and will have cultural implications as well on communities and individuals. Causes and effects of change on ecosystems and reverberations felt by communities and individuals will be investigated. The measured output will be publications.

  2010 4 **2011** 5 **2012** 5 **2013** 6 **2014** 6

- Output Target 6. Research related to product development to include timber products and non-timber products including energy will continue. Forest management specific to fuel/energy demand will be initiated. Measureable outputs will be publications and business starts.

  2010 4 **2011** 5 **2012** 5 **2013** 6 **2014** 6

- Output Target 7. 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.

  2010 3 **2011** 4 **2012** 4 **2013** 4 **2014** 4

V(I). State Defined Outcome

O. No	Outcome Name
1	Outcome Target 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 Target 2. Increase animal producer and wildlife manager knowledge on range use and animal impact. Measurable outcomes are publications, workshops, and conferences.
3	Outcome Target 3. Increase knowledge through classroom and field course delivery. The outcome measures will be curricula delivered and number of students reached.
4	Outcome Target 4. Increase community and individual knowledge on the impact of climate change in northern ecosystems and affects on cultural lifeways, economies, and individual well-being. Outcome measures will be publications, workshops, and conferences.
5	Outcome Target 5. Provide research information that leads to product development and recreational opportunities. Outcome measures will be publications, business starts, conferences, and workshops.

Outcome #1

1. Outcome Target

Outcome Target 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 Type : Change in Knowledge Outcome Measure

2010 : 12	**2011 :** 16	**2012 :** 17	**2013 :** 20	**2014 :** 20

3. Associated Institute Type(s)

•1862 Research

4. Associated Knowledge Area(s)

- 102 - Soil, Plant, Water, Nutrient Relationships
- 123 - Management and Sustainability of Forest Resources
- 132 - Weather and Climate

Outcome #2

1. Outcome Target

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

2. Outcome Type : Change in Knowledge Outcome Measure

2010 : 7	**2011 :** 8	**2012 :** 9	**2013 :** 10	**2014 :** 10

3. Associated Institute Type(s)

•1862 Research

4. Associated Knowledge Area(s)

- 102 - Soil, Plant, Water, Nutrient Relationships
- 121 - Management of Range Resources
- 132 - Weather and Climate
- 315 - Animal Welfare, Well-Being and Protection

Outcome #3

1. Outcome Target

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

2. Outcome Type : Change in Knowledge Outcome Measure

2010 : 100	**2011 :** 100	**2012 :** 110	**2013 :** 120	**2014 :** 130

3. Associated Institute Type(s)

•1862 Research

4. Associated Knowledge Area(s)

- 102 - Soil, Plant, Water, Nutrient Relationships
- 121 - Management of Range Resources
- 122 - Management and Control of Forest and Range Fires
- 123 - Management and Sustainability of Forest Resources

- 132 - Weather and Climate
- 315 - Animal Welfare, Well-Being and Protection

Outcome #4

1. Outcome Target

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

2. Outcome Type : Change in Knowledge Outcome Measure

2010 :7	**2011 :** 8	**2012 :** 9	**2013 :**10	**2014 :**10

3. Associated Institute Type(s)

•1862 Extension
•1862 Research

4. Associated Knowledge Area(s)

- 102 - Soil, Plant, Water, Nutrient Relationships
- 121 - Management of Range Resources
- 122 - Management and Control of Forest and Range Fires
- 123 - Management and Sustainability of Forest Resources
- 132 - Weather and Climate
- 315 - Animal Welfare, Well-Being and Protection

Outcome #5

1. Outcome Target

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

2. Outcome Type : Change in Knowledge Outcome Measure

2010 :3	**2011 :** 3	**2012 :** 4	**2013 :**4	**2014 :**5

3. Associated Institute Type(s)

•1862 Research

4. Associated Knowledge Area(s)

- 123 - Management and Sustainability of Forest Resources
- 132 - Weather and Climate

V(J). Planned Program (External Factors)

1. External Factors which may affect Outcomes

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

Description

Alaska is the harbinger of climate change in the north. The region is already seeing impacts of the changing climate in its sea ice degradation, the ecology of the boreal forest, and its ice-impregnated northern soils. This will influence the thrust of ecosystem management in coming years. Policy and regulation and competing public priorities are already coming to the fore as endangered species affect land use and hence management of forests and rangelands. Programmatic challenges will occur as consideration is given to the management of the forests for fuels to mitigate demands on petroleum and coal supplies. A continuing rise in transportation costs is already drawing attention to regional and local management for energy and other local wood products. Finally, as demographics of the population change and demographics of the forest industry change toward management with a specific product objective as well as an objective of sustainable and resilient northern ecosystems, there will be a need for continuing adult education and higher education to fill workforce vacancies or new positions that are created to meet demands in energy and ecosystem management fields.

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

1. Evaluation Studies Planned

- Retrospective (post program)
- After Only (post program)
- Comparison between locales where the program operates and sites without program intervention
- During (during program)
- Comparisons between different groups of individuals or program participants experiencing different levels of program intensity.
- Before-After (before and after program)

Description

The objective of the AFES and Extension is to set in place a feed-back loop that brings information from our units to our clientele and to bring clientele input back to us to enable us to continue to adjust our work, within the capabilities of our space and budgets, to meet the needs of the people of Alaska.

2. Data Collection Methods

- Case Study
- Structured
- Observation
- Mail
- Telephone
- Journals
- Unstructured
- Sampling
- On-Site
- Tests

Description

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.