

# University of Alaska Fairbanks Combined Research and Extension Plan of Work 2020-2024

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## I. Plan Overview

### 1. Executive Summary

Alaska is recognized for its immense size and sparse population and its cultural, geographic and environmental diversity. The state represents a major region of renewable and nonrenewable natural resources in the United States. Its 365 million acres include the nation's largest oil reserves, coal deposits and the two largest national forests. The state also contains an array of mineral deposits, including gold, zinc, boron, molybdenum and rare earth minerals. Alaska has a diverse geography that offers soils for production of food, fiber and biomass fuels as well as a multitude of recreational and tourism activities. Waters surrounding Alaska's shoreline and riparian habitats contain large stocks of salmon, cod, pollock, halibut, herring, crab and shrimp that support thriving commercial, sport and subsistence fisheries. Alaska's natural resources have historically been the foundation of the state's economy though resource industries have been mostly extractive in nature. The use and management of these resources is a predominant force in the planning and delivery of any teaching, research, Extension and engagement programs. The University of Alaska Fairbanks (UAF) in general and Cooperative Extension Service (CES) and Agricultural and Forestry Experiment Station (AFES), in particular, meet the challenges of increasing demands for research, education, outreach and community engagement that are relevant to sustainable management of Alaska's resources and bring community ideas to the university for further development of the state's resources.

Alaska's economy has become dependent upon revenues related to petroleum development. To diversify its economy, the state is moving toward nonpetroleum natural resources for economic opportunities that are cost-effective and sustainable. The programs of AFES and CES play a vital role in linking the knowledge generated at the university to meet the needs and interests of Alaskans. Citizens are provided opportunities through engagement to influence future research and education priorities. CES delivers the latest research findings, education and outreach opportunities to the public.

While Alaska imports a high percentage of foods and other agricultural products, growers in the agricultural sector produce fresh market potatoes, vegetables and herbs; forages, grains and manufactured livestock feeds; controlled environment products, which include bedding plants, florals, landscape ornamentals and short season vegetables; and a variety of niche market crops. Livestock enterprises in Alaska are varied in size and species of animal in production. Producers need information specific to northern latitudes that will protect the environment and ensure an abundant and safe food supply. As the population grows, more locally and regionally produced food will be needed to provide greater food security. Many Alaskans live a subsistence lifestyle or supplement their diets with fish and game meat. Alaska also has a large military population, and most have not previously preserved game meat or fish. Alaska has one of the nation's highest rates of botulism, so it is imperative to provide much needed information on safe preservation of dietary staples. Alaska also has one of the fastest growing senior populations, who faces the challenge of remaining active and healthy in a demanding environment. Other concerns that define health and nutrition programming are the high rates of child and adult obesity and diabetes. Indoor air quality is also a particular Alaska concern.

High energy costs remain a critical issue, particularly in rural Alaska, where fuel oil runs \$8 or \$9 a gallon. Research and outreach will continue to focus on new and alternative sources of energy, wood and biomass and energy conservation. AFES will work to provide new information to manage renewable resources and to improve technology for enhancing the economic well-being and quality of life at high latitudes. While foresters, farmers and land managers use research results, all Alaskans benefit from the wise use of land resources. Research projects will be in response to requests from producers, industries, and state and federal agencies for information on plant, animal and soil sciences, forest sciences and resources management. AFES priorities, like national priorities, are to enhance sustainability of food and agricultural systems; adapt to and mitigate the impacts of climate change; support energy security through the development of renewable natural resources; ensure a safe, secure and abundant food supply; improve human health, nutrition and wellness; support environmental stewardship through the development of sustainable

management practices; and strengthen individual, family and community development and resilience. Experiment station researchers will continue to publish research in scientific journals, conference proceedings, books, and in experiment station bulletins, circulars, newsletters, research progress reports and miscellaneous publications. Scientists will also disseminate their findings through conferences, public presentations, workshops and other public information programs like websites and blogs.

The mission of CES is to use research-based knowledge to educate, engage and support the people and communities of Alaska, connecting them with their university. CES provides factual and practical information while bringing Alaskans' issues and challenges to the university. CES is committed to promoting the sustainability and economic security of individuals, families and communities by providing practical, nonformal education, including conferences, workshops and cooperative work with community, regional and tribal partners. Outreach is also provided through numbered publications, faculty consultations, newsletters, blogs and social media platforms like Facebook pages, YouTube channels and Twitter feeds. CES priorities address national priorities by helping families, youth and individuals be physically, mentally and emotionally healthy; enhancing workforce preparation and life skills; strengthening food safety and security; and fostering greater energy independence.

Programming respects cultural and ethnic diversity and is responsive to emerging stakeholder needs and interests. Programs result from client requests, various regional and subject matter advisory groups, surveys and needs assessments. Collaborations with other universities and with other units within UAF, the University of Alaska statewide system, federal and state agencies, nongovernmental organizations and private industry are planned to continue. Stakeholders include K-12 students, higher education students, researchers, individuals, businesses, industry, government, nongovernmental organizations, and families and communities throughout Alaska, the circumpolar North and the nation. The combined efforts of CES and AFES bring the university to Alaskans while bringing community concerns and issues back to the university.

State-defined critical issues link specific public needs with our broad mission in order to allow the concentration of resources (money and people) that will promote high-quality work. Critical issues will be used to provide guidance for faculty, staff and administrators to direct current and new programs and find or retain faculty expertise. The next section of this summary explains the rationale driving a five-year focus on four critical issues: Agriculture & Food Security; Natural Resources, Ecosystems & Sustainable Energy; Healthy Individuals, Families & Communities; and 4-H & Youth Development. Climate change is not listed separately, as it affects all the program areas.

**Agriculture & Food Security:** Alaska imports over 90 percent of foods and other agricultural products consumed in the state. Growers' products are primarily for in-state consumption and use, including fresh market potatoes, forages, grains and other livestock feeds, greenhouse flowers and vegetables and a variety of "niche market" crops and products. Commercial horticulture includes ornamentals, greenhouse operations, turf management, lawn maintenance and sod production. Proper knowledge and planning of soil-disturbing activities can prevent major impacts on other resources. Animal enterprises in Alaska include dairy, beef, swine, reindeer, poultry and nontraditional livestock such as muskox, elk and bison. Agriculture research and outreach will address areas of animal agriculture, home animal production, agronomic crops including oil seeds and cover crops, and home and commercial vegetable production. Agricultural soils, fertilizer and compost research and outreach are also part of this program area. Our statewide Integrated Pest Management (IPM) education program has operated since 1981 assisting individuals to understand invasive pests and control options. Agriculture outreach includes the primary areas of animal agriculture, animal health, horticulture, soil science and agroforestry. As Alaska expands its in-state consumption and export markets, producers will require increasing access to research-derived information specific to northern latitude environments and knowledge applied from research in other states.

**Natural Resources, Ecosystems & Sustainable Energy:** Communities increasingly depend on Alaska's natural resources for viable economic development. Policies to sustain this growth that mirror sociological and technological change will be critical. Major Alaska resource development activities are now centered in the oil and gas industries. Headquarters for these industries are located in the urban centers where there is access to various transportation and advanced communication systems. However, urban communities lack infrastructure to engage in value-added activities that would enhance development of nonpetroleum industry. Additionally, these efforts should provide underserved populations in rural areas real options for economic development and improved quality of life. Outreach will address stakeholder needs for unbiased, science-based information about natural resource management issues in forestry, mining, water, recreation and alternative, sustainable energy sources. Alaska's forest and agricultural resource

potential for bioenergy production is immense but requires more research. The economic potential of Alaska's forests is under-realized in timber and nontimber products. The forest ecosystem and agricultural lands can play a role in diversifying the economy of Alaska. Concern for the health and survival of resource biodiversity will continue to be a central issue in resources management in Alaska and elsewhere. As energy continues to become a growing concern throughout the world, the boreal forest has the potential to provide products necessary for fuel alternatives to petroleum and coal.

Healthy Individuals, Families & Communities: Concerns for Alaskans include high rates of obesity and recurring food safety issues such as botulism. The state records frequent earthquakes, which underscores a need for emergency preparation as well as periodic radon testing related to ground shifts. Food safety programming will encompass food preservation, safety, preparation and product development. Food safety education will utilize various resources and strategies to ensure that all types of foods, including indigenous foods, are properly stored, prepared and preserved so that food is safe for consumption. Home and energy Extension programming addresses indoor air quality, home maintenance and repair, energy use and conservation. Emergency preparedness impacts such areas as families and communities responding to natural and man-made disasters. Nutrition outreach will address childhood obesity with nutrition education in after-school programs and nutritional programs in community venues as well as cooking programs that emphasize preparing healthy foods. Training is conducted with youth, teachers, 4-H leaders, youth group organizers, parents and community partners to provide techniques for working directly with youth in the area of nutrition and physical activity.

4-H & Youth Development: Research shows that youth need sustained, healthy relationships with adults in order to thrive. CES will continue to promote positive youth development through education with a focus on leadership skills, using the 4-H mission mandates of science, citizenship and healthy living. Organized 4-H clubs, school enrichment programs, after-school activities and summer camps will continue to achieve youth development goals. The focus of Alaska's 4-H program is supporting the healthy maturation of youth from childhood to adulthood. Training throughout the state, promoting life skills and using the 4-H model of youth development, will be the foundation of all youth development programming.

During the last five years, the state's appropriations to the University of Alaska have decreased significantly. During the FY19 legislative session, Alaska's governor proposed a 41 percent cut to the state appropriation for the University of Alaska. In general, there is a great concern with the amount of state funding that will be available to the university this year and the next three years. With this in mind, CES and AFES have had to adjust their expectations of how many faculty and staff they can continue to provide salary funding for until there is an increase in state funding. Thus, the FTE projections in the next section show a gradual reduction during the POW cycle.

## 2. FTE Estimates

Year	1862 Extension	1862 Research
2020	28.5	13.8
2021	26.2	12.7
2022	24.1	11.7
2023	22.2	10.7
2024	20.4	9.8

## II. Merit / Peer Review Process

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