

University of Alaska Fairbanks



FY16 Capital Budget

Request Summary and Narrative
August 2014



UAF FY16 Capital Request: Facilities Infrastructure, Leading the Arctic Agenda & Academic Technology August 2014

CAPITAL CONSTRUCTION REQUESTS		State Appropriation	Receipt Authority	Total
Renewal & Renovation, Code, ADA (UAF proportion of \$50M UA request)		32,500.0	-	32,500.0
R&R, Code, ADA Total		\$ 32,500.0	\$ -	\$ 32,500.0
New Construction				
Engineering Facility Completion		31,300.0	5,000.0	36,300.0
Alaska Center for Energy and Power Office Buildout		-	6,500.0	6,500.0
Public/Private Partnership (P3) Campus Housing Project		6,500.0	65,000.0	71,500.0
New Construction Total		\$ 37,800.0	\$ 76,500.0	\$ 114,300.0
Planning for New Construction				
Fire Hall Replacement & CTC Emergency Services Training Center		1,500.0	-	1,500.0
Core Campus Parking Garage		350.0	-	350.0
Kuskokwim Campus Consortium Learning Center		700.0	-	700.0
Planning for New Construction Total		\$ 2,550.0	\$ -	\$ 2,550.0
Land, Property, and Facilities Acquisition				
Expanding the Early Childhood Program (Bunnell House)		850.0	-	850.0
Northwest Campus Realignment		150.0	-	150.0
Land, Property, and Facilities Acquisition Total		\$ 1,000.0	\$ -	\$ 1,000.0
CAPITAL RESEARCH				
		State Appropriation	Receipt Authority	Total
Leading Alaska's Arctic Agenda		\$ 13,700.0	\$ 9,000.0	\$ 22,700.0
Unmanned Aircraft Systems in the Arctic - 5 year		10,000.0	5,000.0	15,000.0
Revitalizing Alaska Native Languages - 5 year		2,500.0	1,000.0	3,500.0
Supporting the U.S. Arctic Council Chairmanship: 2015-2017 & Beyond - 2 year		1,200.0	3,000.0	4,200.0
Enhancing Alaska's Economic Competitiveness & Safety		\$ 19,500.0	\$ 22,500.0	\$ 42,000.0
Integrated Fossil Fuels Program - 3 year		1,500.0	1,500.0	3,000.0
Energy & Remote Power Partnerships for Alaska's Future - 3 year		3,000.0	11,000.0	14,000.0
Closing Alaska's Earthquake Safety Gap - 2 year		10,000.0	8,000.0	18,000.0
Oil Spill Research Center of the Arctic (ORCA) - 5 year		5,000.0	2,000.0	7,000.0
Arctic Agenda & Economic Competitiveness Total		\$ 33,200.0	\$ 31,500.0	\$ 64,700.0
ACADEMIC EQUIPMENT & TECHNOLOGY				
		State Appropriation	Receipt Authority	Total
Classroom Instructional & e-Learning Technology - 2 year		2,000.00	-	2,000.00
Advanced Analytical Instrumentation for Resources R&D and Education - 2 year		1,000.00	1,000.00	2,000.00
Technology Tools & Systems Integration in Support of Business Process Improvement - 2 year		1,000.00	-	1,000.00
Academic Equipment & Technology Total		\$ 4,000.0	\$ 1,000.0	\$ 5,000.0

UAF FY16 Capital Budget Request Narratives

RENEWAL & RENOVATION (R&R), CODE, ADA

(GF \$32,500.0)

UAF's R&R request represents a proportional share of the expected \$50.0 million UA system R&R request. The list of items below represents several high priority R&R, Code and ADA items and an estimated amount for allocation in FY16. These items are a small fraction of all UAF R&R and deferred maintenance (DM) needs. Facility events may require reprioritizing and/or increasing or decreasing specific projects and allocation amounts based on those circumstances.

Critical Electrical Distribution

(GF \$6,370.0)

The existing electrical distribution system at UAF is nearly 50 years old. With the completion of several new facilities, the antiquated equipment could be stretched beyond its capabilities and begin to fail. To ensure campus power is not shutdown, major upgrades must be made to replace the ancient switchboard and cabling to bring the campus distribution back into code compliance. This is a multi-phased project and \$32.9 million (roughly 84 percent of the total project cost) has already been appropriated in past years (2005-2014). This final funding increment is necessary to complete the upgrades.

Fairbanks Campus Main Waste Line Repairs

(GF \$2,000.0)

Planning is still ongoing for the sanitary systems and UAF has developed a priority list of repairs. Essentially, 90 percent of the sanitary mains and building branch lines have failed or are failing. Earlier phased work has replaced the most critical failed sections including the main trunk off-campus to the utility, and failed lines to several existing facilities. This funding will address the next group of projects in the prioritized list developed by engineering consultants in 2011.

Fairbanks Main Campus Wide Roof Replacement

(GF \$2,500.0)

UAF has many older large campus structures that still have original roof systems. As buildings on campus age and do not receive adequate R&R funding, roofing system repairs only offer a Band-Aid solution to a long-term problem. Funding is required for a multi-year project to replace roofs that have surpassed their useable life and are at risk of complete failure.

West Ridge Facilities Deferred Maintenance & Revitalization

(GF \$9,000.0)

The first phase of the West Ridge Deferred Maintenance project will provide a road map on how to effectively and efficiently address deferred maintenance and functional obsolescence in these 40-50 year old facilities. A program of renovations will be developed to ensure the University is addressing the needs of the buildings in a timely manner and in such a way as to enhance the space for the existing programs on West Ridge. The first project is expected to be relocation of the Irving 1 animal quarters into the basements of

the BiRD and Virology Buildings. This requires the completion of these unfinished spaces. Next on the list is consolidation of 24/7 operations so needed backup infrastructure can be efficiently provided for the National Weather Service, Alaska Satellite Facility, and Alaska Volcano Observatory.

ADA Compliance Campus Wide: Elevators, Ramps & Restrooms

(GF \$1,000.0)

The Campus Wide ADA Guidelines Compliance project is an on-going effort to bring older components of the UAF Fairbanks campus and associated community and research campuses into compliance with ADA guidelines. This project includes accessibility improvements such as renovations to restrooms, improvements to accessibility routes both inside and outside buildings, replacing drinking fountains, upgrading elevators and modifying stairwell handrails.

Elevator/Alarms Scheduled Upgrading & Replacement

(GF \$500.0)

UAF Facilities Services manages the operation and maintenance of a fleet of more than 50 elevators and lifts with an average age of over 25 years. With the help of an audit in FY01, elevators and alarm systems were reviewed and prioritized for modernization upgrades. Over time, a number of these items have been addressed and new items have been added. This request represents the latest installment of multi-year modernization plans and will address ADA, code, and deferred maintenance improvements in an identified group of campus elevator systems. Also included in this scope of work is routine and deferred maintenance on the many fire alarm systems in UAF facilities.

Fairbanks Campus Building Interior & Systems Renewal

(GF \$500.0)

This project will focus on critically needed existing building interiors and systems renewal. Particular emphasis will be on instructional spaces; classrooms, labs and research. It will include flooring systems, replacement of worn interior finishes, repair and modernization of the buildings mechanical and electrical systems, fire and life safety improvements. Associated with the building mechanical system is the inclusion of building monitoring and control systems to improve performance and increase energy efficiency.

Cogen Heating Plant Required Upgrades to Maintain Service & Code

Corrections (Ph3)

(GF \$1,660.0)

The UAF combined heat and power plant is a co-generation facility that provides electrical power, domestic and firefighting water, and steam for heating buildings. The plant is over almost 50 years old and many components have exceeded their useful life. This project will address revitalization of the highest priority deficiencies of utilities on the UAF Main Campus. The heating plant renewal items will include the steam, electrical, and water systems. The items were identified in the 2006 Utility Development Plan as needing immediate action. Avoiding a major utility failure is the primary objective of this project.

Patty Center Revitalization

(GF \$3,000.0)

Constructed in 1963 to replace an existing 40-year old gym, the Patty Center houses sports and recreational space for five NCAA Division II, and two NCAA Division I sports. This includes both men's and women's teams that are a vital part of the UAF Campus Life Master Plan. The construction project will correct an abundant list of code citations and extend the life of the 50-year-old facility. The facility must be upgraded to meet basic competition standards.

Gruening Revitalization: Envelope, HVAC

(GF \$1,500.0)

Gruening is the Fairbanks Campus' major instructional building with both classrooms and faculty offices. Because the building is over 40 years old, the building systems are reaching or at useful-life expectancy and are in need of exterior envelope and HVAC revitalization. This project will include fireproofing, waterproofing, insulation upgrades, structural wall upgrades and bracing, re-flashing, seal joints, repair and replacement of exterior doors and windows, repair and renovate wall systems, concrete repairs, vapor barrier correction and repair building ventilation system as well as the heating system. The building revitalization will not only protect the building asset, but will positively affect the engagement of the student and faculty by providing better thermal comfort, noise reduction, indoor air quality. An additional benefit is improvement in the overall building mechanical system which will be a big energy saving measure. This work will also help in reducing the UAF's deferred maintenance backlog.

Campus Infrastructure

(GF \$1,000.0)

Continued and sustained funding would allow for the completion of the approximately one mile North Tanana Loop Road, provide access roads to the Natural Sciences Facility, Museum, parking lot North of West Ridge Research Complex, bike trail access, and access and improvements to the campus trail system. North Tanana Loop Road is a key component to improving public and employee access to the facilities on West Ridge. Current traffic routes take cars, buses, and large delivery trucks through the heart of the walking campus or through existing parking lots.

In addition, installation of a wireless mesh network will provide robust, fail-over capable wireless network access to areas of UAF campus that are exterior to buildings. This will provide the foundation and infrastructure for several new services to be made available on the UAF Fairbanks Campus including: wireless connectivity for student research projects and equipment outside of the classroom, seamless service across campus for portable devices, and improved safety surveillance/emergency services as part of student life.

Ski, Bike & Pedestrian Safety

(GF \$500.0)

This project will focus on reducing points of conflict between pedestrians, bikes and vehicles on campus and addressing other safety issues. A significant number of students park their cars for long-term on campus and walk to and from classes. Similarly, a number of students are also using bikes on campus. This project includes: repair and replacement of

existing sidewalks and pedestrian pathways, eliminating overly steep pathways, repairing ramps and impassable curbs, will complete discontinuous sidewalks, and where necessary, provide and upgrade lighting to ensure safe and sufficient circulation through campus. Repairs and improvements in the pedestrian, bike and ski trails will enhance pedestrian circulation within the campus, increase utilization of walkways, and provide better connections between buildings. Additional benefits of this project are that it will enhance the student experience on campus, promote pedestrian non-motorized travel and activities on campus and move the campus toward ADA compliance.

Student Services Renewal - Wood Center Student Union

(GF \$2,000.0)

The Wood Center has the advantages of a central campus location, the draw of food service, and very high levels of pedestrian traffic. Despite these advantages, Wood Center does not function as a "campus center" that attracts students in the evenings or on weekends or whenever they have spare time during the day. While there are areas within the building that are "destinations" for students, including the Pub and the bowling alley, the building as a whole is not a draw for students, even those who live on campus. Renewal work in the Wood Center will include renovation of existing spaces to allocate room for the consolidation of programs serving UAF students and improve its functionality as a central location of student life on campus.

Kuskokwim Campus Facility Critical Deferred & Voc-Tech Renewal Phase 2

(GF \$970.0)

Funding will allow for continued major renovations and code upgrades to over 50,000 square feet of campus space. Work generally includes new architectural finishes on the inside and outside of buildings, new electrical distribution, corrected plumbing systems, and installation of code compliant ventilation systems.

NEW CONSTRUCTION

Engineering Facility Completion

(GF \$31,300.0, NGF \$5,000.0, Total \$36,300.0)

This request represents the final amount necessary to complete the UAF engineering facility. The UAF campus is the home of the College of Engineering and Mines (CEM) and the Institute of Northern Engineering (INE). CEM and INE are the primary centers for engineering education and research in Alaska today. UAF has produced approximately 60 percent of the BS level engineering graduates in the state over the past ten years, and in 2013, UAF had approximately 66 percent of the undergraduate engineering students, above the pre-major level, enrolled in Alaska. CEM and INE additionally generated approximately \$11.5 million in grant-funded research in FY14.

The Duckering Building on the Fairbanks campus is the main facility that supports the engineering programs on the UAF campus. The Duckering building as documented by the UA Engineering Plan 2010 is too small and the facilities cannot fully support the needs of modern engineering education and research.

This project to upgrade UAF's engineering facilities will support the University of Alaska Fairbanks in its efforts to graduate more engineering students. The project has two components. First, a partial upgrade to 30,000 gsf in the existing Duckering Building is an integral component of the proposed solution. (Portions of the existing building that currently adequately house their programs will remain in their current configuration. Some of these spaces are not ideal; but they do provide an effective learning and/or research environment.)

Second, the construction of a new UAF Engineering Facility will provide an additional 119,100 gross square feet (gsf) located between the Duckering Building and the Bunnell Building. The new UAF Engineering Facility design provides an efficient solution to the space and functional deficits recognized in the existing Duckering Building. The new facility creates an environment that enhances interaction among the students, professors and researchers. The modern building improves indoor environment and building systems and student success and retention are enhanced through a visible and interactive learning environment (engineering on display), day lighting of common, learning, and research spaces, improved air quality, student interaction and learning spaces in common areas and integrated engineering research and instruction.

The state provided incremental funding for this project in FY12 through FY15 leaving an unfunded balance of \$28.3 million dollars. Delayed funding has caused a bifurcation in the scope of work that does not follow the normal schedule of construction activities for such a building. Delayed funding also means the opening of the building is delayed until at least Spring semester 2017. Because the earliest possible completion date is 18 months beyond the original date, the FY16 request is \$31.3 million dollars; the three million dollar increase will cover inflation in material and labor costs and a portion of the extended general conditions cost.

Alaska Center for Energy & Power (ACEP) Office Buildout (NGF \$6,500.0)

UAF will complete the shelled space on the fourth floor of the UAF Engineering Facility to provide research labs, offices, and support space for the Alaska Center for Energy and Power (ACEP). The space will also have collaboration areas, allowing for a more integrated research approach with external partners. The completion of this project, in combination with the multi-bay research building constructed in 2011-2012, ACEP will have the physical space necessary to pursue its mission.

Public/Private Partnership (P3) Campus Housing Project (GF \$6,500.0, NGF \$65,000.0, Total \$71,500.0)

As part of the "Student Life: Transforming the UAF Experience" project, UAF proposes to develop new student housing units through a public private partnership arrangement. This initial housing project will be the first phase in a plan to increase the overall quality and quantity of housing stock. The project will provide beds in dormitory buildings either adjacent to the Wood Center or at another location near core campus. The first phase, two 204-bed dormitories, could be constructed between August 2015 and May 2017.

PLANNING FOR NEW CONSTRUCTION

Fire Hall Replacement and Community & Technical College (CTC) Emergency Services Training Center

(GF \$1,500.0)

For Phase 1, the proposed UAF Emergency Services and Management (EMS) Facility will provide space to meet the current demand and future growth of the emergency services programs and continue to fulfill the university's missions and goals. The current facility is 50 years old and doesn't meet modern earthquake construction codes. The replacement facility is envisioned to be a living laboratory for student emergency responders, attending classes and labs adjacent to an actual operating emergency services department. The facility space program allows for apparatus bays and support spaces for fire and EMS, and firefighter/medic living quarters for on duty members. The new state of the art training center will be constructed at a new location near lower campus. The new building and location will provide greater access to the public and other agencies to the training and operational emergency services groups.

For Phase 2, a proposed CTC Emergency Services Training, Education, and Emergency Management Facility will provide space to meet the current demand and future growth of the emergency services programs in addition to support space for the UAF Police Department.

Core Campus Parking Garage

(GF \$350.0)

The construction of a parking garage on campus will provide consolidated parking, open up valuable land for future buildings, improve the appearance of the lower campus entry, and provide convenient, short-term parking for visitors and part-time students. This increment will fund planning and design. Construction would ideally follow in FY18.

Kuskokwim Campus Consortium Learning Center

(GF \$700.0)

This proposed Kuskokwim (KuC) library expansion was part of the original 2006 Campus Master Plan to reduce overcrowding and to accommodate extended library hours. The library is currently short of book space, office space, and study areas. The layout of the current facility also makes it difficult to effectively and securely offer adequate library services to the public, primarily because the public restrooms are outside of the library and require the entire building be open to the public during extended library hours which can be problematic in terms of security. KuC envisions a 3,246-sf expansion onto the front of this facility. Half would be for a library expansion that would include restrooms. This expansion would promote the university consortium collection. The remaining half of the additional space would be for a campus gift shop, offices and conference room.

LAND, PROPERTY, AND FACILITIES ACQUISITION

Expanding the Early Childhood Program (Bunnell House)

(GF \$850.0)

The Early Childhood Education (ECE) program requires more functional space in order to meet accreditation requirements and to continue to offer the high-quality education and services provided by the program.

Northwest Campus Realignment

(GF \$150.0)

The Northwest Campus was designed and constructed to provide adult basic education (ABE), offer introductory college on campus course work in small traditional classrooms of 5-25 students taught by a resident or itinerant instructors, and limited distance learning. The campus consists of fourteen one-story wood frame structures. Funding of this project will allow for a realignment of leased land and campus-owned parcels in order to more fully meet current and projected campus needs and improve the instructional environment.

LEADING ALASKA'S ARCTIC AGENDA

(GF \$13,700.0, NGF \$9,000.0, Total \$22,700.0)

Unmanned Aircraft Systems in the Arctic (ACUASI)

(GF \$10,000.0, NGF \$5,000.0, Total \$15,000.0)

A University of Alaska-led team, headquartered at the UAF Geophysical Institute under the Alaska Center for UAS Integration (ACUASI), is one of six test centers selected by the Federal Aviation Administration (FAA) for the purpose of integrating Unmanned Aircraft Systems (UAS) into the national airspace system. This selection was partly due to the university's years of experience providing innovative UAS application and sensor support to scientific research for faculty projects, federal and state agencies, industry associations and industry groups. The team and the university are recognized nationwide as leaders in the industry, with the primary focus of UAS support for Arctic scientific research and the use of UAS to support community and industry needs. Most of the accomplishments of the program have been funded by small competitively awarded grants and contracts, as well as an important five million dollar state investment in 2012 that enabled growth in necessary infrastructure and personnel for the program. Additional potential users (the oil and gas industry, mining, forestry, etc.) are clamoring for UAS support, and the UAS industry is also eager to continue testing aircraft and systems in Alaska. UA's program is in a position to secure a significant portion of the explosive growth in national UAS related technical jobs, industry, operations and education for Alaska.

The state's initial investment helped garner national attention to Alaska's expertise in this area. This is already translating into more client-funded work, more high-technology jobs for Alaskans, and more industry interest in opening offices in Alaska. The program and test site are viewed as well ahead of others in the business. An additional ten million dollar investment will provide the necessary infrastructure and personnel to build a dedicated UAS test facility, upgrade aircraft and payloads systems, equip training programs to meet the industry's workforce needs and provide technical, teaching, program management, and operator staff to support what is already a rapidly growing demand for services. This

funding will assist expansion to the entire state, enable the university to participate in building a true technology cluster around UAS in partnership with the state, the borough and the military, and position Alaska once again as the leader in aviation technology.

Revitalizing Alaska Native Languages (RANL)

(GF \$2,500.0, NGF \$1,000.0, Total \$3,500.0)

In 2009 the last native speaker of Eyak passed away, and the remaining 19 Alaska Native languages face a difficult battle for survival. These languages, spoken nowhere else in the world, represent a unique cultural heritage for Alaska. The knowledge embedded in Alaska Native languages spans a broad spectrum of human experience, helping us to understand our changing environment and ability to adapt to those changes. In 2012, the Alaska Legislature established the Alaska Native Language Preservation Advisory Council (ANLPAC) for the purpose of recommending the establishment or recognition of programs to support the preservation, restoration and revitalization of Alaska Native languages. The first ANLPAC report, submitted in 2014, includes specific recommendations that lay the foundation for language restoration and revitalization opportunities statewide.

The first step outlined in the recommendations is a legislative grant to the Alaska Native Language Center (ANLC) to conduct a comprehensive update of speaker numbers and language status around the state. New research methods are now available to gather accurate information of the state use of Alaska Native languages and relevant information for language planning. ANLPAC staff has been compiling program information since its establishment and plans to make it available to the public. ANLC will work with ANLPAC to update information on Native language status and existing Native language programs and resources in a comprehensive database.

A second ANLPAC recommendation will be addressed through collaboration between the Alaska Native Language Center and the Elmer E. Rasmuson Library (EERL) to develop infrastructure to sustain Alaska's Native languages. UA will serve in a leadership role across the state, coordinating and strengthening language revitalization efforts. RANL will draw upon more than 40 years of language documentation efforts at ANLC to create a dedicated repository for Alaska Native language materials. RANL will also draw upon library and multimedia expertise at EERL to make archival materials available for dynamic language learning, including use in language software, apps, and online resources such as audio dictionaries. RANL will serve as a clearinghouse for statewide efforts, interfacing with existing language programs across the state and expanding language teaching efforts. RANL will also serve as a springboard for interdisciplinary research connecting language to biodiversity, prehistory, and geography.

This request will support work to develop a baseline database useful for language planning and program development, recommended by ANLPAC as a preliminary step before other major work of the Council proceeds. Funding will support the creation of physical and virtual space with EERL which will provide public access as well as long-term physical and digital preservation services. This space will also serve as a digital workbench, allowing community members to preserve recordings and other materials which have not yet been archived. The project will be overseen by two full-time positions: a dedicated language archivist and a language learning specialist with expertise in multimedia. In addition, graduate student research assistants will assist community language teaching, working with

computer-assisted instruction and digital materials. This funding will enable UAF to compete more effectively for additional external funds and expand partnerships regionally, nationally, and internationally. Improvements to archiving and materials access, along with expanded capacity for language teaching will address the ANLPAC goals of language preservation and revitalization.

Supporting the US Arctic Council Chairmanship: 2015-2017 & Beyond

(GF \$1,200.0, NGF \$3,000.0, Total \$4,200.0)

The United States (US) will assume Chairmanship of the Arctic Council in 2015. This two year term will place additional focus on US leadership in the Arctic - and by definition, Alaska, as the country's only Arctic landscape. UAF will play a central role in both assisting the federal government in its Chairmanship agenda, and the citizens of Alaska through the following important, timely, and integrated initiatives:

Arctic Science Summit Week & Arctic Observing Summit 2016: The Arctic Science Summit Week (ASSW) is the annual gathering of international organizations engaged in supporting and facilitating Arctic research. Its purpose is to provide opportunities for international coordination, collaboration and cooperation in all fields of Arctic science and to combine science and management meetings. The Arctic Observing Summit is another important gathering focused on data collection. UAF will host these two prestigious gatherings in March 2016. UAF is also being considered as a potential host for the 2016 meeting of the Arctic Council's Senior Arctic Officials. Hosting virtually the entire breadth and depth of Arctic-related organizations, leadership, and policy makers on the UAF campus will be an important initiative for the state of Alaska and unique opportunity for Alaska to welcome those engaged in understanding and addressing the many challenges presented as a result of a changing Arctic.

Alaska Arctic Policy Commission Graduate Fellows: Graduate students will focus a two-year research study term on one of the following AACP recommendation areas - Governance and Indigenous Perspective, Science and Research, Planning and Infrastructure, Oil, Gas, and Mineral Resources, Security and Defense, Marine Transportation, Search and Rescue/Oil Pollution, Energy and Power, or Fisheries and Wildlife. The AACP researchers will be associated with the Center for Arctic Policy Studies but will be housed in an appropriate Institute or School/College.

Center for Arctic Policy Studies Fellows: The CAPS Fellows will be established experts in their fields, and likely a blend of Center Residents and Non-Center Residents, allowing for CAPS to take advantage of the considerable expertise found throughout UAF/UA, and in other organizations and agencies in Alaska. Recognizing Arctic expertise of particular interest to Alaska and the broader Arctic community, also exists outside of our state, CAPS will also have a cohort of experts from other regions of our country and the North. Areas of research and scholarship will include the following five thematic areas likely to be incorporated in the US Arctic Council agenda: energy, water, health, economic development, and governance. CAPS Fellows will include scholars from the social science as well as physical sciences. CAPS Fellows will be affiliated with an applicable Institute or School/College.

Arctic Conferences and Workshops: UAF will support a series of conferences, workshops, and working groups in support of the US Chairmanship agenda. Of particular interest is

creating and supporting such venues that integrate the needs and directions of the US Chairmanship and that also address the priority areas defined by the Alaska Arctic Policy Commission.

Education: Appreciating the significant role education and outreach will play during the US Chairmanship, UAF will work with applicable agencies to develop programs that reinforce US leadership in the Arctic, while leveraging the expertise in applicable organizations such as the University of the Arctic.

Communicating the Arctic: Working closely with the US State Department, UAF will develop a new, nationally broadcast, weekly radio show entitled "The Dynamic Arctic." KUAC - FM, UAF's public broadcasting station, will develop this nationally-syndicated show in consultation and cooperation with the US State Department, Arctic Scholars, and others. The Dynamic Arctic will air for two years (consistent with the US Chairmanship timeframe) to educate and inform communities throughout the United States about the importance of the Arctic and Alaska.

ENHANCING ALASKA'S ECONOMIC COMPETITIVENESS & SAFETY

(GF \$19,500.0, NGF \$22,500.0, Total \$42,000.0)

Integrated Fossil Fuels Program

(GF \$1,500.0, NGF \$1,500.0, Total \$3,000.0)

Alaska's North Slope oil production is declining while Cook Inlet is experiencing a renaissance, with small and medium sized independents replacing more traditional developers. A large diameter gas pipeline may be on the horizon. UAF can help tackle the critical challenges facing the fossil energy industry today and into the future. UAF proposes to build an interdisciplinary research program drawing on expertise across the UAF system. A well-organized Integrated Fossil Fuels (IFF) program would promote technological, economic, and environmental research into technologies for oil recovery, natural gas production, gas-to-liquids, coal-to-liquids and resource extraction through the Petroleum Development Lab. It would support exploration by tapping the resources found in the Water and Environmental Research Center to conduct research into ice road building techniques and other means to reach resource rich areas of the state in a manner that minimizes environmental disturbance. The IFF program would also be supported by ACEP's energy technology teams and Energy Analysis Group, providing Alaska's policy makers and energy industry with sound analysis to support new economic opportunities for the state and its residents. This program will provide a systematic approach to the field of fossil energy research by bringing together, in one place, an examination of the scientific and economic bases for energy economics, resource assessment, engineering and interaction with the natural environment.

The goal for the IFF program is to meet the specific, targeted research needs of industry and agency clients, while increasing revenue to the State of Alaska through enhanced oil and gas production. This funding would provide seed funding to kick-start organization of the program and hire a director. In addition, this funding will be used to build on established research partnerships with industry and agencies, with the goal of creating and communicating scientific and technological solutions to enable new production and

optimize existing production of Alaska's hydrocarbon resources, onshore or offshore, for the maximum benefit of the people of Alaska. The program will focus on:

1. Encouraging exploration in under-developed areas,
2. Understanding the environmental, social, economic, and geotechnical issues surrounding the development of unconventional hydrocarbon resources such as shale oil and gas, and methane hydrates,
3. Extending the useful life of aging Alaska oil and gas production infrastructure or identifying replacement alternatives,
4. Conducting the science necessary to promote environmentally sound exploration and development practices in Alaska and in the circumpolar region; and
5. Developing technology solutions that address the challenges associated with the extraction of Alaska's known oil resources (such as heavy oil production enabling technologies) and improving ultimate recovery from existing fields.

Energy & Remote Power Partnerships for Alaska's Future (ACEP)

(GF \$3,000.0, NGF \$11,000.0, Total \$14,000.0)

Alaska, driven by the necessity of providing reliable electric power to remote communities not connected to a common transmission system, has become a global leader in microgrid technology. Due to substantial capital investment spurred by programs such as the Renewable Energy Fund, Alaska is home to 12 percent of the world's hybrid microgrid systems. Numerous small businesses and utilities have gained special expertise in these systems, and the Alaska Center for Energy and Power (ACEP) has developed strong programs and facilities in parallel with industry in order to enhance performance of existing systems and test the next generation of energy technologies. The microgrid market is on the verge of exploding globally, and is expected to grow nearly five-fold to an estimated \$40 billion in revenue by 2020. There is a near-term opportunity to make Alaska as synonymous with microgrids as Iceland is with geothermal energy, and be a leader in worldwide activity in this market. This will require enhancing Alaska's analysis and testing capabilities to capitalize on this market opportunity. ACEP believes the timing of this investment is essential, so as global activity is ramping up, the opportunity to position Alaska on the forefront of this wave will not be missed. Goals of this increment include:

Develop new market opportunities for Alaska expertise in microgrids. This program will work with Alaska's small businesses to build new market opportunities through knowledge export. The goal is to develop a market supporting high quality jobs for Alaska residents. This would include enhancing ACEP's visiting researcher program, bringing potential international clients to Alaska for training, and sending UA researchers to other locations to conduct research relevant to the state's needs and promote Alaska's expertise.

Enhance ACEP's testing capabilities. This funding will be heavily leveraged with industry contracts to add capacity to these testing facilities and make them truly unique, flexible platforms for testing energy technologies and deployment strategies.

Expand capacity within ACEP's Energy Analysis Group. Funding will allow research professionals and students to be trained in and perform labor-intensive work of data mining, interpretation and knowledge creation with an emphasis on the critical energy decisions facing the state today and within the next decade.

Enhance student learning and interaction with Alaska's energy industry. This funding will allow UAF students to work on community-energy related projects with ACEP researchers and Alaska's small businesses to strengthen university-industry relationships. Funding will also provide post-secondary training opportunities in needed technology areas, or where Alaska has a first-mover advantage. One project will be to develop a pilot program suited to integration with the United Nations University (UNU) system, with the ultimate goal of positioning Alaska's universities and industries as global leaders in the export of knowledge in the design and operation of these systems.

Closing Alaska's Earthquake Safety Gap

(GF \$10,000.0, NGF \$8,000.0, Total \$18,000.0)

A magnitude five or larger earthquake occurs each week in Alaska. From Southeast to the North Slope to the western Aleutians, earthquakes rattle most mines, dams, pipelines, ports, power plants, schools and communities each year. The Federal Emergency Management Agency (FEMA) estimates Alaska's annualized earthquake loss at more than \$50 million per year. Resource production facilities, combined with the systems that connect the state, make Alaska vulnerable in unusual and unforeseen ways. Alaska's impressive infrastructure developments create unique points of failure that multiply local damage into far-reaching consequences. Alaska is the only earthquake-prone state with no program to help businesses and communities plan for the earthquake scenarios most likely to impact them.

This initiative will help industry and communities prepare for earthquakes by leveraging the \$40 million federal EarthScope investment in Alaska. The EarthScope program is currently installing a massive, but temporary, earthquake monitoring network in Alaska. With funding, the Alaska Earthquake Center will use the network to develop earthquake scenarios across the state. Adapting EarthScope will, for the first time, provide the data to make this possible. AEC will also adapt a portion of the network for ongoing use in Alaska beyond the life of the EarthScope project. Two dozen states have already leveraged EarthScope to successfully bolster earthquake monitoring at a fraction of the real cost. Goals of this increment include:

Adapting EarthScope will establish rigorous scenario earthquakes statewide. Users will be able to query any location in the state to obtain estimates of the ground shaking from the most relevant scenario earthquakes. The project will publish maps of ground shaking for all known earthquake hazards in the state.

Adapting EarthScope will assess shaking during actual earthquakes. Following large or damaging earthquakes, rapid Geographic Information Systems (GIS)-ready maps of earthquake shaking will guide emergency response decisions and the allocation of resources. Actual shaking can be compared with the scenarios to anticipate the full impact of an earthquake.

Adapting EarthScope will make earthquake risk planning feasible. Planning is in place for a multi-agency earthquake program that leverages the Alaska Earthquake Center, Alaska Division of Geological & Geophysical Surveys (DGGS), the Division of Homeland Security & Emergency Management (DHS&EM) and the Alaska Seismic Hazards Safety Commission.

Scenario earthquakes and statewide earthquake tracking are the prerequisites for this initiative. The goal of the multi-agency program is for oil and gas, tourism, schools and communities to have “on the shelf” earthquake response plans.

Oil Spill Research Center of the Arctic (ORCA)

(GF \$5,000.0, NGF \$2,000.0, Total \$7,000.0)

The threat of an Arctic marine oil spill is not limited to off-shore resource production facilities. It includes risks from increased shipping of tankers, bulk carriers, cruise ships, and fuel barges, hazards associated with pipelines, and community-based and industrial storage facilities. The National Academies report *Responding to Oil Spills in the U.S. Arctic Marine Environment* (April 2014) highlights the need for a comprehensive, collaborative, and coordinated long-term research program that can link together the efforts of industry, government, academia, international partners, local experts and non-governmental organizations.

The Oil Spill Research Center of the Arctic (ORCA) is Alaska’s response to this report from the National Academies. The report and other recently released government documents underscore a unique opportunity to build and implement a center focused on addressing these challenges at America’s Arctic University, UAF, in collaboration with leading experts across academia, industry and government. By locating the oil-spill related research center in northern Alaska, the expertise will be developed within the cultures and communities who would be most affected by, and are most likely respond to, an oil spill in the Arctic. ORCA has been proposed to the National Science Foundation (NSF) as a UAF-based center that will formalize relationships and communication pathways among scientists, Arctic communities, industry, state and federal agencies and international partners. In the funding construct proposed by NSF, funds from Industry, State, and other Federal sources are an integral part of the overall support plan for the activities in the center. NSF would provide only basic structure, not the full cost of the research activities, making collaborations for leveraged resources critical. Through a program involving application-based research, education and outreach, this center will ensure that the knowledge gained by UAF and its partners will be transferred to oil spill response efforts, in the United States, the Arctic and globally.

ORCA will build on the extensive and growing collection of Arctic-based research at UAF, with its collaborators and partners, to address research gaps identified in the National Academy report. Resulting science from this multifaceted approach will expand the applicable knowledge for responsible development in the Arctic.

ACADEMIC TECHNOLOGY & EQUIPMENT

(GF \$4,000.0, NGF \$1,000.0, Total \$5,000.0)

Classroom Instructional & eLearning Technology

(GF \$2,000.0)

This request will install and/or upgrade instructional technologies in 50 classrooms throughout the UAF campuses. Installations and upgrades will include presentation and distance delivery technologies, videoconferencing, lecture capture and mobility.

Technological innovation is an important aspect of teaching and learning in the 21st century. According to the *International Journal on Integrating Technology in Education*, today's students have spent their entire lives surrounded by digital technologies. Through their use of cellphones, smartphones, tablet computers and laptops, college students are arriving in higher education classrooms more technologically linked and socially connected than ever before. These portable technologies with online connectivity challenge educators to meet students in the technological world.

From "flipped" classrooms (a form of blended learning where students watch video lectures at home and work on assignments in class) to massive open online courses (MOOCs), eLearning is creating a notable transformation in higher education. As the paradigm shifts from traditional teaching methods to technology-enabled learning, it is essential that instructors be well-prepared to utilize new technologies to meet the needs of all students.

As the demand for mobile technology and personalized learning propagates, a clear transformation in the use of technology must occur.

UAF educators routinely conference with colleagues at international sites such as New Zealand and Antarctica, at national sites such as Washington, D.C., Berkeley C.A., with organizations such as the National Aeronautics and Space Administration (NASA) and with numerous statewide locations. It is common for an instructor at UAF to teach students at UA extended campuses across the state as well as K-12 sites in Glennallen, the Lower Yukon School District, Bering Strait School District, Telehealth networks, and with students nationally as well as internationally, using video on their personal computers.

In FY09 UAF academic usage of video conferencing was 5,454 hours, in FY14 UAF utilized 7,217 hours of academic video conferencing reflective of a 30 percent increase over five years. Video conferencing is proven to be a highly effective instructional technology at UAF and facilitates learning and teaching throughout the state and in rural communities. The increase in demand has eclipsed the existing capacity of the classrooms equipped with current instructional technologies and video conferencing technology.

Advanced Analytical Instrumentation for Resources R&D and Education

(GF \$1,000.0, NGF \$1,000.0, Total \$2,000.0)

This request is for two advanced analytical instrument systems that will enable highly competitive research and cutting-edge education in natural resource and environmental sciences. UAF can secure funding from a charitable foundation to cover half the equipment's cost, but the University must provide a 50 percent match. Both instruments are mass spectrometers, although each has very different capabilities. One can make high precision isotope ratio measurements of a wide range of chemical elements in both solid and liquid samples. The instrument would be used by researchers and students in a wide variety of fields, including geochemistry, geochronology, archaeology, environmental sciences, forensic sciences, biosciences, pharmaceutical, food and beverage laboratories and more. The other instrument incorporates new technological developments in ICP-MS instrumentation (Triple Quadrupole technology) that make quantification of rare earth elements (REEs) straightforward. The instrument package would replace equipment that is nearing the end of its serviceable lifetime. It would improve capabilities not only for REE analysis, but also for ongoing research by UA undergraduate and graduate students, staff

and faculty in areas such as fisheries, chemical oceanography, toxicology, environmental chemistry, food science, archaeology, and wildlife biology.

Technology Tools & Systems Integration in Support of Business Process Improvement

(GF \$1,000.0)

In this challenging budget climate, UAF is focused on optimizing its current resources through process management and prioritization. Process improvement allows UAF to direct its resources to the mission-centric aspects of teaching, service, and research, and on value-added services rather than on highly manual and cumbersome administrative support tasks. Analysis of services and how they are provided becomes more important in this climate; this includes the emerging need to renew or integrate existing enterprise administrative systems and develop robust business practices. Major efforts are focused on streamlining grant award set-up, employee recruitment, procurement and travel processes. A comprehensive campus-wide employee training initiative is also taking shape in FY15. Assessing and integrating efficient business processes with enterprise systems is critical to optimizing student-centric, administrative and research processes. An assessment will include enterprise systems such as, but not limited to: the database of record for student/HR/finance systems, the recruitment system, records management and electronic routing/signature capability, travel expense management, and proposal/grant management systems, and will be expanded to examine other concepts such as employee training, tracking, and performance management systems that allow UAF to maximize its employee resources. The ability to enhance and optimize current and new technologies in a timely manner is critical. This funding will be used to bridge gaps between systems, better integrate technology tools and expand access to data in an effort to streamline workflows, improve reporting, and create efficiencies in business processes.

Appendix: UAF FY16 Budget Request by Strategic Investments for Alaska

UAF Strategic Investment Priorities to Benefit Alaska		State Appropriation	Receipt Authority	Total
Strengthening Alaska's Position in Setting the Arctic Agenda		\$ 15,197.0	\$ 12,565.0	\$ 27,762.0
<i>Operating</i>		\$ 1,497.0	\$ 3,565.0	\$ 5,062.0
Strengthen Alaska's Participation in Arctic Policy	1.5	200.0	-	200.0
Establish Core Infrastructure for Continued Unmanned Aircraft Systems Operations	4.0	570.0	1,000.0	1,570.0
Compete for Marine Ecosystem Program & Other Competitive Grants with Sikuliaq	0.0	500.0	2,500.0	3,000.0
Improve Understanding of Ocean Acidification	2.0	227.0	65.0	292.0
<i>Capital</i>		\$ 13,700.0	\$ 9,000.0	\$ 22,700.0
Supporting the U.S. Arctic Council Chairmanship: 2015-2017 & Beyond - 2 year		1,200.0	3,000.0	4,200.0
Unmanned Aircraft Systems in the Arctic - 5 year		10,000.0	5,000.0	15,000.0
Revitalizing Alaska Native Languages - 5 year		2,500.0	1,000.0	3,500.0
Promoting Economic Diversity in Alaska		\$ 41,988.0	\$ 26,918.0	\$ 68,906.0
<i>Operating</i>		\$ 1,188.0	\$ 918.0	\$ 2,106.0
Deliver Chemical Engineering Degree to Support Alaska LNG & Refining Industries	4.5	400.0	450.0	850.0
Research & Development to Support Alaska Mining Development	2.0	150.0	150.0	300.0
Improve Alaska Seafood Processing & Training in Kodiak	1.0	113.0	135.0	248.0
Build in-State Leadership for Tourism Management	2.0	130.0	130.0	260.0
Develop Film Industry Workforce	2.5	232.0	-	232.0
Develop Economically Viable Crops with Alaska's Farmers	1.0	163.0	53.0	216.0
<i>Capital</i>		\$ 40,800.0	\$ 26,000.0	\$ 66,800.0
Engineering Facility Completion		31,300.0	5,000.0	36,300.0
Energy & Remote Power Partnerships for Alaska's Future - 3 year		3,000.0	11,000.0	14,000.0
Alaska Center for Energy and Power Office Buildout		-	6,500.0	6,500.0
Integrated Fossil Fuels Program - 3 year		1,500.0	1,500.0	3,000.0
Oil Spill Research Center of the Arctic (ORCA) - 5 year		5,000.0	2,000.0	7,000.0
Supporting Alaska's Students & Sustaining Communities		\$ 57,342.0	\$ 74,396.0	\$ 131,738.0
<i>Operating</i>		\$ 792.0	\$ 396.0	\$ 1,188.0
Provide Comprehensive Rural Student Advising (Ongoing)	3.0	278.0	-	278.0
Maintain Nursing Program at Bristol Bay	0.5	60.0	30.0	90.0
Expand Rural Construction Trades Program	0.5	54.0	25.0	79.0
Complete the Launch of the Collaborative 2+2 Veterinary Medicine Program	3.0	200.0	241.0	441.0
Expand the Behavioral Health Workforce by Building the Undergraduate & Clinical PhD Psychology Program	2.0	200.0	100.0	300.0
<i>Capital</i>		\$ 56,550.0	\$ 74,000.0	\$ 130,550.0
Closing Alaska's Earthquake Safety Gap - 2 year		10,000.0	8,000.0	18,000.0
Public/Private Partnership (P3) Campus Housing Project		6,500.0	65,000.0	71,500.0
Fire Hall Replacement & CTC Emergency Services Training Center		1,500.0	-	1,500.0
Core Campus Parking Garage		350.0	-	350.0
Kuskokwim Campus Consortium Learning Center		700.0	-	700.0
Expanding the Early Childhood Program (Bunnell House)		850.0	-	850.0
Northwest Campus Realignment		150.0	-	150.0
Classroom Instructional & e-Learning Technology - 2 year		2,000.0	-	2,000.0
Advanced Analytical Instrumentation for Resources R&D and Education - 2 year		1,000.0	1,000.0	2,000.0
Technology Tools & Systems Integration in Support of Business Process Improvement - 2 year		1,000.0	-	1,000.0
UAF Proportion of \$50M UA Request for R&R, Code & ADA		32,500.0	-	32,500.0
Strategic Investment Priorities Total		\$ 114,527.0	\$ 113,879.0	\$ 228,406.0
UAF FY16 FIXED COSTS - Shaping Alaska's Future Themes		State Appropriation	Receipt Authority	Total
Student Achievement		\$ 650.0	\$ -	\$ 650.0
Rural 4-H Program Natural Resource Fund (NRF) Replacement (pending NRF decisions - up to \$400.0 max amt.)		400.0	-	400.0
Electronic Journal Subscriptions for Rasmuson Library		250.0	-	250.0
Accountability to the People of Alaska		\$ 6,995.0	\$ 6,420.0	\$ 13,415.0
Fairbanks & Community Campus Adjustment (Est.)		3,000.0	3,000.0	6,000.0
Title IX Compliance - Prevent/Respond to Campus Sexual Harrassment		230.0	-	230.0
General Fixed Cost Increases (Est.)		460.0	1,350.0	1,810.0
UA System Office Risk Assessment: FY15 Increase & FY16 Proposed		240.0	-	240.0
Facilities Maintenance and Repair (Est.)		1,220.0	720.0	1,940.0
Utility Cost Increases (Est.)		1,600.0	600.0	2,200.0
Bristol Bay Applied Science Center		65.0	-	65.0
Process Technology Program Lease (\$155K) Facility Operations/Shuttle Service (\$25K) (Partial Replacement Funds)		180.0	-	180.0
ASF-Richardson, Seward Ship Office & CTC Hangar O&M		-	750.0	750.0
Estimated Fixed Cost Increases Total		\$ 7,645.0	\$ 6,420.0	\$ 14,065.0