

# Mission Area Analysis for UAF Research

Including an Analysis of West Ridge Building Condition

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**March 2013**

## **Executive Summary**

The key planning documents for the University of Alaska Fairbanks (UAF) call for UAF to become a leader in research related to the circumpolar North, to encourage interactive learning experiences for students, including undergraduate research, and to recruit and retain highly-qualified faculty. The West Ridge research facilities must be state-of-the-art to allow UAF to meet these needs. The deferred maintenance project focuses on the following guiding principles in support of this mission:

- Care of the health, safety, and welfare of researchers is of utmost importance and critical to continuation of the mission.
- Provide modern space to maintain and grow research institutes.
- Conduct strategic evaluation of the backlog of deferred maintenance to generate the priorities to rejuvenate the old, nonfunctional space.
- Target increasing the energy efficiency of older facilities and otherwise reducing operating costs by at least a third.
- Eliminate functional obsolescence and improve laboratory spaces for modern science.
- Improve building accessibility.

## **Scope of This Document**

The West Ridge Deferred Maintenance (WRDM) Mission Area Analysis (MAA) is a quantitative and qualitative analysis of the current research and teaching programs, including evaluation of substantive changes to the West Ridge research facilities, aligned with appropriate plans and policies. This MAA serves as a program proposal and delineates how the need for expansion was triggered along with the compelling reasons in favor of the proposed actions. The Statement of Need (SON) is a concise summary of the compelling facts described in the MAA.

## **Introduction**

*The University of Alaska Fairbanks, the nation's northernmost Land, Sea, and Space Grant university and international research center, advances and disseminates knowledge through teaching, research and public service with an emphasis on Alaska,*

*the circumpolar North and their diverse peoples. UAF – America's arctic university– promotes academic excellence, student success, and lifelong learning.*

The West Ridge research facilities at the UAF Fairbanks Campus are essential to fulfilling UAF's mission as it relates to research and education. The existing West Ridge buildings are utilized to support research and instruction in pursuit of the priorities and goals outlined in UAF's planning documents: The University of Alaska's (UA) Strategic Plan 2009, UAF Master Plan 2010, the UAF Strategic Vision 2017 Plan, and the UAF Academic Plan for 2007-2012.

UA's Strategic Direction Initiatives (SDI) are an organizational change effort created and led by President Gamble. SDI engages people from many different levels, both inside and outside the University system, looking for ideas and innovations to change UA for the better. The SDI themes are:

- Student Achievement and Attainment
- Productive Partnerships with Alaska's Schools
- Productive Partnerships with Alaska's Public and Private Industries
- Research and Development to Help Build and Sustain Alaska's Communities and Economic Growth
- Accountability to the People of Alaska

The UA SDI provides an overarching goal structure for the University as a whole. The UAF Strategic Plan maps out goals for achieving success in both the long and short term. One of the seven goals of the UAF Strategic Plan is to promote UAF as Alaska's premier research enterprise in partnership with state agencies, industry, and civic organizations. The strategies to achieve this goal involve both new initiatives and increasing breadth and depth of existing research efforts across many fronts. In each case, the strategy calls for more researchers from faculty to undergraduate students working on more projects focused on the Arctic and Alaska. As UAF seeks to connect and engage its research enterprise with Federal, State, and local communities, the need for physical space evolves.

## **Aligned With UAF Mission & Planning for the Future**

UAF is already well established as a world leader in studies and discovery related to the Arctic and subarctic climates, its people and wildlife, and its multiple ecological systems. The UAF Academic Plan specifically calls for additional resources to conduct biomedical and health education, research, and outreach that relates to Alaska's unique environment and lifestyles. UAF has made significant investment in recruiting and securing high-quality faculty and staff focused on core-science programs as well as new and expanding research initiatives. In turn, the faculty and staff have attracted and maintained millions in competitive research revenue and continue to serve an increasing number of students in the life-science disciplines. The

renovations and required new spaces highlighted in the WRDM Master Plan are critical in carrying out these science missions.

Working with an executive planning committee and the UAF administration, and utilizing multiple planning and programming meetings with user groups, project goals were developed that guide the West Ridge master-planning work. The Master Plan Goals include:

- Support the integration of teaching and research through building location and use, circulation and open space.
- Ensure the campus environment enhances both the academic and student life experience.
- Improve access to and circulation within the campus.
- Preserve and highlight the unique natural and cultural aspects of UAF's northern location.
- Employ the best practices in sustainability for northern environments.
- Address the space deficit in research and research-support space noted in the 2010 Campus Master Plan.

## **Forecast of Program Demands**

Growth projections for undergraduate and graduate research needs are based not just on past enrollment, but also on anticipated needs for the growing research enterprise. Student involvement in research is important for generations of well-rounded graduates. Equally important is the increase in both the speed and volume achievable by research faculty with the additional labor, talent, and enthusiasm of students at many levels.

Representatives of the functional units on UAF's West Ridge, as well as Vice Chancellor of Research, Dr. Mark Myers, have participated in a series of workshops that began in February 2012. Information on projected personnel, changes in programs, existing facilities issues, adjacency requirements, both within the unit and neighboring units and, teaching and research concepts deriving from these meetings, formed the basis of personnel projections for 2017. These projections were then compared to historic program data and peer-institution benchmarks to identify both conformance and deviation from established patterns. Referencing the space standards utilized in the new Murie building, space needs were extrapolated from this data. Both the research growth and associated space projections were then reviewed with multiple stakeholders within the University, and the projections were adjusted based upon those comments.

## Outputs, Outcomes, and Impact

For a research university such as UAF, the three simplest measurable outputs are publications, citations, and graduates. The number of UAF Ph.D. degrees is growing, indicating a growing need for graduate students in funded research. Figure 1 shows the steady increase in the number of Ph.D.s awarded at UAF from 2006 to 2012. During that time, the number of degrees awarded more than doubled.

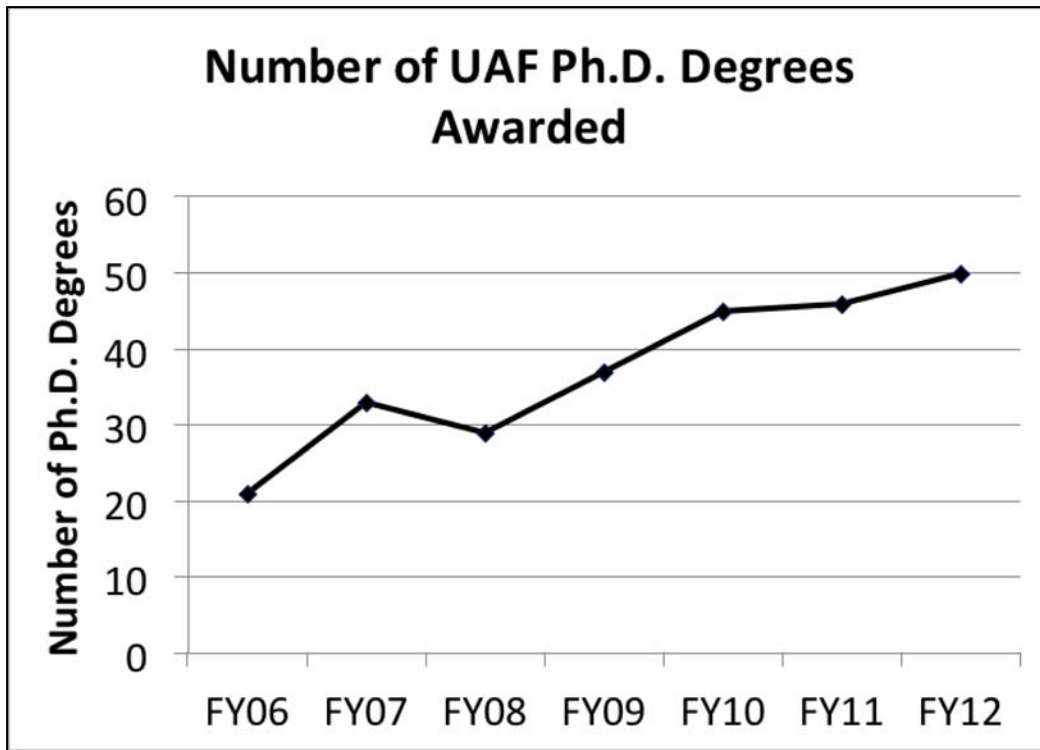
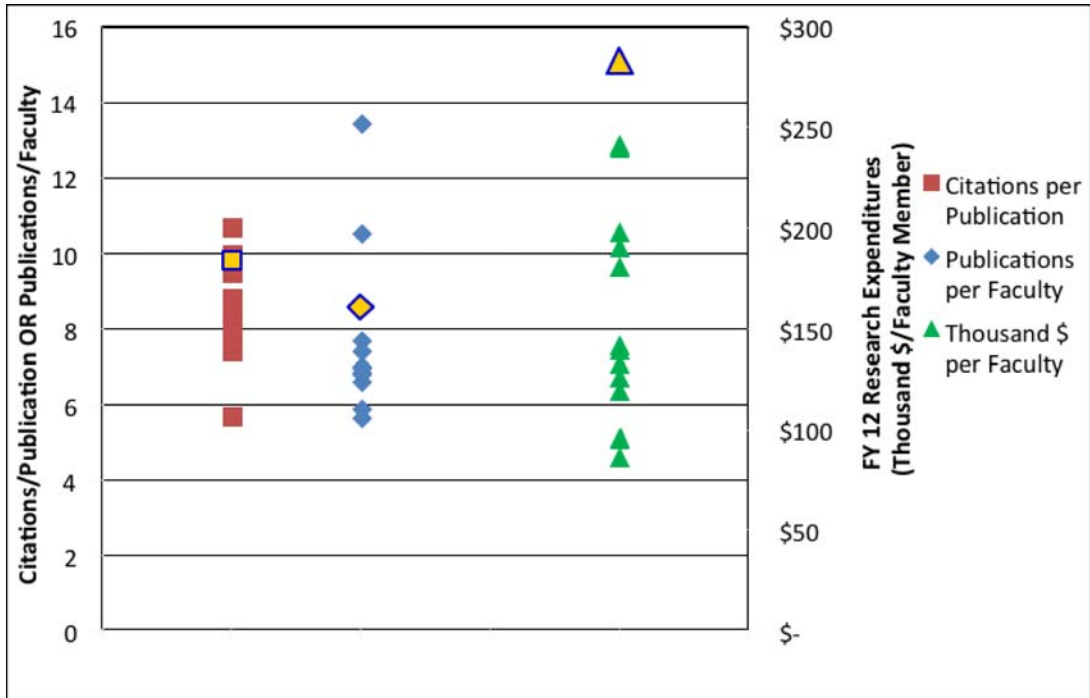


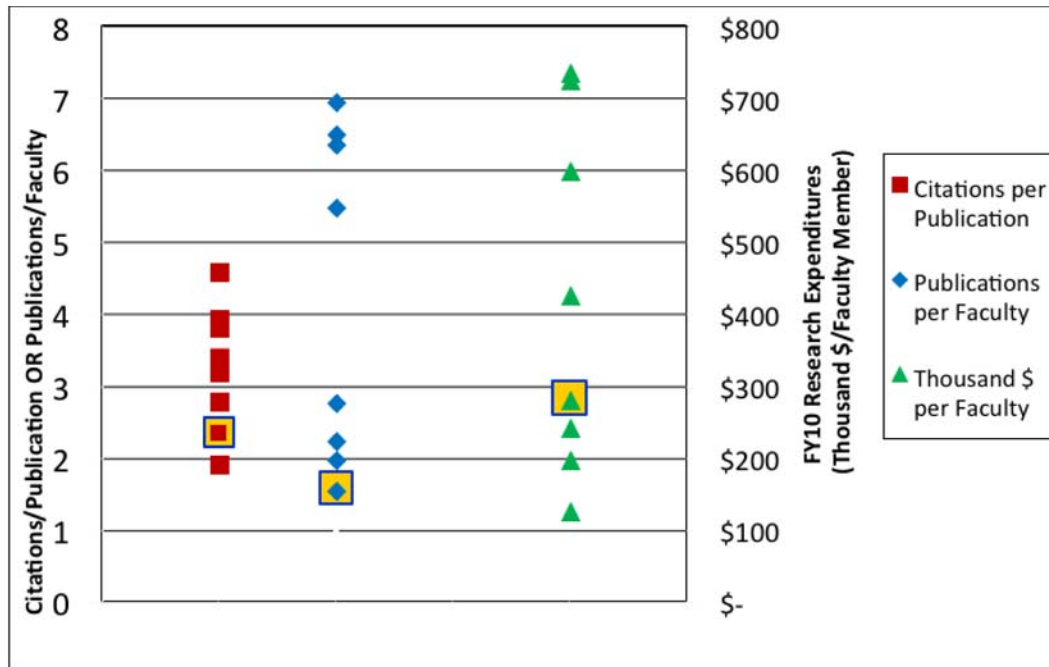
Figure 1. UAF Ph.D. degrees awarded from 2006-2012

Figure 2 compares UAF publications, citations, and research funding to peer universities in the West based on publications from one year, 2011, only. UAF's performance is shown as a yellow symbol and shows that UAF compares favorably with the peer institutes. The research universities used in this chart are universities that are comparable to UAF in size, focus, and research funding.



**Figure 2. UAF Publications, Citations, and Research Funding compared to peers.**

Figure 3 shows the same information for UAF from 2011, but is now compared to the leading universities in the western region. The comparison between Figure 2 and Figure 3 shows the potential growth for UAF in research outputs and outcomes. To move up in comparison to the leading universities is the goal and can only be achieved by fulfilling the research goals outlined in the UAF strategic plan.



**Figure 3. Comparison between UAF and leading Western region universities.**

The Fairbanks Economic Development Corporation (FEDC) reports that UA pays \$219 M (<http://www.investfairbanks.com/sites/default/files/documents/Economic%20Model%202-23-10.pdf>) in annual payroll in the Fairbanks North Star Borough (FNSB), wherein the total payroll is \$2,760 M. Faculty and staff, in turn, spend a large portion of this money on goods, services, and housing in their home communities. The impact for UA is proportionally largest in Fairbanks, because UAF has the largest research expenditures and Fairbanks is a smaller community than Anchorage. So, if research is responsible for half of UA wages in the FNSB, this is about 4% of wages paid. UA is the second largest payroll, after the military. Goldsmith (2007) estimated that for every 100 university jobs, 85 additional jobs are generated through UA employee spending. UA employs over 3,000 people in the FNSB and is responsible for about 5,550 jobs.

### Existing Capacity to Support Mission

The West Ridge research facilities at UAF includes institutes focused on research, the International Arctic Research Center (IARC), the Geophysical Institute (GI), and the Institute of Arctic Biology (IAB), as well as institutes within colleges that combine teaching and research,

including the Institute of Marine Science (IMS) in the School of Fisheries and Oceanographic Sciences (SFOS), and the Agricultural & Forestry Experiment Station (AFES) in the School of Natural Resources and Agricultural Sciences (SNRAS). Included in the UAF Research Enterprise are institutes, facilities, and programs not located on West Ridge that are outside the scope of this document.

Historically, discipline-focused research institutes reside in a single building built for that purpose, but the West Ridge research needs have driven changes to that construct. The GI has researchers in the Elvey Building primarily, but it also extends into IARC and the West Ridge Research Building (WRRB), due to lack of suitable space in Elvey for specific groups. Similarly, IAB resides primarily in Irving I and Irving II, but also has researchers working in WRRB and the Arctic Health Building. Overflowing from one crowded building to another crowded building does not solve the problem of not enough access to appropriate research space for a thriving enterprise that UAF would like to strategically grow. There will be some relief for life sciences with the new building, but the needs of the faculty and students already push the limits of the resources with the new construction taken into account.

Additional off-campus facilities have specific purposes and do little to alleviate the pressure on the laboratory and classroom space. As UAF looks to grow undergraduate research while encouraging a thriving graduate- and faculty-driven enterprise, the access to facilities, equipment, and instruction becomes a limiting factor. Research and education are the core missions at UAF. As such, high priority should be placed on meeting these needs.

## **Statement of Need**

Based on the analysis of the current situation and the goals of the planning effort, major renewal and renovation or repurposing is required on the facilities that support sciences, teaching, and research on West Ridge. The renewal effort must reduce the accumulated deferred maintenance and eliminate functional obsolescence in these outdated buildings, whether by renovation, repurposing, or demolition. To accomplish this, each facility must undergo a gut-and-renew construction effort or complete demolition that will necessitate a large amount of surge space to prevent interruptions to normal university business.

Currently, very little space is available for relocating departments during building renovations. In addition, two of the five facilities are scheduled for repurposing or replacement due to the high cost to renovate them for their current use. Based on the analysis completed for the master plan, and in compliance with the recommendation of the 2010 Campus Master Plan, there is a requirement for new space on West Ridge. Two facilities are noted in the plan as required to address the surge-space needs during renovation. After renovations and replacements are completed, the new space will be redirected to address the space deficit noted in the Plan.

## **Annual Operating Budget Impact**

Through renovation, repurposing, and replacement, annual operating cost will, for the most part, remain on par. Growth in annual personnel directly ties to the creation of modern state-of-the-art facilities that will increase research faculty and staff effectiveness, and the capability to more quickly respond to current and future initiatives. Annual utility costs will offset as facilities are brought up to current energy and ventilation codes, with decreases coming in electrical use and thermal envelope heat loss, and increases in heating more outside air used to ventilate the buildings.