Institution
Western Washington University
Project Title
Environmental Studies Renovation (STEM II)
Project Location (City)
Bellingham

Postscript:

The Environmental Studies Renovation (STEM II) project was included in the Sciences Building Addition and Renovation project. The project as a whole was previously scored in the last biennium and funding for the design of the Addition was provided in the 2017-19 biennium. For the 2019-21 biennium, Western Washington University (Western) is requesting construction funding for the Addition and design funding for the Renovation. After consultation with the Office of Financial Management, we are bifurcating the original proposal into two –one for the Addition (Science Building Addition) and the other for the Renovation (Environmental Studies Renovation).

1. Problem Statement (short description of the project – the needs and the benefits)

Western Washington University has a strong tradition of excellence when it comes to environmental education and sustainability. Most notably, Western is home to the nation's first college dedicated exclusively to the environment—the Huxley College of the Environment was established in 1969 and continues to be a nationally recognized institution for producing high-quality, job-ready graduates in fields such as environmental science and environmental policy. Western has also been recognized by several national rankings based on its commitment to green building techniques, sustainability, and the use of alternative energy sources, including continually ranking high on the U.S. Environmental Protection Agency's list of the nation's top 30 green energy purchasers in higher education, as well as ranking on the Sierra Club's "Coolest Schools" roster, which recognizes colleges around the country according to their efforts toward solving climate issues and pursuing sustainable operations strategies.

Despite Western's accomplishments in environmental education and sustainability, the building that houses the majority of environmental science and geology courses and labs, WWU's Environmental Studies Center, is arguably Western's least environmentally-friendly and most inefficient instructional facility on campus. The forty-five year old Environmental Studies Center is structurally well suited for intensive science use, but requires significant upgrades to critical mechanical systems and space utilization in order to address costly inefficiencies, improve safety, and provide students a more collaborative research and learning environment. Additionally, many of the building's mechanical systems are past their useful life and are in need of repairing or replacement.

2. Project Description

This project will renovate the approximately 115,500 gross square foot ESC. The renovation includes:

- Replacing/recladding the exterior envelope (see photo below for rendering)
- Replacing or repairing the HVAC system, windows, and flooring;
- Addressing code compliance associated with ADA accessibility, asbestos, and restroom fixtures;
- Performing seismic remediation for necessary safety upgrades; and
- Modifying interior space to improve utilization and student-faculty collaboration.

Renovation of the ESC is projected to help create 81 additional STEM and high-demand degrees each year in the subject areas of geology, environmental sciences and studies, materials sciences and energy studies by improving interior space to accommodate more classrooms and labs. As the home for the College of the Environment, the renovated facility will be more energy efficient by being designed to meet current energy code and will target LEED platinum certification. The electrical upgrades included in the project will be in compliance with the Washington State Energy code. The renovation of ESC will also address a number of code deficiencies to the 1973 constructed facility such as code insulation requirements, upgrading ADA accessibility throughout the building including classrooms and labs; increasing the number of restroom fixtures which do not meet code minimums, addressing restroom equity, addressing ventilation deficiencies which is a serious safety issue with lab makeup air and classroom ventilation; correct electrical system deficiencies, and correcting code violations with the central atrium.

Design for the ESC renovation is proposed in the 2019-21 biennium and construction will be proposed in the 2021-23 biennium. Construction of the ESC renovation will follow construction of the Sciences Building Addition. This phased-in approach is intended to have the Addition provide some of the science instructional space during construction of the ESC renovation in order to minimize impacts to student learning and time-to-degree. When complete, both projects will dramatically improve Western's ability to serve its students and help meet the state's STEM workforce needs.

View of Renovation from South-West

3. History of the Project or Facility

The ESC was originally completed in 1973, four years prior to Western being granted University Status and the same year the (then) College of Arts and Sciences was created. The building's primary use was for science, but as its infrastructure has aged and its ability to safely and adequately support the modern practice of science has diminished, many of the scientific functions have had to shift to other buildings in order to provide students access to quality STEM learning space. Western's most recent

minor lab renovations within the ESC building were achieved by diverting infrastructure services from other areas, with remaining areas used for less intensive, non-science functions such as general use instruction, administrative space, and institutional infrastructure and support.

Structurally, ESC is well suited for intensive science use; its thick slab concrete floors are ideal for locating sensitive scientific instrumentation and the ample floor to ceiling heights are well able to adequately contain the infrastructure distribution networks uniquely required in science buildings. The building is also well situated in direct proximity to our other science facilities.

2013-15 Biennium: In the fall of 2013, Western commissioned a space needs assessment by Ira Fink Associates that specifically cited the very poor quality of campus space, including but not limited to student learning space, in the ESC. The needs expressed in that study were originally represented in a 2013-15 capital request for pre-design funding of the ESC Renovation.

2015-17 Biennia: A comprehensive reworking and streamlining of the 2013-15 proposal resulted in our current project, which was considered for pre-design funding in the 2015-17 biennia. A major renovation to the ESC, coupled with the Science Building Addition project, was believed to be the most programmatically beneficial and cost-effective approach for providing Western with the science instructional space required to best serve students and meet growing demand in STEM fields. The 2015-17 proposal to renovate the ESC was well received and ranked second overall for predesign funding. However, at that time the renovation of Western's Carver Academic Facility had been delayed for years and needed to stand as the Institution's highest capital investment priority. Accordingly, much of WWU's 2015-17 capital budget allocation was directed to the completion of the Carver Academic Facility. In view of the continued persistent growth in STEM disciplines and the dearth of supportive space on campus, the Institution elected to self-fund the pre-design of the Sciences Building Addition & Renovation.

2017-19 Biennium: The design component of the new sciences building was funded in the 2017-19 capital budget, and design is currently underway.

University programs addressed or encompassed by the project

All of the departments and operations listed below would be accommodated and benefit from the Sciences Building addition and renovation:

Academic Departments ▪ *Chemistry Department* ▪ *Biology Department* ▪ *Department of Environmental Sciences* ▪ *Department of Geology* **Academic Instructional Space** ▪ *General Use Science Lecture Halls* ▪ *Student Collaborative Areas**	**University Centers** ▪ *Institute for Energy Studies* ▪ *Advanced Materials Science & Engineering* ▪ *Institute of Environmental Toxicology* ▪ *Institute for Watershed Studies* ▪ *Marine Sciences Program* **Academic Support** ▪ *Scientific & Technical Services* ▪ *Hazardous materials receiving and storage*

Other Academic Partnerships that would benefit from the ESC renovation:

- USGS - the US Geological Survey already has a presence within the building. Research Scientists from the USGS actively participate in undergraduate student research and the supervision of graduate students at Western.
- NOAA - Similarly, NOAA participates and assists in graduate supervision and offers yearly scholarship and internship opportunities for Western students.

Linkages to other Capital Projects: In addition to the Science Building Addition, the ESC Renovation is critically interlinked with two other capital requests also proposed by Western in the 2019-21

biennium. These interrelationships exist in an effort to scale this project request reasonably to the funding capabilities of the state and because of the intensive nature of science instructional space. Western currently does not have swing-lab space available and our class labs are heavily utilized[1]. The relationship of these interlinked capital projects are briefly described below:

A. The **Consolidated Academic Support Services Facility** will assist in resolving Western's shortage of faculty and administrative space by constructing a two-story office building of approximately 25,000 gross square feet. The proposed facility would be located south of the main campus on land owned by the Institution that has been rezoned specifically for this purpose. University operations that will be housed in the new building will be administrative in nature and not have a student learning or student services component. In turn, a significant amount of space within the core of campus will become available for academic purposes and front-line student services. The Support Services Facility will be directly supportive of the **ESC Renovation** because it will provide most of the interim academic administrative space during the construction phase of the project.

B. The proposed **Classroom & Lab Upgrades** will improve specialized instructional space that is vital to student learning and ensure the continued high utilization of instructional space throughout campus. The project will provide some of the displaced instructional capacity during the **ESC Renovation**.

4. Integral to Achieving Statewide Policy Goals

Provide degree targets, and describe how the project promotes improvement on 2015-16 degree production totals in the OFM four-year public dashboard.

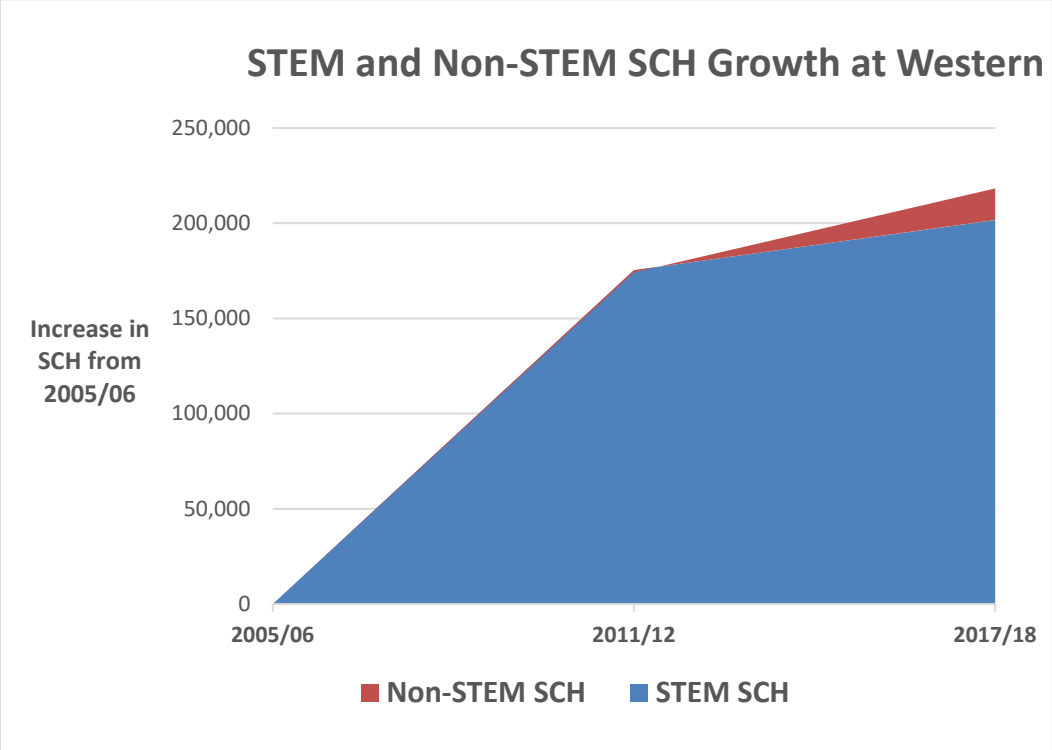
a. Indicate the number of bachelor's degrees awarded at the close of the 2015-16 academic year.
- **3,317** bachelor degrees were awarded at the close of the 2015-16 academic year.

b. Indicate the number of bachelor's degrees awarded in high-demand fields at the close of the 2015-16 academic year.
- **1,137** bachelor degrees were awarded in high-demand fields at the close of the 2015-16 academic year

c. Indicate the number of advanced degrees awarded at the close of the 2015-16 academic year.
- **328** advanced degrees were awarded at the close of the 2015-16 academic year

Non-STEM Student Credit Hours (SCH) continue to comprise the largest component of Western's academic programming; however, it is not where Western is growing. The diagram below employs a zero-base to best illustrate the dramatic shift in student demand in STEM disciplines since 2005-06. In 2017-18, STEM credit hours comprised 26% of all SCH at Western, yet it also accounted for almost all of Western's SCH growth.

[1] **During the 2017 academic year at Western, 16 science labs with a combined student capacity of 395 seats operated at over 20 student contact hours per week per seat:**
- **4 science labs operated over in excess of 30 student contact hours per week per seat**
- **2 science labs operated over in excess of 40 student contact hours per week per seat**
- ***WWU's highest weekly utilization in a science lab in 2015 was 47 contact hours per week per seat***



Western projects that a more efficient and utilized ESC will help create 81 additional high demand and STEM degrees each year relative to the 2015 academic year, including:

- 25 additional degrees in Geology
- 22 additional degrees in Environmental Sciences
- 24 additional degrees in Environmental Studies
- 10 additional degrees in integrated studies such as Materials Sciences and Energy Studies

5. Integral to Campus/Facilities Master Plan

a. Western's *Institutional Master Plan* (IMP) approved by the Board of Trustees in October 2001 and adopted as an amendment to the *Western Washington University Neighborhood Plan* by the Bellingham City Council in September 2001, will guide development of the University's main campus until it reaches a capacity of 4,000,000 overall gross square feet of total building space. The University is currently below 3,300,000 gross square feet of total building space.

The Institutional Master Plan[2] begins with the Institution's heart and mission to develop and utilize the academic core as Western's highest intensity use. The core area is a conceptual 10-minute walk-zone situated deep within the campus. It is strongly pedestrian focused, imbued with a sense of sanctuary, and protected from off-campus influences. While the IMP will increase the overall existing built density, the academic core absorbs much of that planned growth by in-fill and modernization to accommodate all of the University's main campus academic and student service needs. It does this while retaining the desirable characteristics that define Western as it is today, including the continuity of pedestrian flow, the strong connections of the built and natural environment, the sense of a "community of learners," the visual portals to the mountains, water, and adjacent neighborhoods, and the breakdown

[2] **The Western Washington University Institutional Master Plan provides for capacity of growth but leaves project sequencing to the academic plan.**

of scale. As described above, the ESC Renovation is an existing structure located within the academic core. The facility is located in IMP District 11 with land use classifications of Academic, Administrative/Support, and Open Space. (See Appendix D)

6. Integral to institution's Academic Programs Plan

Describe the proposed project's relationship and relative importance to the institution's most recent Academic Programs Plan. Must the project be initiated soon in order to:

a. Meet academic certification requirements?

Western Washington University's bachelor's program in Urban Planning and Sustainable Development was conditionally granted national accreditation[3] in 2015 and, with a successful accreditation review occurring this fall, will be one of only 15 accredited undergraduate planning programs in the United States and the second in the State of Washington. During the Accreditation Board's most recent site visit to Western, concern was raised about the lack of appropriate planning studio space currently available. The ESC Renovation would address the shortfalls identified by the Accreditation Board by providing planning space that can be used by students in the Urban Planning and Sustainable Development program.

b. Permit enrollment growth and/or specific quality improvements in current programs?

Interdisciplinary science learning is increasingly a requirement of grant submissions and industry sponsorship. Additionally, access to interdisciplinary STEM learning opportunities is a primary consideration of undergraduate students in selecting a major and is a growing factor in WWU's ability to compete in the higher education marketplace and recruit and retain faculty and students. This proposed project is consistent with Western's commitment to increased production of STEM and high demand degrees and it will provide the physical means to expand Western's vision of learning through discovery in scientific fields. The construction of interconnected collaborative science learning environments will be responsive and supportive of our interdisciplinary teaching model and help prepare students for the modern STEM workforce.

Additionally, the project will permit growth and protect access to lower division STEM programs, several of which are currently experiencing enrollment bottlenecks due to lack of access. This is particularly evident in the department of Biology and its role in lower division intake to the Huxley College of the Environment. Huxley students enter the College in either the upper division or as graduate students. This greatly impacts upper division and graduate intake in several other STEM disciplines and to some degree in other non-STEM disciplines, such as the College of Business and Economics. This project will contribute to improving the current situation by providing access to modular and flexible lab space. As one example, much needed efficiencies for Environmental Sciences and Biology can be realized via the common use of modular lab space. Ecology Lab (BIOL 326), Forest Ecology (ESCI 407), and Stream Ecology (ESCI 429) can all be compatible within the same lab room. Initiatives such as this will facilitate upper division intake for both Huxley and the Department of Biology.

c. Permit initiation of new programs?

The project will allow Western to build out newly commissioned programs and new programs that are in development such as:

- Western's newly accredited Engineering Program and its interfaces with the Advanced Material Sciences & Engineering Center (AMSEC), the latter of which is (and will continue to be) located in the ESC.

[3] **Accreditation was granted by the Planning Accreditation Board in association with the American Planning Association, the American Institute of Certified Planners, and the Association of Collegiate Schools of Planning.**

- The development of Geological Engineering. Western presently produces more Licensed Geologists than any other institution in the state, including more than the University of Washington and Washington State University combined.
- Programs in Oceanography and Marine Sciences, including the new Marine, Coastal and Watershed Sciences Degree program.
- Western's newly accredited undergraduate degree in Urban Planning.
- The Institute for Energy Studies, which offers undergraduate programs that combine the science, technology, policy and business of energy. The new BA in Energy Policy and Management produced its first graduates during the 2017-18 academic year.

7. Age of Building Since Last Major Remodel

The Environmental Studies Center was constructed in 1973 and has not had any major renovations. Previous minor capital projects have taken place to minimize the water leaking through the exposed cast-in-place concrete.

8. Condition of Building

The 2016 OFM Comparable Building Condition score for the Environmental Studies Center was 3.0 – FAIR. The majority of problems with the building are related to the mechanical systems. The building remains serviceable but key systems have a poor condition rating. The following is a Uniformat L1 breakdown.

a. The design of the HVAC system included the use of chilled water for building climate control. The campus chilled water system was abandoned in the 1970's and has resulted in the inability to adequately control temperatures in the building. Due to the lack of air conditioning, core air delivery is required. This results in significant noise interruptions to student learning due to the bladder type air terminal devices. All of the air terminal devices and associated building controls require replacement. The fume hoods are running at constant volume resulting in large energy consumption. When air terminal devices are updated the fume hoods controls should be improved. Roughly 50% of the lab waste plumbing system is no longer available, resulting in increased maintenance and repair costs.

b. Exterior building envelope and windows are problematic. The exterior walls do not have insulation, vapor retarder, or air barrier. Additionally, the numerous cracks in the concrete has resulted in water and air intrusion. The window panes are oversized and detailed flush with the exterior face of the building. Sealants are the primary weather seal. Major leaks are ongoing at the southwest corners of the top floors and are currently visible within classrooms, impeding teaching and student learning.

c. Interior Conditions: Vinyl floor tile and carpet flooring have outlived their life cycle and need renewal or replacement. Fixed tablet arm seating and window treatments are original and need renewal. Asbestos containing (ACM) finishes and insulation are found throughout the building and are cost factors for any work.

d. Restoration of the Environmental Studies Center would reduce Western's current renewal backlog by $8,290,300. See Appendix D for breakdown.

9. Significant Health, Safety, and Code Issues

Code: The Environmental Studies Center Renovation will address a number of code deficiencies to the facility such as upgrading ADA accessibility throughout the building, including in classrooms and labs; increasing the number of restroom fixtures that do not meet code minimums, addressing restroom equity by increasing the number of restroom facilities for women, addressing ventilation

deficiencies that constitute a serious safety issue for lab and classroom ventilation; and correcting electrical system deficiencies and code violations with the central atrium.

Health: The proposed renovation will include replacement finishes with low volatile organic compounds (VOC) and low greenhouse gas (GHG) impact materials. Worn carpets will be replaced which will eliminate existing trip hazards from wrinkles and ripped seams. Asbestos containing flooring and insulation materials will be removed wherever practical or be encapsulated if not cost effective to remove. The acoustic environment will be improved with noise absorptive panels to improve audibility. Mechanical source noise will be mitigated to eliminate distracting vibrations.

Energy Code: As the home for the College of the Environment, the renovated facility will be more energy efficient by being designed to meet current energy code and will target LEED platinum certification. The electrical upgrades included in the project will be in compliance with the Washington State Energy Code. These include: low watts per square feet overall energy budget, occupancy sensors to turn lights and select outlets off automatically when unoccupied; daylight zone automatic dimming; task lighting on writing surfaces to concentrate lumens where needed most; multifactor computers and monitors. All reductions in electrical consumption will translate to reduced mechanical cooling requirements.

Seismic: Suspended ceiling systems will include seismic bracing per current International Building Code (IBC). Lighting fixtures and other room equipment will be upgraded with secondary restraints and lateral bracing per current code requirements.

Reasonableness of Cost:

2008 Expected Project Cost Range, with escalation to 2020:

Construction Cost (Science Labs - teaching)
$309 x 1.399 (escalation to 2022) = **$432/GSF**

Project Cost (Science Labs - teaching)
$437 x 1.399 (escalation to 2022) = **$611/GSF**

Environmental Studies Renovation (STEM II) Project Estimated Costs
$43,148,780/115,500 SF = $374/SF estimated construction cost (86% of expected cost)
$78,000,000/115,500 SF = $675/SF total project cost (111% of expected cost)

The estimated costs of the project are based upon similar projects currently under construction, an evaluation of local general and sub-tier contractor availability and capability and current costs for similar scope. The estimate also includes life cycle analysis recommendations for high efficiency mechanical systems and high performance envelope additions which will lower energy costs and the building's carbon generation over the life of the building.

10. Availability of Space/Utilization on Campus

Describe the institution's plan for improving space utilization and how the project will impact the following:

a. The utilization of classroom space
This project allows the Institution to right-size several of its general university classroom spaces to increase the functionality and utilization of these rooms to enhance academic programming

and better serve students. The project will replace general-use classrooms presently within the ESC with general-use science lecture halls in order to allow for larger sections where lab demonstration is required. The transfer of non-science learning from the ESC into adjoining Arntzen Hall enables the University to increase its inventory of small collaborative (moveable tables and chair) classrooms. This type of room is in short supply as smaller tablet-armchair rooms become less relevant and are usually too small and impractical for conversion to table and chair layouts. As a result, WWU plans for a slight increase in assignable area given to general use classrooms but with few, net-new general use seats.

b. The utilization of class laboratory space

Class-lab utilization on the campus continues to be high. Of growing concern is the disparity between the most highly utilized labs and the lowest. Twenty-two percent of all class labs performed at higher than 16 student contact hours per week per seat in the fall of 2015. Still, the overall utilization of class labs for the campus averaged over 18 student contact hours per week per seat during the same period. Relevant to this particular project request, **class-lab utilization in the Fall of 2015 within the Environmental Studies Center was less than nine weekly contact hours.**

11. Efficiency of Space Allocation

a. For each major function in the proposed facility (classroom, instructional labs, offices), identify whether space allocations will be consistent with Facility Evaluation and Planning Guide (FEPG) assignable square feet standards. To the extent any proposed allocations exceed FEPG standards, explain the alternative standard that has been used, and why. See Chapter 4.0 of the Project Evaluation Guidelines for an example.

Classroom/Lab Type	# of Rooms	# of Stations	Proposed ASF/Station	FEPG Standard	Meets Standard
MEDIUM SCIENCE LECTURE HALL C/W FOLDING Auditorium Seating w/TA	3	306 STUDENT STATIONS	14 ASF	14 ASF/STATION	YES
Small Classroom w RISER MOUNTED TC	1	49 STUDENT STATIONS	17 ASF	17 ASF/STATION	YES
MED. CLASSROOM W MTC	3	126 STUDENT STATIONS	24.5 ASF/STATION	16-26 ASF/STATION	YES
NATURAL SCIENCES CLASS LABS	10	230 STUDENT STATIONS	51 ASF/STATION	60 ASF/STATION	YES
Computer Lab	3	108	39 ASF/STATION	60 ASF/STATION	YES
OFFICE - CHAIRS/DIRECTORS	10		120 ASF/DIR. 140 ASF/CHAIR	175/ASF/CHAIR	YES
OFFICE - FACULTY & EQUIVILENTS	67		120 ASF/FACULTY	140/ASF/FACULTY	YES
OFFICE - STUDENT ASSISTANTS	20	40	120ASF/2 STDNTS SHARING	140/ASF/2 STUDENTS	YES
OFFICE - STAFF & OTHER	17		120/ASF STATION	120/ASF STATION	YES
CLERICAL/ADMINISTRATIVE	25		80 - 120ASF/CLERICAL FTE	140ASF/CLERICAL FTE	YES
OFFICE SERVICE			100ASF/CLERICAL FTE	100ASF/CLERICAL FTE	YES

b. Identify the following on form CBS002:
   1. Usable square feet (USF) in the proposed facility, 60,100
   2. Gross square feet (GSF), and 115,500
   3. Building efficiency (USF divided GSF). 52.0%

12. Adequacy of Space

The prominence of science intensive activities within the ESC has declined over the years as the building's support infrastructure has become less able to service such specialized spaces. As a result, approximately one-third of the building's assignable area is presently utilized for non-science activities. These non-science activities include general administrative spaces such as the Environmental Health

and Safety Offices, two college dean's offices, general storage and institutional support services such as custodial storage and laundry facilities. Much of the remaining assignable area within the building is dilapidated and of marginal use. Due to the lack of an effective ventilation system, heat gain on the south side of the facility is so extreme that offices can only be periodically used. The deficit of available building air supply has resulted in the ESC being negatively pressured; this makes the building an anomaly amongst science facilities, which are typically designed so that building pressure and containment zones can be actively managed. The current situation causes several other issues that the building is infamously known for such as a myriad of water leaks, failing window seals, mold, doors that can hardly be opened, and water being drawn into the building because of the air pressure differential.

This project essentially restores the ESC building for its original science use and expands the facility to enable program growth and degree production moving forward. The limitations of the existing building coupled with overall space shortages affecting the three major departments that occupy this facility are impeding program growth and will soon limit intake into these high-demand majors. In recent years we have, in effect, diverted building mechanical and electrical systems from different areas of the building to maintain science intensive use of a few labs elsewhere in the building.

Environmental Studies Renovation (STEM II)

Appendix Contents

A. Office of Financial Management Reports (CBS002)
   Project Cost Summary/C100

B. Environmental Studies Facility *Space Needs Assessment Summary*
   Prepared by Ira Fink and Associates, Inc.

C. WWU Institutional Master Plan

D. Environmental Studies Center – Facility Maintenance Backlog Information

E. Availability of Space Table

F. Program-related Space Allocation Assignable Square Feet Template

Appendix A

OFM

380 - Western Washington University
Capital Project Request
2019-21 Biennium
*

Version: SV 2019-21 Capital Budget Request

Report Number: CBS002
Date Run: 8/3/2018 10:26AM

Project Number: 30000871
Project Title: Environmental Studies Renovation (STEM II)

Project Class: Preservation

Description

Starting Fiscal Year: 2020
Agency Priority: 2

Project Summary

The Environmental Studies Renovation (STEM II) project was included in the Sciences Building and Renovation project. The project as a whole was previously scored in the last biennium with funding for the design of the Addition provided in the 17-19 biennium. For 19-21 biennium, Western is requesting construction funding for the Addition and design funding for the Renovation. After consultation with OFM, we are bifurcating the original proposal into two--one for the Addition (Science Building Addition) and the other for the Renovation (Environmental Studies Renovation). This project will renovate the approximately 115,500 gross square foot Environmental Studies Center to address building deficiencies, code compliance, and inefficient utilization.

Project Description

Western's forty-five year old Environmental Studies Center (ESC) is structurally well suited for intensive science use, but requires significant upgrades to critical mechanical systems and space utilization in order to address costly inefficiencies, improve safety and provide students a more collaborative research and learning environment. Additionally, many of the building's mechanical systems are past their useful life and are in need of repairing or replacement.

This project will renovate the approximately 115,500 gross square foot ESC. The renovation includes:

* Replacing/recladding the exterior envelope
* Replacing or repairing the HVAC system, windows, and flooring.
* Addressing code compliance associated with ADA accessibility, asbestos, and restroom fixtures;
* Performing seismic remediation for necessary safety upgrades; and
* Modifying interior space to improve utilization and student-faculty collaboration.

The ESC building's primary use was for science, but as its infrastructure has aged and its ability to safely and adequately support modern science practice has diminished, many of the scientific functions have had to shift to other buildings in order to provide students access to quality STEM learning space. In the 13-15 biennium, Western commissioned a space needs assessment that specifically cited the very poor quality of campus space, including the student learning space in ESC. Those needs were presented in the 13-15 capital request for pre-design funding of the ESC Renovation.

With the continued and persistent growth in STEM disciplines and the building's capability for intensive science use, **providing renovations are made**, the structure is well situated in direct proximity to Western's other science facilities. Since the ESC is in the academic core of the campus it marries the Institutional Master Plan's goal to fully develop and utilize the academic core to its highest intensity use.

The building remains serviceable but key systems have a poor condition rating. The following are highlights of the buildings key deficiencies that will be addressed with the renovation:

a. The design of the HVAC system included the use of chilled water for building climate control. The campus chilled water system was abandoned in the 1970’s and has resulted in the inability to adequately control temperatures in the building. Due to the lack of air conditioning, core air delivery is required. This results in significant noise interruptions to student learning due to the bladder type air terminal devices. All of the air terminal devices and associated building controls require replacement. The fume hoods are running at constant volume resulting in large energy consumption. When air terminal devices are updated the fume hoods controls should be improved. Roughly 50% of the lab waste plumbing system is no longer available, resulting in increased maintenance and repair costs.

b. Exterior building envelope and windows are problematic. The exterior walls do not have insulation, vapor retarder, or air barrier. Additionally, the numerous cracks in the concrete has resulted in water and air intrusion. The window panes are

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oversized and detailed flush with the exterior face of the building. Sealants are the primary weather seal. Major leaks are ongoing at the southwest corners of the top floors and are currently visible within classrooms, impeding teaching and student learning.

c. Interior Conditions: Vinyl floor tile and carpet flooring have outlived their life cycle and need renewal or replacement. Fixed tablet arm seating and window treatments are original and need renewal. Asbestos containing (ACM) finishes and insulation are found throughout the building and are cost factors for any work.

d. Code: The Environmental Studies Center Renovation will address a number of code deficiencies to the facility such as upgrading ADA accessibility throughout the building, including in classrooms and labs; increasing the number of restroom fixtures that do not meet code minimums, addressing restroom equity by increasing the number of restroom facilities for women, addressing ventilation deficiencies that constitute a serious safety issue for lab and classroom ventilation; and correcting electrical system deficiencies and code violations with the central atrium.

e. Health: The proposed renovation will include replacement finishes with low volatile organic compounds (VOC) and low greenhouse gas (GHG) impact materials. Worn carpets will be replaced which will eliminate existing trip hazards from wrinkles and ripped seams. Asbestos containing flooring and insulation materials will be removed wherever practical or be encapsulated if not cost effective to remove. The acoustic environment will be improved with noise absorptive panels to improve audibility. Mechanical source noise will be mitigated to eliminate distracting vibrations.

f. Energy Code: As the home for the College of the Environment, the renovated facility will be more energy efficient by being designed to meet current energy code and will target LEED platinum certification. The electrical upgrades included in the project will be in compliance with the Washington State Energy Code. These include: low watts per square feet overall energy budget, occupancy sensors to turn lights and select outlets off automatically when unoccupied; daylight zone automatic dimming; task lighting on writing surfaces to concentrate lumens where needed most; multifactor computers and monitors. All reductions in electrical consumption will translate to reduced mechanical cooling requirements.

g. Seismic: Suspended ceiling systems will include seismic bracing per current International Building Code (IBC). Lighting fixtures and other room equipment will be upgraded with secondary restraints and lateral bracing per current code requirements.

h. Backlog: Restoration of the Environmental Studies Center would reduce Western's current renewal backlog by $8,290,300.

Western is requesting design funding for this project in the 2019-21 biennium. Design will commence when funding is received. Construction will be requested in the 2021-23 biennium. Construction is scheduled to be completed in January 2023.

Location
City: Bellingham **County:** Whatcom **Legislative District:** 040

Funding

			Expenditures		2019-21 Fiscal Period	
Acct Code	Account Title	Estimated Total	Prior Biennium	Current Biennium	Reapprops	New Approps
057-1	State Bldg Constr-State	78,000,000				8,000,000
	Total	**78,000,000**	**0**	**0**	**0**	**8,000,000**

Future Fiscal Periods

OFM

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			Future Fiscal Periods		
		2021-23	**2023-25**	**2025-27**	**2027-29**
057-1	State Bldg Constr-State	70,000,000			
	Total	**70,000,000**	**0**	**0**	**0**

Operating Impacts

No Operating Impact

Parameter	Entered As	Interpreted As
Biennium	2019-21	2019-21
Agency	380	380
Version	SV-A	SV-A
Project Classification	*	All Project Classifications
Capital Project Number	30000871	30000871
Sort Order	Project Class	Project Class
Include Page Numbers	Y	Yes
For Word or Excel	Y	Y
User Group	Agency Budget	Agency Budget
User Id	*	All User Ids

STATE OF WASHINGTON
AGENCY / INSTITUTION PROJECT COST SUMMARY

Agency	Western Washington University
Project Name	Environmental Studies Center Renovation
OFM Project Number	

Contact Information	
Name	Rick Benner, FAIA
Phone Number	(360) 650-3550
Email	rick.benner@wwu.edu

Statistics			
Gross Square Feet	115,500	MACC per Square Foot	$332
Usable Square Feet	60,100	Escalated MACC per Square Foot	$374
Space Efficiency	52.0%	A/E Fee Class	A
Construction Type	Research Facilities	A/E Fee Percentage	10.48%
Remodel	Yes	Projected Life of Asset (Years)	50
Additional Project Details			
Alternative Public Works Project	Yes	Art Requirement Applies	Yes
Inflation Rate	3.12%	Higher Ed Institution	Yes
Sales Tax Rate %	8.70%	Location Used for Tax Rate	Bellingham
Contingency Rate	8%		
Base Month	June-18		
Project Administered By	Agency		

Schedule			
Predesign Start	August-15	Predesign End	June-16
Design Start	October-19	Design End	May-21
Construction Start	August-21	Construction End	January-23
Construction Duration	17 Months		

Green cells must be filled in by user

Project Cost Estimate

Total Project	**$69,493,165**	Total Project Escalated	**$78,000,063**
		Rounded Escalated Total	**$78,000,000**

STATE OF WASHINGTON

AGENCY / INSTITUTION PROJECT COST SUMMARY

Agency	Western Washington University
Project Name	Environmental Studies Center Renovation
OFM Project Number	

Cost Estimate Summary

Acquisition			
Acquisition Subtotal	**$0**	**Acquisition Subtotal Escalated**	**$0**

Consultant Services			
Predesign Services	$0		
A/E Basic Design Services	$2,977,266		
Extra Services	$1,283,000		
Other Services	$1,967,612		
Design Services Contingency	$467,091		
Consultant Services Subtotal	**$6,694,969**	**Consultant Services Subtotal Escalated**	**$7,290,772**

Construction			
GC/CM Risk Contingency	$1,100,000		
GC/CM or D/B Costs	$8,350,000		
Construction Contingencies	$2,872,500	Construction Contingencies Escalated	$3,236,159
Maximum Allowable Construction Cost (MACC)	$38,300,000	Maximum Allowable Construction Cost (MACC) Escalated	$43,148,780
Sales Tax	$4,404,158	Sales Tax Escalated	$4,961,724
Construction Subtotal	**$55,026,658**	**Construction Subtotal Escalated**	**$61,993,033**

Equipment			
Equipment	$4,954,500		
Sales Tax	$431,042		
Non-Taxable Items	$0		
Equipment Subtotal	**$5,385,542**	**Equipment Subtotal Escalated**	**$6,067,352**

Artwork			
Artwork Subtotal	**$215,744**	**Artwork Subtotal Escalated**	**$215,744**

Agency Project Administration			
Agency Project Administration Subtotal	$1,682,753		
DES Additional Services Subtotal	$0		
Other Project Admin Costs	$0		
Project Administration Subtotal	**$1,682,753**	**Project Administation Subtotal Escalated**	**$1,895,790**

Other Costs			
Other Costs Subtotal	**$487,500**	**Other Costs Subtotal Escalated**	**$537,372**

Project Cost Estimate

Total Project	**$69,493,165**	Total Project Escalated	**$78,000,063**
		Rounded Escalated Total	**$78,000,000**

Cost Estimate Details

Acquisition Costs					
Item	**Base Amount**		**Escalation Factor**	**Escalated Cost**	**Notes**
Purchase/Lease					
Appraisal and Closing					
Right of Way					
Demolition					
Pre-Site Development					
Other					
Insert Row Here					
ACQUISITION TOTAL	**$0**		**NA**	**$0**	

Green cells must be filled in by user

Cost Estimate Details

Consultant Services				
Item	**Base Amount**	**Escalation Factor**	**Escalated Cost**	**Notes**
1) Pre-Schematic Design Services				
Programming/Site Analysis				
Environmental Analysis				
Predesign Study				
Other				
Insert Row Here				
Sub TOTAL	**$0**	**1.0418**	**$0**	Escalated to Design Start
2) Construction Documents				
A/E Basic Design Services	$2,977,266			69% of A/E Basic Services
Other				
Insert Row Here				
Sub TOTAL	**$2,977,266**	**1.0675**	**$3,178,232**	Escalated to Mid-Design
3) Extra Services				
Civil Design (Above Basic Svcs)	$30,000			
Geotechnical Investigation	$10,000			
Commissioning	$65,000			
Site Survey	$15,000			
Testing	$100,000			
LEED Services	$90,000			
Voice/Data Consultant	$35,000			
Value Engineering	$30,000			
Constructability Review	$30,000			
Environmental Mitigation (EIS)				
Landscape Consultant	$50,000			
LCCA	$40,000			
Acoustical Consultant	$120,000			
Travel & Per Diem	$120,000			
Render & Models	$15,000			
Document Reproduction	$25,000			
Advertising	$5,000			
AV Consultant	$35,000			
Elevator Consultant	$20,000			
Wind Tunnel Study	$20,000			
Laboratory Consultant	$200,000			
Interior Design Consultant	$100,000			
Security Consultant	$20,000			
Code Consultant	$30,000			
Envelope Consultant	$78,000			
Sub TOTAL	**$1,283,000**	**1.0675**	**$1,369,603**	Escalated to Mid-Design
4) Other Services				
Bid/Construction/Closeout	$1,337,612			31% of A/E Basic Services
HVAC Balancing	$80,000			
Staffing				
On-Site Reps.	$400,000			
Commissioning	$150,000			
Sub TOTAL	**$1,967,612**	**1.1266**	**$2,216,712**	Escalated to Mid-Const.

5) Design Services Contingency				
Design Services Contingency	$467,091			
Other				
Insert Row Here				
Sub TOTAL	**$467,091**	**1.1266**	**$526,225**	Escalated to Mid-Const.
CONSULTANT SERVICES TOTAL	**$6,694,969**		**$7,290,772**	

Green cells must be filled in by user

Cost Estimate Details

Construction Contracts				
Item	**Base Amount**	**Escalation Factor**	**Escalated Cost**	**Notes**
1) Site Work				
G10 - Site Preparation				
G20 - Site Improvements				
G30 - Site Mechanical Utilities				
G40 - Site Electrical Utilities				
G60 - Other Site Construction				
Other				
Insert Row Here				
Sub TOTAL	**$0**	**1.1023**	**$0**	
2) Related Project Costs				
Offsite Improvements				
City Utilities Relocation				
Parking Mitigation				
Stormwater Retention/Detention				
Other				
Insert Row Here				
Sub TOTAL	**$0**	**1.1023**	**$0**	
3) Facility Construction				
A10 - Foundations				
A20 - Basement Construction				
B10 - Superstructure				
B20 - Exterior Closure				
B30 - Roofing				
C10 - Interior Construction				
C20 - Stairs				
C30 - Interior Finishes				
D10 - Conveying				
D20 - Plumbing Systems				
D30 - HVAC Systems				
D40 - Fire Protection Systems				
D50 - Electrical Systems				
F10 - Special Construction				
F20 - Selective Demolition				
General Conditions				
Overall	$38,300,000			
Insert Row Here				
Sub TOTAL	**$38,300,000**	**1.1266**	**$43,148,780**	
4) Maximum Allowable Construction Cost				
MACC Sub TOTAL	**$38,300,000**		**$43,148,780**	

5) GCCM Risk Contingency				
GCCM Risk Contingency	$1,100,000			
Other				
Insert Row Here				
Sub TOTAL	**$1,100,000**	**1.1266**	**$1,239,260**	
6) GCCM or Design Build Costs				
GCCM Fee	$3,100,000			
Bid General Conditions	$4,750,000			
GCCM Preconstruction Services	$500,000			
Other				
Insert Row Here				
Sub TOTAL	**$8,350,000**	**1.1266**	**$9,407,110**	
7) Construction Contingency				
Allowance for Change Orders	$2,872,500			
Other				
Insert Row Here				
Sub TOTAL	**$2,872,500**	**1.1266**	**$3,236,159**	
8) Non-Taxable Items				
Other				
Insert Row Here				
Sub TOTAL	**$0**	**1.1266**	**$0**	
Sales Tax				
Sub TOTAL	**$4,404,158**		**$4,961,724**	
CONSTRUCTION CONTRACTS TOTAL	**$55,026,658**		**$61,993,033**	

Green cells must be filled in by user

Cost Estimate Details

Equipment				
Item	**Base Amount**	**Escalation Factor**	**Escalated Cost**	**Notes**
E10 - Equipment	$3,954,500			
E20 - Furnishings	$1,000,000			
F10 - Special Construction				
Other				
Insert Row Here				
Sub TOTAL	**$4,954,500**	**1.1266**	**$5,581,740**	
1) Non Taxable Items				
Other				
Insert Row Here				
Sub TOTAL	**$0**	**1.1266**	**$0**	
Sales Tax				
Sub TOTAL	**$431,042**		**$485,612**	
EQUIPMENT TOTAL	**$5,385,542**		**$6,067,352**	

Green cells must be filled in by user

Cost Estimate Details

Artwork					
Item	**Base Amount**		**Escalation Factor**	**Escalated Cost**	**Notes**
Project Artwork	$0				0.5% of Escalated MACC for new construction
Higher Ed Artwork	$215,744				0.5% of Escalated MACC for new and renewal construction
Other					
Insert Row Here					
ARTWORK TOTAL	**$215,744**		**NA**	**$215,744**	

Green cells must be filled in by user

Cost Estimate Details

Project Management					
Item	**Base Amount**		**Escalation Factor**	**Escalated Cost**	**Notes**
Agency Project Management	$1,682,753				
Additional Services					
Other					
Insert Row Here					
PROJECT MANAGEMENT TOTAL	**$1,682,753**		**1.1266**	**$1,895,790**	

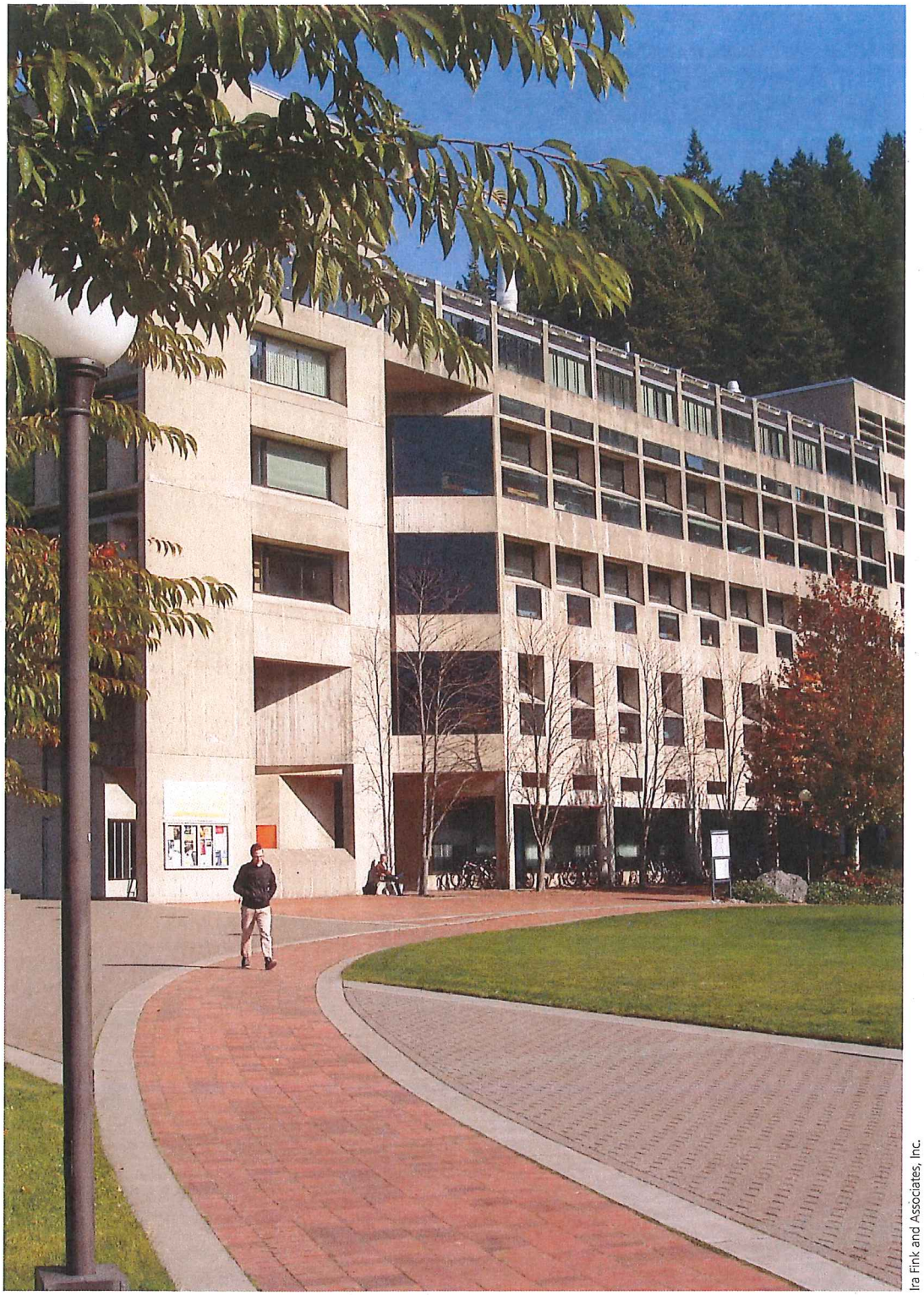
Green cells must be filled in by user

Cost Estimate Details

Other Costs					
Item	**Base Amount**		**Escalation Factor**	**Escalated Cost**	**Notes**
Mitigation Costs					
Hazardous Material Remediation/Removal					
Historic and Archeological Mitigation					
Plan Review	$337,500				
M & O Assist	$150,000				
OTHER COSTS TOTAL	**$487,500**		**1.1023**	**$537,372**	

Green cells must be filled in by user

Appendix B



Ira Fink and Associates, Inc.

Environmental Studies Center. The Environmental Studies Center has 111,145 gross square feet and 63,526 assignable square feet.

EXECUTIVE SUMMARY

Space Needs Assessment

- This study is a broad-based, conceptual space needs assessment of the College of Sciences and Technology and the Huxley College of the Environment academic units at Western Washington University.
  - One premise of the study is that enrollment growth at WWU will be slow and total campus enrollment will remain at approximately 15,000.

Primary Findings

Huxley College of the Environment

- Of the two colleges, the primary finding of the study is that the space needs of Huxley College require the most immediate attention.
  - **Facilities:** Huxley College space needs have substantially changed since the College was founded and facilities were built 40 years ago.
  - **Space:** Both Huxley College departments are consistently positioned in the lowest range of amount of space per faculty, per student, and per research unit among the WWU science and technology departments.
  - **Class Laboratories:** Moreover, the instructional laboratory spaces of the Huxley College units are in the poorest condition of the two colleges and in the most need of attention.

College of Sciences and Technology

- Among the College of Sciences and Technology (CST) units, four of the seven departments and both research units have relatively new space. Biology, Chemistry, Computer Science, Physics and Astronomy, AMSEC, SMATE are in recently renovated or otherwise relatively new space. These units have both contemporary space and space largely adequate for their needs. Geology needs better space. Mathematics needs both better space and more space. Engineering Technology requires a total review of its space and a plan to provide appropriate space for its newly designated engineering programs.

Space for Scientific Instrumentation

- There is a collaborative desire for additional or replacement instrumentation since the instruments and their centers serve both disciplinary and interdisciplinary objectives.
  - To help guide this activity, an overall WWU plan for new and replacement instrumentation is needed.

Space Projections

- To test alternatives, a series of eight separate space projection estimates, identified as Scenarios 1 through 8, were tabulated.
  - For the purposes of this study, Scenario 3 was chosen as a plausible planning projection. In Scenario 3, the faculty growth is based upon the Provost's estimates of growth from 2013 to 2018 or one new faculty member per department, whichever is greater. Faculty growth counts add one faculty member per department from 2018 to 2023.
- In Scenario 3, space needs for Huxley College would grow by 32,014 ASF from its existing 36,788 ASF in 2013 to 68,802 ASF in 2018 and an additional 3,106 ASF to 71,908 ASF in 2023.
- Space needs for CST would grow by 37,229 ASF from 231,599 ASF in 2013 to 268,828 ASF in 2018 and an additional 15,680 ASF to 284,508 ASF in 2023.
- Space needs for Scientific Technical Services would grow by an estimated 1,800 ASF based upon instrument requirements, or a growth from 7,337 ASF to 9,137 ASF.

Summary Report

- This summary report is accompanied by three separate, standalone appendices, which together constitute an omnibus indicators report.
  - Appendix A is an expanded narrative, which includes a listing of space needs as identified by each department or unit.
  - Appendix B provides supplemental data, including detailed space benchmark analysis.
  - Appendix C presents the WWU room-by-room space database, both by building and by department.

Appendix C

Western Washington University
Institutional Master Plan

An Addendum to the Western Washington University Neighborhood Plan

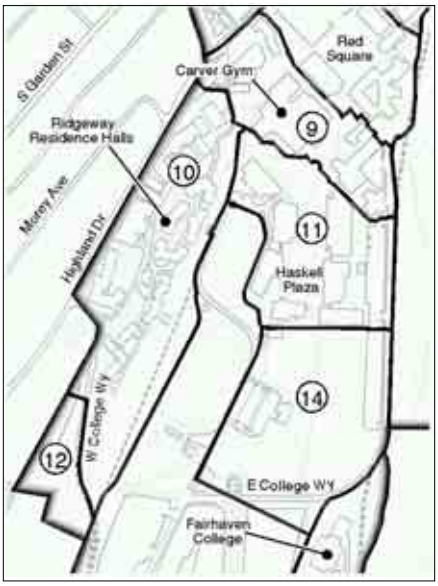
Adopted by the City of Bellingham, September 24, 2001
Ordinance #2001-09-068

Approved by WWU Board of Trustees, October 5, 2001

WESTERN
WASHINGTON UNIVERSITY

District 11

Location: Haskell Plaza (Science, Mathematics and Technology Education, Chemistry, Biology, Parks Hall, Ross Engineering Technology, Arntzen Hall, Environmental Studies)



Adjacent City Zoning: None

2001 Primary Land Uses:

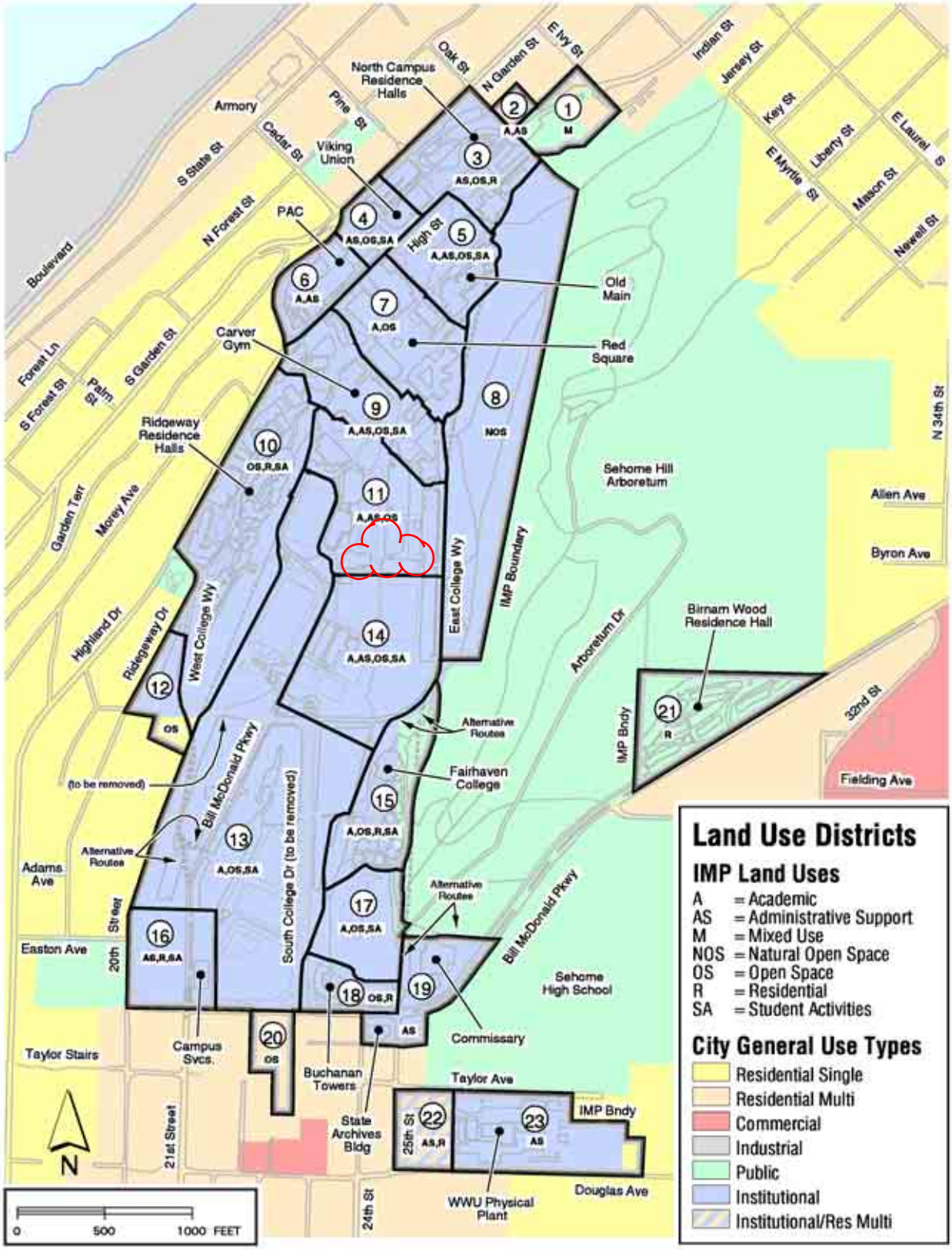
- Academic (Arntzen Hall and Greenhouse; Biology; Chemistry; Environmental Studies; Parks Hall; Science, Mathematics and Technology Education; and Ross Engineering Technology)
- Open space, sculpture sites, circulation (Haskell Plaza and Science, Mathematics and Technology Education lawn area)
- Parking

City Land Use Designation:

- Institutional (Area 1, WWU Neighborhood Plan)

***Institutional Master Plan* Land Use Classifications:**

- Academic
- Administrative/support
- Open space


North Campus Residence Halls
Armory
Viking Union
PAC
Old Main
Red Square
Carver Gym
Ridgeway Residence Halls
Sehome Hill Arboretum
Birnam Wood Residence Hall
Fairhaven College
Alternative Routes
(to be removed)
Bill McDonald Pkwy
South College Dr (to be removed)
Adams Ave
Easton Ave
Taylor Stairs
Campus Svcs.
Buchanan Towers
State Archives Bldg
Commissary
Sehome High School
WWU Physical Plant
Taylor Ave
Douglas Ave
IMP Bndy
Allen Ave
Byron Ave
Fielding Ave
32nd St
24th St
21st Street
20th Street
25th St
N Garden St
E Ivy St
Oak St
Pine St
Cedar St
S State St
N Forest St
Boulevard
High St
Indian St
Jersey St
Key St
Liberty St
E Myrtle St
E Laurel St
Mason St
Newell St
N 34th St
S Forest St
Forest Ln
Palm St
S Garden St
Garden Terr
Morey Ave
Highland Dr
Ridgeway Dr
West College Way
East College Way
Arboretum Dr
0 500 1000 FEET
N
Land Use Districts
IMP Land Uses
A = Academic
AS = Administrative Support
M = Mixed Use
NOS = Natural Open Space
OS = Open Space
R = Residential
SA = Student Activities
City General Use Types
Residential Single
Residential Multi
Commercial
Industrial
Public
Institutional
Institutional/Res Multi

Appendix D

BMAR Overview Graph

Graph
- By Reason
- By Uniformat Groups
- By Uniformat Item

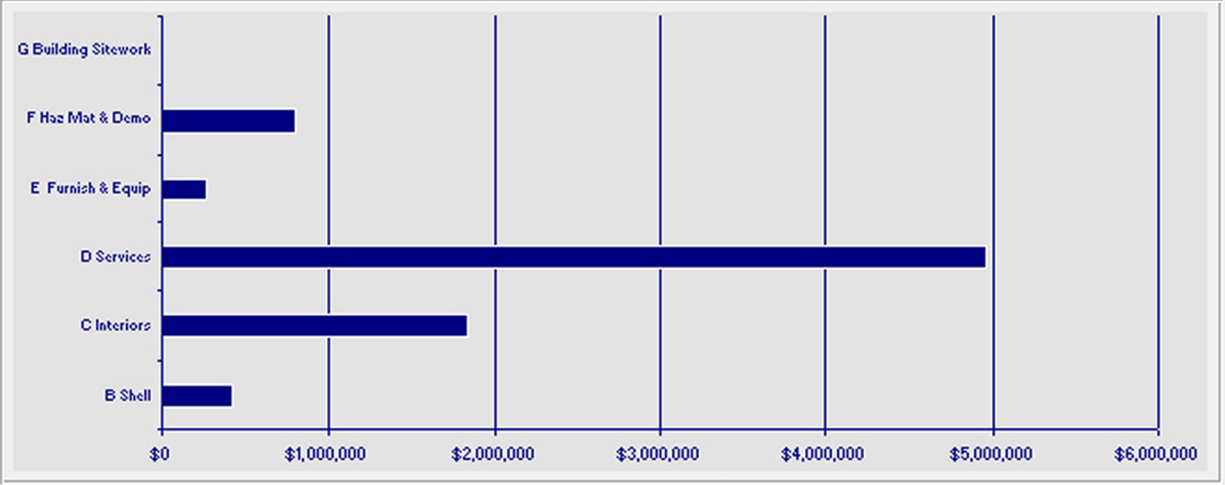
L1 L2 Custom
Uniformat Item

Fund
- Pres.
- Oper.
- All

Impact: All
Reason:
Zone:
Bldg Name: ENVIRONMENTAL STUDIES CENTE

Clear Filters | Calculate

ENVIRONMENTAL STUDIES CENTER



B Shell..	$422,000
C Interiors..	$1,836,800
D Services..	$4,964,100
E Furnish_Equip..	$271,400
F Haz Mat_Demo..	$789,800
G Building Sitework..	$6,200

Total $8,290,300

? | Print | Single Uniformat | 10 Year | Condition | Browse | Close

Appendix E

AVAILABILITY OF SPACE

2019-21 Four-year Higher Education Scoring Process

REQUIRED FOR ALL CATEGORIES EXCEPT LAND ACQUSITION AND INFRASTRUCTURE.

Project Name:	Environmental Studies Renovation (STEM II)
Campus Location	516 High Street, Bellingham, WA

Identify the average number of hours per week each (a) classroom seat and (b) classroom lab is expected to be utilized in Fall 2018 on the proposed project's campus. Please fill in the green shaded cells for the **campus** where the project is located.

(a) General University Classroom Utilization		**(b) General University Lab Utilization**	
Fall 2017 Weekly Contact Hours	171,070	Fall 2017 Weekly Contact Hours	38,009
Multiply by % FTE Increase Budgeted	0.00%	Multiply by % FTE Increase Budgeted	0.00%
Expected Fall 2018 Contact Hours	171,070	Expected Fall 2018 Contact Hours	38,009
Expected Fall 2018 Classroom Seats	7,719	Expected Fall 2018 Class Lab Seats	2,037
Expected Hours per Week Utilization	**22.2**	**Expected Hours per Week Utilization**	**18.7**
HECB GUC Utilization Standard	22.0	HECB GUL Utilization Standard	16.0
Difference in Utilization Standard	1%	Difference in Utilization Standard	17%

If the campus does not meet the 22 hours per classroom seat and/or the 16 hours per class lab HECB utilization standards, describe any institutional plans for achieving that level of utilization.

Appendix F

Program-related Space Allocation
Assignable Square Feet Template

Input the assignable square feet for the proposed project under the appropriate space type below:

Type of Space	Points	Assignable Square Feet	Percentage of total	Score [Points x Percentage]
Instructional Space (Classroom, Lab, Library)	6	41,930	69.8	4.2
Student Advising/Counseling	4	390	0.6	0.0
Childcare	1		0.0	0.0
Faculty Offices	4	9,600	16.0	0.6
Administrative	3	4,970	8.3	0.2
Maintenance/Central Stores/Student Center	4	3,210	5.3	0.2
Total		**60,100**	**100.0**	**5.3**