2020 PROJECT PROPOSAL CHECKLIST

2021-23 Biennium Four-year Higher Education Scoring Process

INSTITUTION	CAMPUS LOCATION
380 - Western Washington University	Bellingham
PROJECT TITLE	**FPMT UNIQUE FACILITY ID # (OR NA)**
Electrical Engineering and Computer Science Building	Click or tap here to enter text.
PROJECT CATEGORY	**PROJECT SUBCATEGORY**
Growth	Major
PROPOSAL IS	
New or Updated Proposal (for scoring)	Resubmitted Proposal (retain prior score)
☒ New proposal ☐ Resubmittal to be scored (more than 2 biennia old or significantly changed)	☐ Resubmittal from 2017-19 biennium ☐ Resubmittal from 2019-21 biennium
CONTACT	**PHONE NUMBER**
Brian A. Ross	W: 360-650-6539; C: 559-270-4928

PROPOSAL CONTENT

- ☒ Project Proposal Checklist: this form; one for each proposal
- ☒ Project Proposal Form: Specific to category/subcategory (10-page limit)
- ☒ Appendices: templates, forms, exhibits and supporting/supplemental documentation for scoring.

INSTITUTIONAL PRIORITY

- ☒ Institutional Priority Form. Sent separately (not in this packet) to: Darrell Jennings.

Check the corresponding boxes below if the proposed project meets the minimum threshold or if the item listed is provided in the proposal submittal.

MINIMUM THRESHOLDS

- ☒ Project is not an exclusive enterprise function such as a bookstore, dormitory or contract food service.
- ☒ Project meets LEED Silver Standard requirements.
- ☒ Institution has a greenhouse gas emissions reduction policy in place in accordance with RCW 70.235.070 and vehicle emissions reduction policy in place per RCW 47.01.440 or RCW 43.160.020 as applicable.
- ☒ Design proposals: A complete predesign study was submitted to OFM by July 1, 2020.
- ☒ Growth proposals: Based on solid enrollment projections and is more cost-effectively providing enrollment access than alternatives such as university centers and distance learning.
- ☐ Renovation proposals: Project should cost between 60 – 80% of current replacement value and extend the useful life of the facility by at least 25 years.
- ☐ Acquisition proposals: Land acquisition is not related to a current facility funding request.
- ☐ Infrastructure proposals: Project is not a facility repair project.
- ☐ Stand-alone, infrastructure and acquisition proposals: is a single project requesting funds for one biennium.

2020 PROJECT PROPOSAL CHECKLIST

2021-23 Biennium Four-year Higher Education Scoring Process

REQUIRED APPENDICES

- ☒ Capital Project Report CBS 002
- ☒ Project cost estimate:
  - CBS 003 for projects between $2 million and $5 million
  - Excel C-100 for projects greater than $5 million
- ☒ Degree Totals and Targets template to indicate the number of Bachelors, High Demand and Advanced degrees expected to be awarded in 2021. (Required for Overarching Criteria scoring criteria for Major Growth, Renovation, Replacement and Research proposals).
- ☒ Availability of Space/Campus Utilization template for the campus where the project is located. (Required for all categories/subcategories except Infrastructure and Acquisition proposals).
- ☒ Assignable Square Feet template to indicate program-related space allocation. (Required for Growth, Renovation and Replacement proposals, all categories/subcategories).

OPTIONAL APPENDICES

Attach supplemental and supporting project documentation, *limit to materials directly related to and needed for the evaluation criteria*, such as:

- ☐ Degree and enrollment growth projections
- ☒ Selected excerpts from institutional plans
- ☒ Data on instructional and/or research space utilization
- ☐ Additional documentation for selected cost comparables (acquisition)
- ☐ Selected materials on facility conditions
- ☐ Selected materials on code compliance
- ☐ Tables supporting calculation of program space allocations, weighted average facility age, etc.
- ☐ Evidence of consistency of proposed research projects with state, regional, or local economic development plans
- ☐ Evidence of availability of non-state matching funds
- ☐ Selected documentation of prior facility failures, high cost maintenance, and/or system unreliability for infrastructure projects
- ☐ Documentation of professional assessment of costs for land acquisition, land cleanup, and infrastructure projects
- ☐ Selected documentation of engineering studies, site survey and recommendations, or opinion letters for infrastructure and land cleanup projects
- ☐ Other: Click or tap here to enter text.

I certify that the above checked items indicate either that the proposed project meets the minimum thresholds or the corresponding items have been included in this submittal.

Name: Brian A. Ross Title: Assistant Director, Capital Budget

Signature: Brian A. Ross Date: 8.3.2020

INSTITUTION	CAMPUS
Western Washington University	**Bellingham**
PROJECT TITLE	
Electrical Engineering and Computer Science Building	

SUMMARY NARRATIVE

- **Problem statement**

Computer Science and Electrical Engineering, Western Washington University's (Western) fastest growing programs, are greatly impacted by lack of space and modern lab and research facilities. Both programs currently accommodate three times more majors than the instructional space was designed to hold. Due to the lack of adequate space on campus, both programs are presently capped, and many highly qualified students are being turned away from these majors. The lack of facilities is also increasing time-to-degree as the lack of space is reducing availability of required courses both for Science, Technology, Engineering and Math (STEM) majors and for non-majors completing General University Requirements. Additionally, faculty hiring searches fail because the university lacks physical resources to support the research and pedagogical expectations of new faculty.

From a state-wide perspective, Washington needs thousands more people prepared for jobs in the fields of computer science and engineering than the state's universities can currently produce. According to the 2019 Washington State Achievement Council Science Technology Engineering Math Report Card, from 2020 to 2025, there will be nearly 6,000 more job openings in computer science per year than there are graduates completing computer science degree programs. Similarly, out of a total of about 2,500 annual job openings in Engineering, there will be more than 400 more openings than there are graduates prepared to fill them. While the COVID-19 pandemic may impact these numbers in the immediate future, employment experts anticipate a continuing need for graduates with degrees that prepare them for careers in advanced technology fields.

Western's curricula in Computer Science and Electrical Engineering are unique and developed in direct collaboration with industry advisors. Without expanded space capacity, Western risks failing to meet student and industry demand in this key sector of the Washington State economy.

- **Project description**

Scope: In response to both student and workforce demand, Western is proposing the Electrical Engineering and Computer Science Building project (EE/CS), which will consist of a new building and renovation of the existing Communications Facility. The new building is proposed to be approximately 60,000 gross square feet, consisting of teaching labs, learning research labs, active learning classrooms, collaborative space, and academic administrative

Figure 1: Architect's Rendering of Electrical Engineering and Computer Science Building with bridge to Ross Engineering Technology

space. The renovation portion will modernize approximately 20,000 square feet of class labs and collaborative space in the Communications Facility. The new building and existing Communications Facility will be connected, maximizing program/pedagogical efficiencies and increasing collaboration.

Figure 2: Architect's rendering of collaboration lab

Benefits: The EE/CS building will be designed as a hub for collaboration and connection with industry partners, with physical and cultural accessibility and inclusion in mind. It will include spaces that foster innovation, investigation, inspiration, and the exchange of ideas among an increasingly diverse population of students and faculty. By allowing Western to contribute more highly skilled and diverse candidates to the workforce in Washington and the region, this project directly supports two key goals in Western's strategic plan—advancing inclusive success and increasing Washington impact.

In addition to allowing growth and student intake to resume in the currently at-capacity programs in Computer Science and Electrical Engineering, the EE/CS will free up space in the existing Ross Engineering Technology building to enable growth in the high-demand programs of Industrial Design and Manufacturing Engineering. The new facility will consist primarily of teaching labs, learning research labs and collaborative space, along with some academic offices. The EE/CS will also house the Institute for Energy Studies (IES), an interdisciplinary program that brings together science, technology, policy, business and economics to prepare graduates to address complex issues in sustainable energy.

Funding: Western is requesting $46 million in State funding in the 2021-23 capital budget for the project, for a total State funded contribution of $48 million. Importantly, the EE/CS building project represents a public-private funding partnership that aims to leverage state funds with as much as $20 million in private donations through the Western Foundation's "Building Washington's Future" capital campaign.

- **History of the project or facility**

The proposal for a new EE/CS building aimed at reducing space constraints in STEM degree programs is tied to the Legislature's recent operating budget investments in expanding STEM enrollment capacity. In 2013, Western received nearly $3 million in on-going state operating funds to expand student enrollments in Computer Science and Engineering. Western also received $3.4 million in state operating funding in 2019 that included money to address staffing capacity constraints in Electrical Engineering and to develop a degree program in Energy Science and Technology.

Western has experienced rapid growth in demand for STEM majors in the past several years. This has created an urgent need to expand STEM degree programs and plan for supporting that growth in the future. Western developed the following three-phase interdisciplinary approach for adding new capacity while simultaneously achieving greater efficiency using multidisciplinary lab and instructional space:

1. *Phase I – Science Building Addition*

Phase I, Western's Science Building Addition, is currently under construction. The project (also known as the Interdisciplinary Science Building) will reduce critical lab and classroom shortages in biology, chemistry and environmental science and help alleviate bottlenecks in science course graduation requirements for non-science majors. Flexible spaces, designed for shared use, will increase interaction and collaboration among STEM and non-STEM disciplines and reduce time to degree for all students.

2. *Phase II – Electrical Engineering/Computer Science Building*

The EE/CS building represents Phase II of the plan, with emphasis on increasing capacity in Western's fastest-growing degree programs: computer science and engineering. The EE/CS building will provide the necessary space for preparing graduates with unique engineering, computer science, energy science and technology skills, through degree programs available at no other Washington State institutions. The program expansions supported by the construction of this building fill an important gap in the continuum of STEM education available to the citizens of Washington State and meet the rapidly evolving and growing needs of the region's advanced technology industries.

3. *Phase III – Environmental Studies Center Renovation*

In future biennia, Phase III of addressing STEM capacity will be accomplished through the renovation of Western's 50-year old Environmental Studies Center. The Environmental Studies Center Renovation will increase lab capacity in geology, marine science, toxicology and environmental sciences, while drastically improving the building's lifetime use. Western is requesting $500,000 in pre-design funding for this project in the 2021-23 biennium.

4. *Other Projects*

The University's multi-phase, multi-biennia Classroom & Lab Upgrades project, a campus-wide program to upgrade general instructional space and specialized class-labs, continues to be a part of the master plan for capital construction related to growth in STEM degree areas.

In the 2019-21 biennium, Western received $2 million in partial design funding for the EE/CS project. The legislature then declared its intent to fund the remainder of the design phase and the full construction phase in the 2021-23 biennium, provided Western raised at least 10% of the total cost of the project from private funds. The Western Washington University Foundation has now secured over $12 million in gifts and pledges and is on track to raise an additional $8 million, for a total of $20 million, by the end of2020.

- **University programs addressed or encompassed by the project**

Western's primary goal for this project is to develop a cost-effective solution to meet the demand for instructional and lab space serving the University's fastest-growing and highest employer-demand programs— Computer Science and Electrical Engineering —by increasing throughput in these programs.

In addition to Computer Science and Electrical Engineering, most other programs in the College of Science and Engineering are also capping growth due to significant space shortages. Students seeking to take required courses or major in other high-demand STEM programs would also benefit from the additional space on campus created by the new EE/CS building. The new building and the renovation of engineering

spaces in the existing Ross Engineering Technology Building will improve and free up space to enable growth in the high-demand programs of the Engineering and Design Department. The new facility will also provide a location for Western's innovative Institute for Energy Studies which offers a suite of interdisciplinary energy programs, including the new and rapidly growing B.S. in Energy Science and Technology.

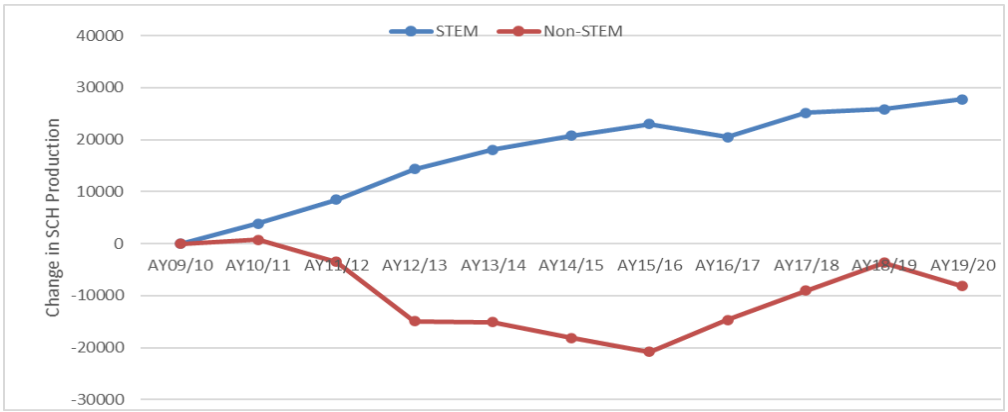
The new EE/CS building will support a 150% expansion of Western's Engineering degree programs (from 30 Engineering graduates per year to 90 Engineering graduates per year) and a 50% increase in the number of Computer Science graduates per year (from 130 CS graduates per year to 200 CS graduates per year) in the four years following completion. The proposed EE/CS building would also double the number of engineering master's graduates from 10 to 20 per year, as well as house a new graduate program created within the Computer Science and Electrical Engineering programs.

OVERARCHING SCORING CRITERIA

1. Integral to achieving statewide policy goals

The project promotes improvement on degree production totals by allowing for growth in high-demand areas where the primary constraint is capital infrastructure. This growth will occur in 2025, about 2 years after completion of this project.

Over the past decade, almost all growth in student credit hour (SCH) production at Western was in STEM fields. The graph below depicts the overall change in student credit hour production relative to the 2009-2010 academic year, broken out by STEM production and non-STEM production. Although the majority of SCH is accounted for by non-STEM programs, the growth of the institution is almost entirely within STEM disciplines.



A. **Bachelor's Degrees:** 3663 Bachelor's degrees were awarded at the close of AY 2018-2019. The overall institutional targets for AY 2020-2021 are to remain flat, including adjustments for the operational and enrollment changes in response to COVID-19. Target: 3700.

B. **Bachelor' Degrees in High Demand Fields:** 1160 Bachelor's Degrees were awarded in high-demand fields at the close of AY 2018-2019. Again, following adjustments for COVID-19, the projected targets for high-demand degrees are for increases of roughly 8% over 2019; target: 1253.

C. Advanced Degrees: 260 advanced degrees were awarded at the close of AY 2018-2019. Adjusted projected target for AY 2020-2021 is 300.

2. Integral to campus/facilities master plan

A. This project aligns with 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. The IMP 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 currently has approximately 3,400,000 gross square feet of total building space. Following the completion of the two major projects that are currently in construction on campus and the completion of this project, total GSF will be just over 3,600,000. In Fall 2019, Western initiated a highly collaborative Space Modeling effort as the preliminary phase of developing a new Comprehensive Master Plan and ultimately a new Institutional Master Plan agreement with the City of Bellingham.

The IMP calls for the development of the academic core as the heart of Western's campus, with its highest density use. The core area is a conceptual 10-minute walk-zone situated deep within the campus. It is strongly pedestrian focused, creating the sense of community and sanctuary. The density of the academic core accommodates academic and student service needs while retaining the campus' most desirable characteristics, including continuity of pedestrian flow, strong connections between the built and natural environments, the sense of a "community of scholars," and visual portals to the mountains, water, and adjacent neighborhoods. The Electrical Engineering and Computer Science Building will add its unique design and programming to this core, offering new opportunities for scholarly collaboration and innovation.

In 2017, Western adopted the Sustainability Action Plan (SAP), which, among other ambitious operational goals, charted a path for the institution's built environment to achieve carbon neutrality by 2035, achieve LEED Gold certification on all major construction projects, maximize energy and resource efficiency, and minimize the impact on the global climate and environment. The institution is seeking private partnership with the specific goal of achieving Net Zero certification on this project in both energy use and carbon footprint, in order to take a big step forward in achieving the goals and objectives in the SAP.

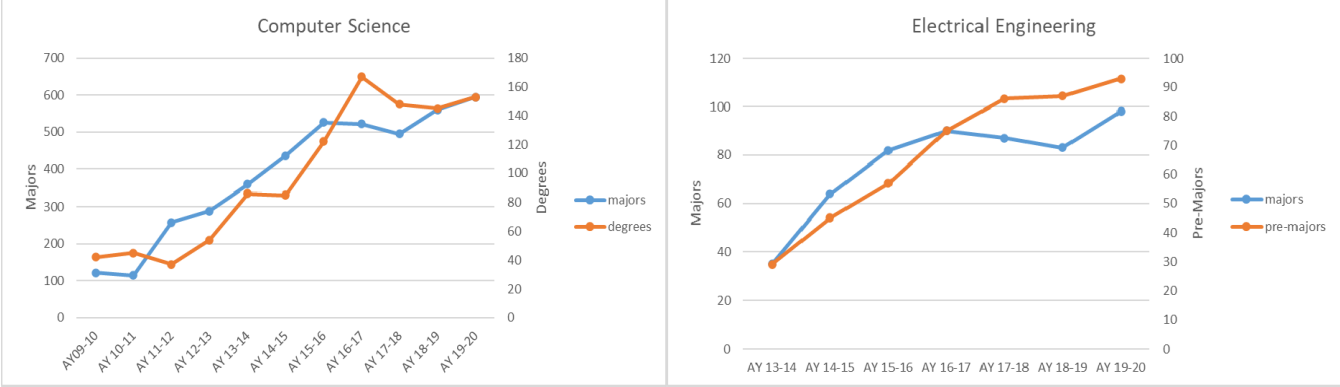
B. This project is not contrary to any sequencing provisions outlined in the plan. The new facility will be located in IMP District 14, with land use classifications of Academic, Administrative/Support, Open Space, and student activity, and its additional square footage will not exceed the four million gross square foot capacity. (See Appendix B)

3. Integral to institution's academic programs plan

A. Both Electrical and Computer Engineering and Computer Science are ABET (Accreditation Board for Engineering and Technology)-accredited programs. The new facility will provide research and office space for new faculty, modern facilities, and increased student access, all critical to maintaining accreditation with growth.

B. By 2024-25, Western aims to increase the number of degrees produced annually from 3700 to 4500 and increase the number of degrees that meet the State's highest needs by 17.5 percent. This will serve two key goals in Western's Strategic Plan, increasing Washington impact and advancing inclusive success. This project will add the needed space to accommodate enrollment growth and meet existing and future student demand. Additionally, this project will accommodate majors in programs (computer science and electrical engineering) that represent the State's highest needs.

As noted, both Electrical Engineering and Computer Science programs have been sustaining significant enrollment growth and pressure. With both programs running at space-capacity, both currently incur long waitlists and turn away qualified students. To help characterize the growth, the graphs below show the numbers of majors and degrees for Computer Science since AY 09-10, and the numbers of pre-majors and majors for Electrical Engineering since AY 13-14, the first year of the program. The number of declared pre-majors that feed the Electrical Engineering program greatly exceed the spaces per class (for AY 19-20, there were 93 pre-majors that transition to 36 class spaces). The relative plateaus in the major numbers for both programs are indicators of space constraint.



C. The new facility (and associated faculty and labs) will allow for the intended development of a graduate program in Electrical Engineering, focused on a sub discipline connected with the needs of local industrial research and development areas. In addition, new collaborative programs bridging Electrical Engineering and Computer Science become possible with the new spaces.

GENERAL CATEGORY SCORING CRITERIA

1. Describe how the project promotes access for underserved regions and place-bound adults through distance learning and/or university centers

A. The EE/CS building will serve as a central hub on Western's main Bellingham campus for current and future academic programs offered at Western's university center locations in Bremerton, Everett, Port Angeles and Poulsbo. Distance-learning technology will be integrated into the project's active

learning spaces to ensure all lectures, labs and other academic events will be available in real-time to off-site place-bound students in all of Western's university center locations. Conversely, courses taught in those locations will be made available to students on the Bellingham campus, creating a rich, diverse, and interactive learning environment that brings together our traditional on-campus students with less traditional students in these satellite locations. It will also facilitate communications among faculty and staff across locations.

B. **As described above, the EE/CS building will boost enrollments for a significant number of place-bound students by serving as a the home base of several academic departments that currently or will soon offer degree programs at Western's satellite locations on the Kitsap and Olympic Peninsulas, some of the most underserved regions of the State in terms of access to four-year higher education.** Specifically, the new building will house Western's Cybersecurity bachelor's degree program, also currently offered in Poulsbo and Port Angeles as part of Western on the Peninsulas-Western's 2+2 degree partnerships with Olympic and Peninsulas colleges.

In the future, Western aspires to expand degree programs in manufacturing engineering, energy science and computer science at Western on the Peninsulas to address regional workforce needs. The construction of the EE/CS building will greatly enhance the University's ability to deliver these degree programs in satellite locations by fostering strengthened partnerships with regional industry and by attracting top-notch faculty and staff into Western's computer science and engineering programs. The new facility will also allow for the planned development of a graduate program in Electrical and Computer Engineering, which is designed to align with the research and development needs of regional industry and to deliver instruction to place-bound students via a range of modalities.

By expanding capacity in some of the University's most popular and fastest-growing degree programs, the EE/CS building will also improve Western's ability to recruit and retain students from all areas of the state, ultimately increasing in the number of enrolled students from underserved regions.

2. Enrollment growth

Both Computer Science and Electrical Engineering have long been under substantial enrollment pressure. During a decade of steady growth, Computer Science has been housed in the same space, with the number of majors growing from 120 in 2010 to over 500 today and the number of degrees granted from 40 per year in 2010 to 150 in 2019. New spaces to support active learning pedagogies and student projects are also urgently needed.

The Electrical Engineering program began in 2013-2014 and was fully accredited in 2015. Since that time, demand for the program has grown dramatically. The number of graduates per year was initially fixed at 24 and expanded to 36 in AY 2018-2019, while the number of pre-majors (a major designation required for entry into the program) has grown from 30 in 2014 to 94 in 2019. The instructional space for the Electrical Engineering program was converted from a

predecessor program, Electrical Engineering Technology and, despite improvements, lacks features needed for current teaching methods in the discipline. For both programs, the ability to accommodate further demand is dependent upon a new facility.

Specific numbers of FTE students this project will serve are detailed below.

A. Two years after completion of the project, the facility will allow Computer Science to accommodate at least 50 additional graduates per year, and Electrical Engineering will add 34 graduates per year, for a total increase of 84. The new facility will allow growth in several key areas, in the Computer Science and Electrical Engineering programs directly and in the Industrial Design (ID) and Manufacturing Engineering (MFE) programs through vacated space in Ross. In addition, re-purposed space will allow the ID and MFE programs to add 36 graduates per year. Therefore, at full occupancy, the facility will allow the institution to serve at least an additional 480 FTE students per year over the four programs. [Note: FTE student = additional graduates per year * 4 years per class; 120 more graduates* 4years].

Enrollment growth is assumed based on demand remaining at current levels or rising and at least one FTE student enrolled at the freshman, sophomore, and junior levels for every graduating senior. Overall demand for the programs is expected to increase.

B. This project will add 84 FTEs in high demand fields two years after completion of the project. Per the OFM State-wide public four-year dashboard, all new FTE enrollments are in high demand fields. The fields in which growth will occur are Computer Science, Electrical and Computer Engineering, Manufacturing Engineering, and Industrial Design.

3. Availability of space/utilization on campus

A. Utilization of classrooms is high at Western, 23 hours per classroom seat. During the prime instruction hours of 9 am to 3 pm, over 90% of classrooms are in use most days. This intensive use leaves little flexibility to move classes within the main teaching hours and reduced ability to match classes with desired classroom capacity and furniture type. This project will enhance learning opportunities by expanding Western's teaching and collaborative spaces.

B. Overall class laboratory utilization at Western meets utilization standards and in STEM fields well exceeds the standard, with an average weekly use of 19 hours per station. Currently, Computer Science laboratories are used 22 hours per week for structured classes. Usage levels for Electrical Engineering labs are not quite as high, but the labs need upgrading to meet modern pedagogical standards. The EE/CS building will add much needed class lab space for both disciplines, increasing access for new students and improving the quality of instruction. Space freed in Ross will help relieve lab shortages in the Engineering and Design Department programs.

4. Efficiency of space allocation

A. The table below shows space allocations in the context of Facility Evaluation and Planning Guide (FEPG) assignable square feet standards.

FEPG Code	Space Allocation Type	# of Rooms	# of Stations	Proposed ASF/ Station	FEPG Standard	Meets Standard
210	Class Laboratory - Computer Science	4	108	30	60	Yes
210	Class Laboratory - Electrical Engineering	4	100	45	120	Yes
210	Active Learning Class Lab -Computer Science	2	80	50	60	Yes
210	Active Learning Class Lab -Electrical Engineering	5	150	35	120	Yes
250	Research Laboratory	15	180	55	*	N/A
311	Offices -Faculty	52	52	120	140	Yes
313	Offices -Student Assistants	1	5	2/100	2/140	Yes
316	Offices -Staff	20	20	100	120	Yes
350	Conference	2	40	15	20	Yes
412	Collaborative/Study	9	138	15	30	Yes
610	Assembly	1	120	15	15 to 16	Yes

*Size of research labs included in this project are tailored to the disciplines of each department while meeting FEPG guidelines for spaces that are modular, flexible, enhance communication, ensure safety, and have adequate building system support.

B. The Project will have a relatively high building efficiency of 62.7%. The following is the space breakdown identified in the C100:

1. Usable square feet (USF) - 49,633
2. Gross square feet (GSF) - 79,115
3. Building efficiency (USF divided GSF) - 62.7%

The project includes approximately 22,000 square feet of renovated space. The renovation portion of the project will not include improvements to circulation space or restrooms. Thus, the building efficiency of the renovation portion is close to 100%, making the total project building efficiency higher than the average science building.

5. Reasonableness of cost

The escalated MACC/GSF ($497) identified in the C100 is equal to the estimate in the 2019 Higher Education Facilities Study (OFM's expected cost standards). This project is being procured via General Contractor Construction Manager. The following breakdown shows the cost of the MACC in the C100 compared to the 2019 Higher Education Facilities Study:

MACC/GSF PER 2019 HIGHER EDUCATION FACILITIES STUDY

Space Type	MACC/GSF by Category	Percentage of Building	TOTAL MACC/GSF
Instructional Labs	$397	34%	$135
Research Labs	$545	34%	$186
Administrative Space	$406	17%	$69
Collaborative Space	$428	15%	$64
		SUB-TOTAL (2019)	$454
		Mid-Point Construction Escalation (November 2022)	x1.095
		Escalated MACC/GSF (2019 Study)	**$497**

MACC/GSF PER C100

	C100 MACC/GSF
MACC/GSF	$470
Escalated MACC/GSF (C100)	**$497**
Over/(Under) – compared to 2019 Study	$0

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.

6. Appendices: the following supporting documentation is included

A. Office of Financial Management Reports (CBS002) Project Cost Summary/C100
B. WWU Institutional Master Plan – District 14
C. Availability of Space Table
D. Program-related Space Allocation Assignable Square Feet Template
E. Degree totals and targets template

7. Supporting Links

A. EE/CS Pre-design report
B. Western Washington University Space Optimization Project for STEM Programs
C. Western Foundation campaign to support the EE/CS project (Building Washington's Future)

Appendix A

OFM

380 - Western Washington University
Capital Project Request

2021-23 Biennium

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Version: SV 2021-23 Capital Budget Request

Report Number: CBS002
Date Run: 8/3/2020 10:32AM

Project Number: 30000872
Project Title: Electrical Engineering/Computer Science Building

Description

Starting Fiscal Year: 2020
Project Class: Program
Agency Priority: 1

Project Summary

Western is proposing the Electrical Engineering and Computer Science Building project (EE/CS), which will consist of a new building and renovation of the existing Communications Facility. The new building is proposed to be approximately 60,000 gross square feet, consisting of teaching labs, learning research labs, active learning classrooms, collaborative space, and academic administrative space. The renovation portion will modernize approximately 20,000 square feet of class labs and collaborative space in the Communications Facility. Western received $2million in the 2019-21 biennium for pre-design and partial design. Western is proposing $46 million in State funding in the 2021-23 biennium for construction and the remainder of design.

Project Description

Computer Science and Electrical Engineering, Western Washington University's (Western) fastest growing programs, are greatly impacted by lack of space and modern lab and research facilities. Both programs currently accommodate three times more majors than the instructional space was designed to hold. Due to the lack of adequate space on campus, both programs are presently capped, and many highly qualified students are being turned away from these majors. The lack of facilities is also increasing time-to-degree as the lack of space is reducing availability of required courses both for STEM majors and for non-majors completing General University Requirements. Additionally, faculty hiring searches fail because the university lacks physical resources to support the research and pedagogical expectations of new faculty.

From a state-wide perspective, Washington needs thousands more people prepared for jobs in the fields of computer science and engineering than the state's universities can currently produce. According to the 2019 Washington State Achievement Council Science Technology Engineering Math (STEM) Report Card, from 2020 to 2025, there will be nearly 6,000 more job openings in computer science per year than there are graduates completing computer science degree programs. Similarly, out of a total of about 2,500 annual job openings in Engineering, there will be more than 400 more openings than there are graduates prepared to fill them. While the COVID-19 pandemic may impact these numbers in the immediate future, employment experts anticipate a continuing need for graduates with degrees that prepare them for careers in advanced technology fields.

Western's curricula in Computer Science and Electrical Engineering are unique and developed in direct collaboration with industry advisors. Without expanded space capacity, Western risks failing to meet student and industry demand in this key sector of the Washington State economy.

Scope: In response to both student and workforce demand, Western is proposing the Electrical Engineering and Computer Science Building project (EE/CS), which will consist of a new building and renovation of the existing Communications Facility. The new building is proposed to be approximately 60,000 gross square feet, consisting of teaching labs, learning research labs, active learning classrooms, collaborative space, and academic administrative space. The renovation portion will modernize approximately 20,000 square feet of class labs and collaborative space in the Communications Facility. The new building and existing Communications Facility will be connected, maximizing program/pedagogical efficiencies and increasing collaboration.

Benefits: The EE/CS building will be designed as a hub for collaboration and connection with industry partners, with physical and cultural accessibility and inclusion in mind. It will include spaces that foster innovation, investigation, inspiration, and the exchange of ideas among an increasingly diverse population of students and faculty. By allowing Western to contribute more highly skilled and diverse candidates to the workforce in Washington and the region, this project directly supports two key goals in Western's strategic plan-advancing inclusive success and increasing Washington impact.

In addition to allowing growth and student intake to resume in the currently at-capacity programs in Computer Science and Electrical Engineering, the EE/CS will free up space in the existing Ross Engineering Technology building to enable growth in the high-demand programs of Industrial Design and Manufacturing Engineering. The new facility will consist primarily of teaching labs, learning research labs and collaborative space, along with some academic offices. The EE/CS will also house

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Report Number: CBS002
Date Run: 8/3/2020 10:32AM

Project Number: 30000872
Project Title: Electrical Engineering/Computer Science Building

Description

the Institute for Energy Studies (IES), an interdisciplinary program that brings together science, technology, policy, business and economics to prepare graduates to address complex issues in sustainable energy.

Funding: In the 2019-21 biennium, Western received $2 million in partial design funding for the EE/CS project. The legislature then declared its intent to fund the remainder of the design phase and the full construction phase in the 2021-23 biennium, provided Western raised at least 10% of the total cost of the project from private funds. The Western Washington University Foundation has now secured over $12 million in gifts and pledges and is on track to raise an additional $8 million, for a total of $20 million, by the end of 2020. Western is requesting $46 million in State funding in the 2021-23 capital budget for the project, for a total State funded contribution of $48 million.

Institution Master Plan: This project aligns with 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. The IMP 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 currently has approximately 3,400,000 gross square feet of total building space. Following the completion of the two major projects that are currently in construction on campus and the completion of this project, total GSF will be just over 3,600,000.

Predesign: A pre-design was submitted and approved for this project. The pre-design identifies alternatives and cost analysis, and can be accessed via the following link: https://fdcb.wwu.edu/eecs-pre-design-documents.

Design for the proposed project began in August 2020, with completion in August 2024.

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

Project Type
New Facilities/Additions (Major Projects)

Growth Management impacts
none

New Facility: Yes
How does this fit in master plan
The new facility will be located in IMP District 14, with land use classifications of Academic, Administrative/Support, Open Space, and student activity, and its additional square footage will not exceed the four million gross square foot capacity.

Funding

Acct Code	Account Title	Expenditures: Estimated Total	Expenditures: Prior Biennium	Expenditures: Current Biennium	2021-23 Fiscal Period: Reapprops	2021-23 Fiscal Period: New Approps
057-1	State Bldg Constr-State	48,000,000		2,000,000		46,000,000
	Total	**48,000,000**	**0**	**2,000,000**	**0**	**46,000,000**

		Future Fiscal Periods: 2023-25	2025-27	2027-29	2029-31
57-1	State Bldg Constr-State				
	Total	**0**	**0**	**0**	**0**

Version: SV 2021-23 Capital Budget Request

Report Number: CBS002
Date Run: 8/3/2020 10:32AM

Project Number: 30000872
Project Title: Electrical Engineering/Computer Science Building

Operating Impacts

No Operating Impact

OFM

Capital Project Request

2021-23 Biennium

*

Parameter	Entered As	Interpreted As
Biennium	2021-23	2021-23
Agency	380	380
Version	SV-A	SV-A
Project Classification	*	All Project Classifications
Capital Project Number	30000872	30000872
Sort Order	Project Priority	Priority
Include Page Numbers	Y	Yes
For Word or Excel	N	N
User Group	Agency Budget	Agency Budget
User Id	*	All User Ids

STATE OF WASHINGTON
AGENCY / INSTITUTION PROJECT COST SUMMARY

Updated June 2020

Agency	Western Washington University
Project Name	Electrical Engineering and Computer Science Building
OFM Project Number	30000872

Contact Information	
Name	Rick Benner, FAIA
Phone Number	360.650.3550
Email	benner@wwu.edu

Statistics			
Gross Square Feet	79,115	MACC per Square Foot	$470
Usable Square Feet	49,633	Escalated MACC per Square Foot	$497
Space Efficiency	62.7%	A/E Fee Class	A
Construction Type	Laboratories (Research)	A/E Fee Percentage	7.55%
Remodel	No	Projected Life of Asset (Years)	
Additional Project Details			
Alternative Public Works Project	Yes	Art Requirement Applies	Yes
Inflation Rate	2.38%	Higher Ed Institution	Yes
Sales Tax Rate %	8.70%	Location Used for Tax Rate	Bellingham
Contingency Rate	5%		
Base Month	June-20	OFM UFI# (from FPMT, if available)	
Project Administered By	Agency		

Schedule			
Predesign Start	September-20	Predesign End	July-20
Design Start	August-20	Design End	February-22
Construction Start	March-22	Construction End	August-23
Construction Duration	17 Months		

Green cells must be filled in by user

Project Cost Estimate

Total Project	**$64,449,460**	Total Project Escalated	**$67,999,751**
		Rounded Escalated Total	**$68,000,000**

STATE OF WASHINGTON
AGENCY / INSTITUTION PROJECT COST SUMMARY

Updated June 2020

Agency	Western Washington University
Project Name	Electrical Engineering and Computer Science Building
OFM Project Number	30000872

Cost Estimate Summary

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

Consultant Services			
Predesign Services	$405,251		
A/E Basic Design Services	$2,950,534		
Extra Services	$1,724,914		
Other Services	$1,476,314		
Design Services Contingency	$327,851		
Consultant Services Subtotal	**$6,884,864**	**Consultant Services Subtotal Escalated**	**$7,096,186**

Construction			
GC/CM Risk Contingency	$969,590		
GC/CM or D/B Costs	$8,030,636		
Construction Contingencies	$1,859,910	Construction Contingencies Escalated	$1,970,576
Maximum Allowable Construction Cost (MACC)	$37,198,207	Maximum Allowable Construction Cost (MACC) Escalated	$39,355,194
Sales Tax	$4,181,076	Sales Tax Escalated	$4,424,952
Construction Subtotal	**$52,239,419**	**Construction Subtotal Escalated**	**$55,286,462**

Equipment			
Equipment	$2,595,564		
Sales Tax	$225,814		
Non-Taxable Items	$0		
Equipment Subtotal	**$2,821,378**	**Equipment Subtotal Escalated**	**$2,989,250**

Artwork			
Artwork Subtotal	**$238,804**	**Artwork Subtotal Escalated**	**$238,804**

Agency Project Administration			
Agency Project Administration Subtotal	$1,652,712		
DES Additional Services Subtotal	$0		
Other Project Admin Costs	$0		
Project Administration Subtotal	**$1,652,712**	**Project Administation Subtotal Escalated**	**$1,751,049**

Other Costs			
Other Costs Subtotal	**$612,284**	**Other Costs Subtotal Escalated**	**$638,000**

Project Cost Estimate			
Total Project	**$64,449,460**	Total Project Escalated	**$67,999,751**
		Rounded Escalated Total	**$68,000,000**

STATE OF WASHINGTON
AGENCY / INSTITUTION PROJECT COST SUMMARY
Updated June 2020

Agency	Western Washington University	
Project Name	Electrical Engineering and Computer Science Building	
OFM Project Number	30000872	

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	$405,251			
Other				
Insert Row Here				
Sub TOTAL	**$405,251**	**1.0039**	**$406,832**	Escalated to Design Start
2) Construction Documents				
A/E Basic Design Services	$2,034,733			69% of A/E Basic Services
Architectural	$138,979			
MEP	$337,522			
Electrical and IT	$206,600			
Structural	$232,700			
Sub TOTAL	**$2,950,534**	**1.0219**	**$3,015,151**	Escalated to Mid-Design
3) Extra Services				
Civil Design (Above Basic Svcs)	$62,224			
Geotechnical Investigation	$89,750			
Commissioning	$35,115			
Site Survey	$13,200			
Testing	$106,025			
LEED Services	$112,200			
Voice/Data Consultant	$44,000			
Value Engineering				
Constructability Review				
Environmental Mitigation (EIS)	$8,000			
Landscape Consultant	$83,000			
LCCA	$40,000			
Acoustical Consultant	$45,500			
Travel & Per Diem	$100,000			
Renderings and Models	$40,000			
Document Reproduction	$20,000			
Advertising	$2,000			
AV Consultant	$47,150			
Elevator Consultant	$34,800			
Security Consultant	$21,500			
Envelope Consultant	$66,100			
Displaced Functions Consultant	$100,000			
Displaced Parking Consultant	$40,000			
Cost Consultant	$59,400			
Energy Modeling (LEED)	$65,000			
Daylight Studies	$15,000			
Hardware Consultant	$5,900			
FFE	$80,000			
Lighting Design	$73,000			
CA Site Rep	$114,400			
Signage/Wayfinding (Allowance)	$55,000			
Mark-up on Specialty Consultant	$74,255			
Envelope Testing	$16,520			

Optimization Study	$55,875			
Sub TOTAL	**$1,724,914**	**1.0219**	**$1,762,690**	Escalated to Mid-Design
4) Other Services				
Bid/Construction/Closeout	$914,155			31% of A/E Basic Services
HVAC Balancing	$69,514			
Staffing				
On-Site Representative	$492,645			
Sub TOTAL	**$1,476,314**	**1.0595**	**$1,564,155**	Escalated to Mid-Const.
5) Design Services Contingency				
Design Services Contingency	$327,851			
Other				
Insert Row Here				
Sub TOTAL	**$327,851**	**1.0595**	**$347,358**	Escalated to Mid-Const.
CONSULTANT SERVICES TOTAL	**$6,884,864**		**$7,096,186**	

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	$3,217,541			
Insert Row Here				
Sub TOTAL	**$3,217,541**	**1.0420**	**$3,352,678**	
2) Related Project Costs				
Offsite Improvements				
City Utilities Relocation				
Parking Mitigation				
Stormwater Retention/Detention				
Other				
Insert Row Here				
Sub TOTAL	**$0**	**1.0420**	**$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				
Other	$33,980,666			
Insert Row Here				
Sub TOTAL	**$33,980,666**	**1.0595**	**$36,002,516**	
4) Maximum Allowable Construction Cost				
MACC Sub TOTAL	**$37,198,207**		**$39,355,194**	

5) GCCM Risk Contingency				
GCCM Risk Contingency	$969,590			
Other				
Insert Row Here				
Sub TOTAL	**$969,590**	**1.0595**	**$1,027,281**	
6) GCCM or Design Build Costs				
GCCM Fee	$2,081,736			
Bid General Conditions	$5,108,000			
GCCM Preconstruction Services	$840,900			
Insert Row Here				
Sub TOTAL	**$8,030,636**	**1.0595**	**$8,508,459**	
7) Construction Contingency				
Allowance for Change Orders	$1,859,910			
Other				
Insert Row Here				
Sub TOTAL	**$1,859,910**	**1.0595**	**$1,970,576**	
8) Non-Taxable Items				
Other				
Insert Row Here				
Sub TOTAL	**$0**	**1.0595**	**$0**	
Sales Tax				
Sub TOTAL	**$4,181,076**		**$4,424,952**	
CONSTRUCTION CONTRACTS TOTAL	**$52,239,419**		**$55,286,462**	

Green cells must be filled in by user

Cost Estimate Details

Equipment				
Item	**Base Amount**	**Escalation Factor**	**Escalated Cost**	**Notes**
E10 - Equipment	$1,652,064			
E20 - Furnishings	$943,500			
F10 - Special Construction				
Other				
Insert Row Here				
Sub TOTAL	**$2,595,564**	**1.0595**	**$2,750,000**	
1) Non Taxable Items				
Other				
Insert Row Here				
Sub TOTAL	**$0**	**1.0595**	**$0**	
Sales Tax				
Sub TOTAL	**$225,814**		**$239,250**	
EQUIPMENT TOTAL	**$2,821,378**		**$2,989,250**	

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 total project cost for new construction
Higher Ed Artwork	$338,805				0.5% of total project cost for new and renewal construction
Other	-$100,001				Artwork is only associated with state funds
Insert Row Here					
ARTWORK TOTAL	**$238,804**		**NA**	**$238,804**	

Green cells must be filled in by user

Cost Estimate Details

Project Management					
Item	**Base Amount**		**Escalation Factor**	**Escalated Cost**	**Notes**
Agency Project Management	$1,652,712				
Additional Services					
Other					
Insert Row Here					
PROJECT MANAGEMENT TOTAL	**$1,652,712**		**1.0595**	**$1,751,049**	

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	$129,584				
Document Reproduction	$2,900				
Telecom Activation	$383,900				
M&O Assist	$95,900				
OTHER COSTS TOTAL	**$612,284**		**1.0420**	**$638,000**	

Green cells must be filled in by user

C-100(2020)
Additional Notes

Tab A. Acquisition
Insert Row Here

Tab B. Consultant Services
Insert Row Here

Tab C. Construction Contracts
Insert Row Here

Tab D. Equipment
Insert Row Here

Tab E. Artwork
Insert Row Here

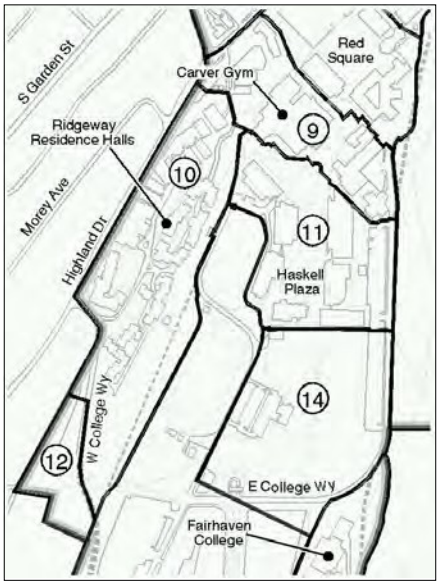
Tab F. Project Management
Insert Row Here

Tab G. Other Costs
Insert Row Here

Appendix B

District 14

Location: Proposed Academic Quad South of Environmental Studies and Parks Hall



Adjacent City Zoning:
Public (Sehome Arboretum to the east)

2001 Primary Land Uses:

- General recreation (playfields)
- Administrative/support (PublicSafety/Mailroom and Visitor Information Center)
- Multiple sculpture sites
- Circulation and parking

City Land Use Designation:

- Institutional (Area 1, WWU Neighborhood Plan)

Institutional Master Plan Land Use Classifications:

- Academic
- Administrative/support
- Open space
- Student activities

Character Goals and Development Recommendations:

- Develop new south academic quad.
- Extend progression of academic plazas to the south with construction of new south plaza.
- Develop views of valley.
- Maintain scale similar to Haskell Plaza and Red Square.
- Maintain and accommodate sculpture collection.
- Restrict building height to minimize impact to Ridgeway residential district to the west.

Rationale:

- Expansion of current academic space is required to serve growth in student enrollment.
- Location of new south quad falls within the 10-minute walk radius and maintains contiguous academic campus core.
- Clustering of academic buildings encourages optimal functional, technical and social relationships among users.
- Location of new quad follows linear progression of campus core and geographical constraints.

Appendix C

Availability of Space/Campus Utilization Template

2020 Four-year Higher Education Scoring Process

Required for all categories except Infrastructure and Acquisition.

Project Name:	Electrical Engineering and Computer Science Building
Institution:	Western Washington University
Campus Location:	Bellingham

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 porposed porject'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 2019 Weekly Contact Hours	172,305	Fall 2019 Weekly Contact Hours	38,163
Multiply by % FTE Increase Budgeted	0.00%	Multiply by % FTE Increase Budgeted	0.00%
Expected Fall 2020 Contact Hours	172,305	Expected Fall 2020 Contact Hours	38,163
Expected Fall 2020 Classroom Seats	7,476	Expected Fall 2020 Class Lab Seats	2,368
Expected Hours per Week Utilization	**23.0**	**Expected Hours per Week Utilization**	**16.1**
HECB GUC Utilization Standard	22.0	HECB GUL Utilization Standard	16.0
Differrence in Utilization Standard	5%	Differrence in Utilization Standard	1%

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 D

Program Related Space Allocation Template

Assignable Square Feet

Required for all Growth, Renovation and Replacement proposals.

Institution: Western Washington University

Campus location: Bellingham

Project name: Electrical Engineering - Computer Science Bldg

Input the assignable square feet for the proposed project under the applicable space types below:

Type of Space	Points	Assignable Square Feet	Percentage of total	Score [Points x Percentage]
Instructional space (classroom, laboratories)	10	22,100	44.53	4.45
Research space	2	9,840	19.83	0.40
Office space	4	11,764	23.70	0.95
Library and study collaborative space	10	2,970	5.98	0.60
Other non-residential space	8	2,959	5.96	0.48
Support and physical plant space	6	-	0.00	0.00
Total		**49,633**	**100.0**	**6.87**

Appendix E

Degree Totals and Targets Template

Required for Overarching Criteria for Major Growth, Renovation, Replacement and Research Proposals

Institution: Western Washington University

Campus location: Bellingham

Project name: Electrical Engineering and Computer Science Building

	Increase in bachelor's degrees awarded	Increase in bachelor's degrees awarded in high-demand fields	Increase in advanced degrees awarded
2018-19 Statewide Public Four-Year Dashboard (a)	3,663	1,160	260
Number of degrees targeted in 2021 (b)	3,700	1,253	300
2018-19 totals/2021 target (a/b)	99.0%	92.6%	86.7%
Score:	**1.00**	**1.00**	**1.00**

Comments:

The project promotes improvement on degree production totals by allowing for growth in high-demand areas where the primary constraint is capital infrastructure. This growth will occur in 2025, approximately 2 years after completion of this project.