



Shawn King
Associate Vice President

MEMORANDUM

To: Darrell Jennings, Capital Budget Analyst, Office of Financial Management
From: Shawn King, Associate Vice President for Facilities and Planning
Date: August 14, 2020
Re: Major Capital Project Proposal – Engineering Building Design Request – Growth 30000556

Eastern Washington University's major project proposal for OFM project number 3000556 Engineering Building Design Request in the Growth Category, in accordance with requirements of the Office of Financial Management's 2021-2023 Capital Project Evaluation System.

An electronic copy of this project proposal can be found at the link below:

<https://ewueagles.sharepoint.com/:f/s/cpstorageprime/EsMSy3rEng1ImBv7T54dxAUBe5Ey6i3DaPlaX19B49RrOQ>

If you have any questions or issues with the link provided, please let me know.

Best Regards,

2020 PROJECT PROPOSAL CHECKLIST
2021-23 Biennium Four-year Higher Education Scoring Process

INSTITUTION	CAMPUS LOCATION
370 - Eastern Washington University	Cheney, WA
PROJECT TITLE	FPMT UNIQUE FACILITY ID # (OR NA)
Engineering Building Design Request	30000556
PROJECT CATEGORY	PROJECT SUBCATEGORY
Growth	Major
PROPOSAL IS	
New or Updated Proposal (for scoring)	Resubmitted Proposal (retain prior score)
<input checked="" type="checkbox"/> New proposal <input type="checkbox"/> Resubmittal to be scored (more than 2 biennia old or significantly changed)	<input type="checkbox"/> Resubmittal from 2017-19 biennium <input type="checkbox"/> Resubmittal from 2019-21 biennium
CONTACT	PHONE NUMBER
Troy Bester	509-359-2204

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: Shawn King Title: AVP, Facilities and Planning

Signature:  Date: August 14, 2020

Engineering Building Design Request



Growth – Major Project



2021 – 2023 Capital Budget

GROWTH – MAJOR PROJECT

2020 Higher Education Project Proposal Form

2021-23 Biennium Project

INSTITUTION	CAMPUS
Eastern Washington University	Cheney, Washington
PROJECT TITLE	
Engineering building Design - 30000556	

SUMMARY NARRATIVE

- **Problem Statement**

Engineering is one of the fastest growing but most physically constrained departments at EWU. The program has demonstrated sustained demand for enrollment and success in providing highly qualified graduates to the marketplace, but future growth is restricted by the lack of appropriate space for its core programs. The Engineering Department currently cannot accommodate additional growth due to space limitations.

EWU requests design funds of \$3,500,000 for the EWU Engineering Building on the Cheney Washington campus as described in the Predesign report submitted to OFM prior to July 1, 2020. EWU proposes that this new facility on the campus connect to the Computing and Engineering Building (CEB), increasing facility capacity, solving facility deficiencies, and meeting future needs. The building is envisioned as an 74,155 GSF facility which will house hands-on teaching laboratories, research laboratories, lab support facilities, and student meeting and study areas. 23,650 GSF of CEB will be lightly modified to create physical connections, take advantage of available space suited to the program, and optimize instructional efficiencies. This is a Major Capital Project in the Growth Category.

Eastern Washington University's Cheney campus offers rigorous and pragmatic Mechanical Engineering and Technology (MENT) degrees that prioritize hands-on training and applied learning. The majority of students are enrolled in Mechanical Engineering, Mechanical Engineering Technology, Applied Technology, Construction Management Technology, and Manufacturing Technology with both a DFM and Process option. EWU's engineering classes are taught exclusively by faculty with industry experience.

Since inception in 2010, EWU's Mechanical Engineering and Technology program has experienced strong and sustained enrollment growth. The department has built highly successful outreach programs to rural and underserved prospective student populations and continuation programs with community colleges. Forecasted growth over the next ten years shows that the Mechanical Engineering and Technology program will remain one of the university's fastest growing fields.

EWU's engineering graduates are highly sought after in the growing regional mechanical engineering marketplace. Spokane and West Plains mechanical engineering companies have emerged as major players in their markets encouraging even more peer companies to the region. A 2009 survey of 2008 EWU Mechanical Engineering and Technology graduates showed that 85% were in full-time positions within the first six months after graduation, a rate that has held steady for the past three years, with 55% reporting salaries of over \$60,000 *in their first year*.

Despite the demand for both enrollment and graduates, the Engineering Department capped enrollment in 2018-2019 due to lack of facility capacity. Lack of space also restricts the hiring of additional faculty FTEs to instruct engineering classes and has severely limited engineering research and on-campus industry collaboration.

The department has outgrown the only existing facilities suitable for the hands-on laboratory training which makes up a significant portion of Mechanical Engineering and Technology education. The existing facilities also have serious deficiencies including student safety concerns due to poor instructor sightlines, reduced overhead clearances and limited overhead services which restrict evolution with changing machine technology, aging technological infrastructure, ADA accessibility concerns, and lack of student interaction spaces among others.

▪ **History of the Project or Facility**

Cheney Hall was originally designed and constructed in 1967 to house the Industrial Arts classes and office spaces that would move out of the old Manual Art building. This building, at 31,018 gross square feet, remained the center of the Industrial Arts Education program and home to the department as the focus of the program shifted toward engineering and took the name Industrial Technology. By the late 1990s, the building was no longer a satisfactory home for the department, which needed new equipment and facilities to support its revised curriculum. The new Computing and Engineering Building (CEB), completed in 2005 became the home for program faculty, classrooms, labs, and shops; Cheney Hall was then used for classroom and office space for programs that were temporarily displaced to allow for remodeling or major repairs of other buildings.

In 2005, Eastern Washington University added a new Bachelor of Science in Electrical Engineering. When the program was accredited in 2006, several rooms in Cheney Hall were modified to the power laboratory, microelectronics, the circuit laboratory, and the Visual Communication Design lab. In 2010, a Bachelor of Science in Mechanical Engineering was added and the program was accredited in 2011.

Since 2010-11, Engineering and Design has grown approximately 60%. EWU proposes that a new building on the campus connected to the Computing and Engineering Building (CEB) is the best alternative to increasing facility capacity, solving facility deficiencies, and meeting future needs. The building is envisioned as a 74,155 GSF facility which will house hands-on teaching laboratories, research laboratories, lab support facilities, and student meeting and study areas. 23,650 GSF of CEB will be lightly modified to create physical connections, take advantage of available space suited to the program, and optimize instructional efficiencies.

The construction of the Engineering Building will allow continued program growth and degree production, with conservative forecasting showing enrollment increasing 47% in the first six years of building occupancy. The opportunity is clear: continuing the trajectory of EWU's engineering programs with the Engineering Building will not only change students' lifelong potential but also help lead Washington State in solving some of the 21st century's biggest challenges.

▪ **University Programs Addressed or Encompassed by the Project:**

Listed below are the degree options, within the Department of Mechanical Engineering & Technology. Key to the project is in the integrated labs and support spaces that allow for community outreach programs and activities with rural and underserved populations. The new facility will encourage student engagement with the regional engineering industry, the Engineering Department and each other.

Current programs/degrees associated with this project are as follows:

- **Mechanical Engineering / Mechanical Engineering Technology (Bachelor of Science)**
- **Manufacturing Technology: DFM Option (Bachelor of Science)**
- **Manufacturing Technology: Process Option (Bachelor of Science)**
- **Construction Management Technology (Bachelor of Science)**
- **Applied Technology (Bachelor of Science)**

OVERARCHING SCORING CRITERIA

1. INTEGRAL TO ACHIEVING STATEWIDE POLICY GOALS:

Provide degree targets, and describe how the project promotes improvement on 2018-19 degree production totals in the OFM four-year public dashboard. Include the degree totals and targets template in an appendix (see Appendix A)

The Education and Research Data Center [ERDC] of the Washington Office of Financial Management has identified engineering as a STEM/High Demand field. “A Skilled and Educated Workforce 2017” issued jointly by the Washington Student Achievement Council, the State Board for Community and Technical Colleges and the Workforce Training and Education Coordinating Board forecasts an ~43% gap in supply of Engineering bachelor’s degrees needed to meet workforce demand in Washington State in the next five years. All bachelor’s degrees awarded by EWU’s Engineering Department apply toward filling this gap. See **Appendix D**.

EWU’s Engineering Department is focused on educating students who seek degrees in STEM, high demand engineering professions. The number of engineering graduates at EWU has grown significantly and regularly in the past decade. Despite the continued demand, enrollment will need to be capped in future years due to lack of facilities. Once the additional facility space in the Engineering Building is available, the department forecasts a **47% growth in degree production in six years**. See enrollment forecast chart on page 5.

A. *Indicate the number of bachelor’s degrees awarded at the close of the 2018-19 academic year.*

Undergraduate degrees awarded = 2219

B. *Indicate the number of bachelor’s degrees awarded in high-demand fields at the close of the 2018-19 academic year.*

STEM/High Demand Undergraduate degrees = 805

C. *Indicate the number of advanced degrees awarded at the close of the 2018-19 academic year.*

Graduate degrees awarded = 377

STEM/High Demand Grad degrees awarded = 125

2. INTEGRAL TO CAMPUS/FACILITIES MASTER PLAN

A. *Describe the proposed project’s relationship and relative importance to the institution’s most recent Campus/Facilities Master Plan or other applicable strategic plan.*

In 2014, the university updated the Cheney Campus Comprehensive Master Plan. In Horizon 1 (2013 to 2023) 1.4.5, the plan states: Construct addition to the Computer and Engineering Building. The intention of the pre-design study is to assess this facility for its use to fulfill that part of the Comprehensive Campus Master Plan. The current Comprehensive Campus Master Plan can be seen in its entirety at:

https://in.ewu.edu/facilities/wp-content/uploads/sites/191/2017/01/EWU-CCMP_All-Sections_Web_optimized_v2.pdf

B. *Does the project follow the sequencing laid out in the Master Plan (if applicable)? If not, explain why it is being requested now.*

Eastern’s planning process integrates comprehensive campus planning with our facilities masterplan and our ten-year capital plan. This process provides short and long range planning that are well thought out and dynamic and flexible enough to meet current and future campus needs. Reporting shows that growth in our engineering related programs and degrees are a high priority for current and future campus strategy. The Master Plan describes five planning principles which the Engineering Building follows:

- *Carefully evaluate each project with regard to renovation vs. replacement opportunities*
See **Appendix E** renovation vs. replacement studies.
- *Locate and size all new or replacement buildings to optimize site utilization*
See **Appendix F** site optimization studies.
- *Improve the overall character of the campus with the implementation of each project*
The Engineering Building will have two front doors to engage students on campus at the Engineering Lawn and the regional community on Washington Street. It will be visible from the southeast corner of Arévalo Student Mall at the entry to the Art Walk.
- *Create and follow a framework that welcomes EWU's neighbors and accommodates future campus expansion beyond existing boundaries*

The building has been intentionally sited on Washington Street to present a new, dynamic front door for the Engineering Department and EWU that is highly visible and accessible to the surrounding community. Space for community outreach programs and events will be located just inside the Washington entrance.

- *Reinforce and improve the overall cohesion of campus, specifically linkages across Washington Street, whenever possible*

Extending the Engineering Building to the East from Washington Street introduces a strong edge to the existing Engineering Lawn, complementing the edge created by JFK Library. The Engineering Building's student entrance on the Engineering Lawn and a new pathway to this entrance from Science Walk will further activate the Engineering Lawn. The building will improve and the pedestrian experiences of the Art Walk and 7th Street.

3. 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.

Engineering is forecasted to be one of the top three projected STEM occupations in 2027 in Washington State and the Northeast Washington region. State reports indicate a -43% gap in supply of engineering bachelor's degrees needed to meet workforce demand in Washington State in the next five years. All bachelor degrees and certificate programs offered by EWU's Engineering Department are designated STEM/High Demand by the State of Washington and prepare students for entry into cutting-edge engineering and related professions.

The mission of Eastern Washington University is to expand opportunities for personal transformation through excellence in learning. The Engineering Building will support EWU's 2018- 2023 Institutional Strategic Plan by:

IGNITE Change: The Engineering Building will be a student centered environment. Its high quality, hands-on teaching and project laboratories, flexible work areas and student interaction spaces will inspire prospective students and fully support their unique engineering interests and ideas through degree completion.

EMBRACE Equity & Social Justice: Not only will the Engineering Building provide the teaching facilities needed to meet the current and forecasted demand for enrollment which will increase access to high demand degrees, it provides critical space for community engagement with prospective rural and underserved students to participate in hands-on engineering activities.

DRIVE Innovation: Increasing facility capacity will allow the department to hire additional FTE faculty. The Engineering Building's state-of-the-art teaching laboratories and collaboration spaces will support innovative instruction and exchange of ideas.

TRANSFORM Our Region: The Engineering Building will increase interaction with the cutting-edge mechanical engineering and applied manufacturing industry in the region through dedicated laboratories for faculty and industry research and flexible space for departmental outreach. Bringing industry into the program will help students not only see their own future but how they can shape the future.

Eastern's current Strategic plan in its entirety is located at <https://inside.ewu.edu/strategic-planning/institutional-strategic-plan-2018-2023/>

Academic program planning and review are embedded in the University's Policy under: Accountability, Program Improvement, and Program and Resource alignment (EWU Policy 303-40) located at <https://inside.ewu.edu/policies/knowledge-base/ap-303-40-academic-program-review/>

Must the project be initiated soon in order to:

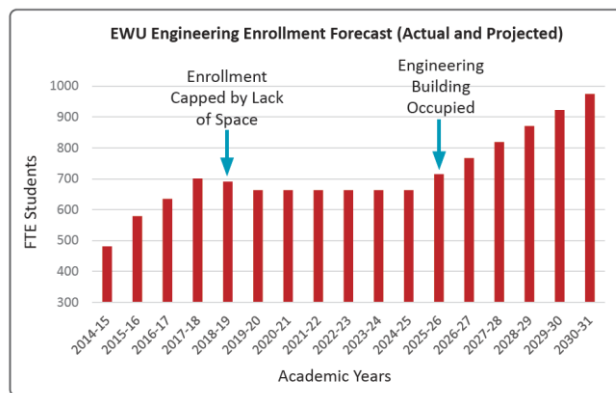
A. Meet academic certification requirements?

While there has not been certification difficulty to date, accreditors consistently cite strong concerns regarding capacity and safety issues in the existing CEB engineering laboratories. This lack of capacity and the safety concerns are at the core of this request, impeding growth in the Engineering disciplines.

Without flexible and safe interdisciplinary collaboration spaces and laboratories, future degree certification will be challenging. Moving forward with additional programs and degrees will be hindered without the proposed specific teaching and research laboratory additions and improvements. Programs that require flexible and multi-discipline collaboration spaces are key for future degree certification.

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

Degree production by EWU's Engineering Department has increased dramatically in the past ten years but, despite demand, is currently capped due to lack of facilities. The availability of new facilities will allow for growth to resume.



C. Permit initiation of new programs?

The department has goals of expanding its academic offerings to include graduate level courses, such as a Master of Science in Engineering and a Master of Science in Technology, as well as a Civil Engineering program. It will be impossible to introduce and accredit these additional programs and degrees in the future without additional quality teaching and research laboratory spaces.

Degrees, certifications and programs that require new academic space to succeed are listed below. They are currently under review to enhance and expand engineering academic offering.

M.S. Engineering - The Master of Science in Engineering program is designed for students who currently hold a B.S. in Engineering and wish to expand their knowledge of Mechanical and/or Electrical Engineering with an emphasis on Engineering Management.

M.S. Technology - The Master of Science in Technology program is designed for students who currently hold a B.S. in Technology (any option) at EWU or another university with a comparable Technology program and wish to expand their knowledge and experience directly tied to their work field.

Certification of the Construction Management Degree - A short-term goal for engineering is the certification of the Construction Management program and degree. Once the Construction Management program is certified, the University can take the necessary steps to establish a *Bachelor of Science in Civil Engineering*.

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. *Is distance learning or a university center a large and significant component of the total project scope? If yes, to what degree or percentage?*

Yes, one of Eastern's primary strategic goals is to be a national leader in developing multiple pathways for students to complete degrees. New programs and degrees are promoted for online/hybrid delivery that meet regional and statewide needs. Eastern is the best value in the state of Washington and our commitment to access is enhanced through a variety of type of program and degree delivery opportunities. Targets for online and distance learning courses that would be represented in this new facility would be approximate 20%.

- B. *Is the project likely to enroll a significant number of students who are place-bound or residents of underserved regions?*

A primary goal in Eastern's strategic plan is to create the EWU Virtual Campus, which will provide a premier learning environment for place-bound students and professionals seeking to improve their skills and their own potential for promotion within the workplace. We are a university of opportunity and the programs housed in the facility would offer a high potential for a variety of technically oriented degrees to be completed by place-bound students through online offerings.

Learning how to talk about their work with non-engineers is seen as a critical skill for EWU Engineering graduates, and the department supports that through community and industry outreach programs and events which the students are expected to participate in. The Engineering Department has built successful outreach programs to rural and underserved prospective student populations by providing hands-on engineering activities, events and clubs with the community. It would be most impactful to host these events in the engineering facilities in order to allow prospective students to visualize a college engineering experience but the department currently cannot house these events due to the space constraints and safety concerns described earlier, and so most outreach is mobile.

Additionally, students in certain technical fields, at no less than 24 community colleges, in the state and region have the option of completing a Bachelor of Science in Applied Technology with their AA degree through Eastern's transfer program. Graduates with specific Associate of Science degrees from the Spokane Community College System may also complete bachelor degrees in Applied Technology on the Cheney campus.

2. ENROLLMENT GROWTH

- A. *Identify the number of additional full-time equivalent (FTE) state-supported students the project is expected to enable the institution to serve when the space is fully occupied. Describe the method by which the number of additional FTEs who can be accommodated by the proposed space has been calculated, and provide and explain the enrollment analysis indicating probable student demand and enrollment from project completion to full occupancy.*

EWU considers the forecasted enrollment growth rate of 47% in the six years after the building opens to be a conservative estimate based on a careful consideration of four data points:

1. Prior to capping enrollment due to lack of space in 2018-2019, the ME program saw a 45.7% overall increase in the three years between 2014-15 and 2017-18 (from 481 to 701 students). Once space is available and the cap can be lifted, the University's expectation is that this rate is likely to continue.
2. In 2017 EWU commissioned an independent degree market study by consulting firm Ruffalo Noel Levitz that the enrollment potential for first time, traditional college freshmen into the ME program is 135 per year. This result takes into account the broader public college enrollment decline forecasted by demographic changes in the next ten years. The department enrolled 68 first time, traditional college freshman in the ME program in Fall 2019. Increasing from 68 to 135 students equates to a growth potential of 98.5% in first time, traditional college freshman.
3. Approximately half of all EWU engineering students are transfer students and it is assumed this rate will be maintained as the non-transfer enrollment grows.
4. Population statistics forecast demographic changes in the next ten years which will cause national enrollment in public colleges to decline.

B. Using the OFM Statewide Public Four-Year Dashboard, identify how many of the additional FTE enrollments are expected to be in high-demand fields and the particular fields in which such growth is expected to occur.

Engineering is forecasted to be one of the top three projected STEM occupations in 2027 in Washington State and the Northeast Washington region. State reports indicate a ~43% gap in supply of engineering bachelor's degrees needed to meet workforce demand in Washington State in the next five years. . See Appendix D. All bachelor's degrees and certificate programs offered by EWU's Engineering Department are designated STEM/High Demand by the State of Washington and prepare students for entry into cutting-edge engineering and related professions.

Despite the increasing demand for enrollment and graduates and the department's strengths in outreach, the Engineering Department capped enrollment in 2018-2019 due to lack of facility capacity. Lack of space also restricts the hiring additional faculty FTE's to instruct engineering classes. The design and construction of the Engineering Building will allow continued program growth and degree production, with conservative forecasting showing enrollment increasing 47% in the first six years of building occupancy.

3. AVAILABILITY OF SPACE/ UTILIZATION ON CAMPUS: (APPENDIX B)

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

A. The Utilization of Classroom Space

Currently the university does not require any additional classrooms (110) in this project. Typical classroom assignments within the Engineering programs are accomplished in other classrooms across campus.

Eastern currently has an abundance of classroom space and seats. Based upon the evaluation that was done during our last Comprehensive Campus Master Plan, growth projections show that EWU will need to increase the level of non-classroom student support spaces. The current plan is to evaluate the current inventory and classrooms and renovate spaces that do not fit the classroom inventory needs to non-classroom support spaces. These renovations may be for faculty offices, student academic support space or other needs. Eastern feels that this is a comprehensive and low cost way to redistribute campus square footage to the best advantage of the campus and the students in to the future.

B. The Utilization of Class Laboratory Space

The existing inventory of teaching lab space does not meet the specific technical needs of the engineering program. Programming for new lab space in this project has been assessed for how it supports the project and the goals of the department and university, and also how it affects the overall utilization rates for teaching labs for the university as a whole.

In 2014 the university revisited and revised its Comprehensive Campus Master Plan. Part of work on the CCMP was determining the need for a variety of space types on the Cheney campus and how forecasted growth would affect those spaces. It was determined that the university in order to keep pace with annual growth of 2% would need to add additional square feet in the next 10 year planning horizon.

4. EFFICIENCY OF SPACE ALLOCATION (APPENDIX C)

- 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 of the scoring process instructions for an example. Include supporting information in an appendix.*

Reference materials utilized in programming the new Engineering building included:

- Facilities Evaluation and Planning Guide (FEPG), Inter-institutional Committee of Space Officers representing the public four-year colleges and universities in the state of Washington, 1994
- Postsecondary Education Facilities Inventory and Classification Manual (FICM), National Center for Education Statistics, 2006

FEPG recommendations for spaces and the corresponding areas used in the program for the Engineering Building and renovated spaces in CEB are shown in the following table:

FEPG Room Classification Type	FEPG Recommendation (ASF/Station)	Program Area Applied to Project (ASF/Station)
Classroom	20 (Range = 16-26)	20
Class Laboratory - Mechanical Engineering	175 (Range = 35-180)	61-182 Varies based on engineering equipment sizes.
Class Laboratory Service	Depends on need	Based on identified need
Open Laboratory	Depends on need	Based on identified need
Research Laboratory	Depends on need	Based on identified need
Research Laboratory Service	Depends on need	Based on identified need
Dean Office	200	175 Existing space
Staff & Other Office	120	88-96 Existing spaces

Laboratory Module: To provide a baseline planning module for programming of teaching and research laboratories, a standard laboratory module was based on industry standards and applicability to the types of laboratories included in the Engineering Building project.

The proposed laboratory planning module for the building was derived by analyzing the laboratory bench, equipment, and circulation space required for the engineering functions. The module is based on the bench space required for technical work stations, instruments, and procedures. The space required between benches is designed to allow people to work back-to-back at adjacent benches, to allow for accessibility for disabled and still allow for movement of people and laboratory carts in the aisle.

The preliminary planning module utilized for the Engineering Building is 11'-0" wide by 33'-0" deep = 363 Assignable Square Feet. This module will provide adequate bench space plus space for floor standing equipment and fume hoods, and can be divided for smaller support spaces such as storage or instrument rooms.

Classrooms: Two classrooms are included in the project scope as the result of reprogramming existing spaces in CEB. An existing classroom which is underutilized due to its small size is being enlarged as part of the expansion of a new

programmed class laboratory. In order to create a physical connection to the Engineering Building on the Second Floor, two classrooms will be combined into one larger classroom.

Class, Open and Research Laboratories: Preliminary areas for teaching, open and research laboratories were assigned based on benchmarks developed by Research Facilities Design from similar university laboratory facilities, reviews of sizes of existing and proposed engineering equipment required in each lab, and on discussions with the faculty, staff and administration. Areas were rounded to the nearest laboratory module. Room diagrams for each proposed laboratory can be found in the Predesign report. See [Appendix J](#) for link.

Laboratory Service: The program size of lab support spaces was based on a comparison of existing spaces to identified needs.

Office Spaces: All offices spaces in project are existing offices in CEB which are proposed to be renovated without changes to existing footprints.

B. Identify the following on form CBS002:

1. Identify square feet (USF) in the proposed facility: 53,792 USF
2. Gross square feet (GSF): 97,805 GSF
3. Building efficiency (USF divided by GSF): 55%

5. REASONABLENESS OF COST

Provide as much detailed cost information as possible, including baseline comparison of costs per square foot (SF) with the cost data provided in Chapter 5 of the scoring process instructions and a completed OFM C-100 form. Also, describe the construction methodology that will be used for the proposed project.

Unit cost for the New Building is **\$599 per gross square foot**, which falls below OFM's expected cost of \$658. Unit cost for the Existing Building Renovation is **\$206 per gross square foot**, which falls well below OFM's expected cost range of \$334 - \$445.

NEW BUILDING	A	B	C	D	E	F
	GSF	Construction Cost	Escalation %	Escalation Cost	Escalated Construction Cost	Unit Cost/ GSF
				BxC	B+D	E/A
New Bldg Construction Cost	74,155	\$33,611,892.00	15%	\$5,041,783.80	\$38,653,675.80	
Sitework Construction Cost		\$3,664,163.00	15%	\$549,624.45	\$4,213,787.45	
General Conditions 1 (76%)		\$1,368,000.00	15%	\$205,200.00	\$1,573,200.00	
Total					\$44,440,663.25	\$599.29

EXISTING BUILDING	A	B	C	D	E	F
	GSF	Construction Cost	Escalation %	Escalation Cost	Escalated Construction Cost	Unit Cost/ GSF
				BxC	B+D	E/A
Existing Bldg Construction Cost	23,650	\$3,796,519.00	15%	\$569,477.85	\$4,365,996.85	
General Conditions 2 (24%)		\$432,000.00	15%	\$64,800.00	\$496,800.00	
Total					\$4,862,796.85	\$205.62

Facility Type: Laboratory

Construction Dates:

Start: July 15, 2023 (from CBS003 or Excel C-100)

End: July 15, 2025 (from CBS003 or Excel C-100)

Midpoint: April 15, 2024 (calculated)

Construction Index for Midpoint: 1.48 (interpolated from index table: $(1.484 - 1.474) * 2/3 + 1.474$)

Expected Total Project New GSF Cost in 2008 Dollars: \$ 444.40 (from expected cost table)

Expected Total Project New GSF Cost at Construction Midpoint: \$657.71 (calculated)

Expected Total Project Renovated GSF Cost in 2008 Dollars: \$225.42/\$300.56 (expected cost)

Expected Total Project Renovated GSF Cost at Construction Midpoint: \$333.62/\$444.82 (calculated)

New Building Construction: The detailed construction cost estimate, escalated to the midpoint of construction (4/15/2024), predicts the cost of the New Building (74,155 GSF) to be \$44,440,663.25 which equates to a unit cost of \$599 per gross square foot.

NEW BUILDING	A	B	C	D	E	G
Facility Type	Percentage of Total Program	Expected Construction Cost/ GSF Best Fit (7/1/2008) *	Weighted Value (7/1/2008)*	Cost Index to Mid-Construction (4/15/2024) **	Expected Construction Cost/ GSF to Mid-Construction	Weighted Value (4/15/2024)**
			AxB		BxD	AxE
Teaching Labs and Support	52.9%	\$437.00	\$231.17	1.48	\$646.76	\$342.14
Research Labs	14.3%	\$623.00	\$89.09	1.48	\$922.04	\$131.85
Project Labs	17.8%	\$437.00	\$77.79	1.48	\$646.76	\$115.12
Offices & Office Support	1.7%	\$309.00	\$5.25	1.48	\$457.32	\$7.77
Collaboration	13.3%	\$309.00	\$41.10	1.48	\$457.32	\$60.82
Total	100.0%		\$444.40			\$657.71

Existing Building Renovation: The detailed construction cost estimate, escalated to the midpoint of construction (4/15/2024), predicts the cost of the Existing Building renovation (23,650 GSF) to be \$4,862,796.85 which equates to a unit cost of \$206 per gross square foot.

EXISTING BUILDING	A	B	C	D	E	F
Facility Type	Percentage of Total Program	Expected Construction Cost/ GSF Best Fit (7/1/2008) *	Weighted Value (7/1/2008)*	Cost Index to Mid-Construction (4/15/2024) **	Expected Construction Cost/ GSF to Mid-Construction	Weighted Value (4/15/2024)**
			AxB		BxD	AxE
Teaching Labs and Support	33.2%	\$437.00	\$145.08	1.48	\$646.76	\$214.72
Project Labs	5.9%	\$437.00	\$25.78	1.48	\$646.76	\$38.16
Offices & Office Support	17.6%	\$309.00	\$54.38	1.48	\$457.32	\$80.49
Classrooms	15.0%	\$420.00	\$63.00	1.48	\$621.60	\$93.24
Collaboration	28.3%	\$309.00	\$87.45	1.48	\$457.32	\$129.42
Subtotal	100.0%		\$375.70			\$556.03
Total (60%/ 80% ***)			\$225.42/ \$300.56			\$333.62/ \$444.824

* Reference: OFM's "2019-21 Capital Project Evaluation System" pages 23-24

** Construction Index extrapolated beyond 2/14/2024 per OFM's "2019-21 Capital Project Evaluation System" pages 23-24

*** 60%-80% cost of comparable new construction rate per OFM's July 2018 "Criteria Scoring Report" for renovation page 6.

C100 Cost Estimate: [Appendix G](#)

The Engineering Building project will be delivered via the Design-Bid-Build methodology. See Appendix H for project schedule and Budget

If applicable, provide Life Cycle Cost Analysis results demonstrating significant projected savings for selected system alternates (Uniformat Level II) over 50 years, in terms of net present savings.

The complete Pre-Design Life Cycle Costs Analysis (LCCA) can be view within the EWU Engineering Building Predesign Report, Section 3.3, page 48. [Appendix J](#) for link.

TEMPLATES REQUIRED IN APPENDIX FOR SCORING

- Degree totals and targets (Appendix A)
- Availability of space/campus utilization (Appendix B)
- Program-related space allocation (Appendix C)

APPENDICES

Supporting Reference Data

APPENDIX A - DEGREE TOTALS AND TARGETS TEMPLATE

[OFM Statewide Public Four-Year Dashboard](#)

Degree Totals and Targets Template			
Required for Overarching Criteria for Major Growth, Renovation, Replacement and Research Proposals			
Institution:	Eastern Washington University		
Campus location:	Cheney, Washington		
Project name:	Science Building Renovation		
	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)	2,219	805	377
Number of degrees targeted in 2021 (b)	2,254	871	675
2018-19 totals/2021 target (a/b)	98.4%	92.4%	55.9%
Score:	1.00	1.00	2.00
Comments:			

APPENDIX B – AVAILABILITY OF SPACE/CAMPUS UTILIZATION

Availability of Space/Campus Utilization Template			
2020 Four-year Higher Education Scoring Process			
Required for all categories except Infrastructure and Acquisition.			
Project Name:	Engineering Building		
Institution:	Eastern Washington University		
Campus Location:	Cheney, Washington		
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 2019 Weekly Contact Hours	91,103	Fall 2019 Weekly Contact Hours	19,167
Multiply by % FTE Increase Budgeted	2.00%	Multiply by % FTE Increase Budgeted	2.00%
Expected Fall 2020 Contact Hours	92,925	Expected Fall 2020 Contact Hours	19,550
Expected Fall 2020 Classroom Seats	6,773	Expected Fall 2020 Class Lab Seats	2,506
Expected Hours per Week Utilization	13.7	Expected Hours per Week Utilization	7.8
HECB GUC Utilization Standard	22.0	HECB GUL Utilization Standard	16.0
Difference in Utilization Standard	-38%	Difference in Utilization Standard	-51%
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.			
Based upon evaluation of overall campus space requirements during our last Comprehensive Campus Master Plan (2014), the University is currently evaluating the quantity and condition of classroom and laboratory spaces and seats. The process will evaluate those classroom and laboratory spaces that do not meet current needs, either quality or seat numbers. Those that cannot be scheduled at a high utilization rate will be taken offline and use for student support spaces, faculty offices, and other areas of need that were identified in our space analysis. This process will decrease the classroom and laboratory seating inventory to improve utilization rates.			

Program Related Space Allocation Template

Assignable Square Feet

Required for all Growth, Renovation and Replacement proposals.

Institution:

Eastern Washington University

Campus location:

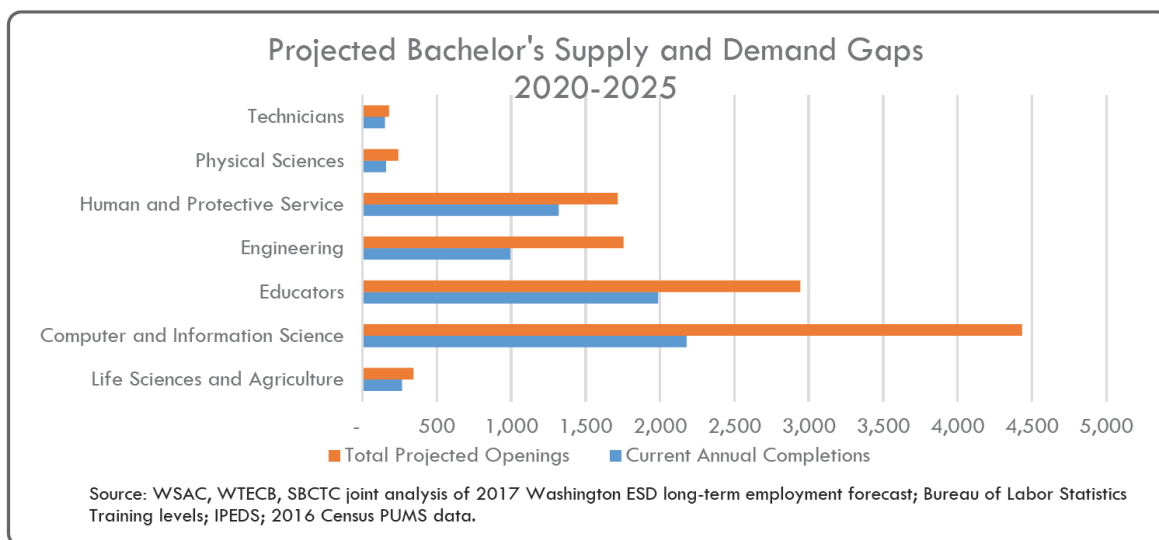
Cheney, WA

Project name:

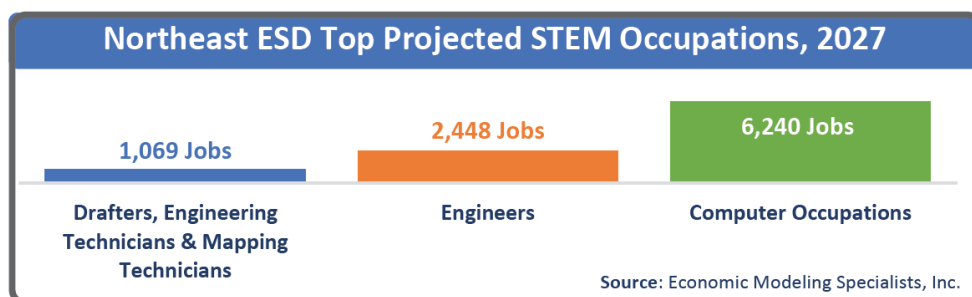
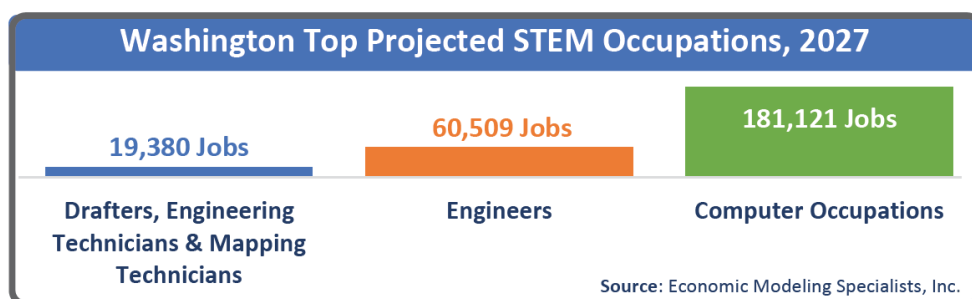
Engineering Building

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	35,107	59.12	5.91
Research space	2	5,808	9.78	0.20
Office space	4	3,996	6.73	0.27
Library and study collaborative space	10	10,668	17.97	1.80
Other non-residential space	8	-	0.00	0.00
Support and physical plant space	6	3,800	6.40	0.38
Total		59,379	100.0	8.56

APPENDIX D - SUPPLY AND DEMAND GAPS

Source: A Skilled and Dedicated Workforce 2017



Source: Washington State Regional Needs Assessment 2017

APPENDIX D - Supply and Demand Gaps - continued**Mechanical Engineering & Technology Degree Production**

Program	2015-16	2016-17	2017-18	2018-19
Mechanical Engineering	51	65	70	67
Mechanical Engineering Technology	15	9	17	17
Manufacturing Technology (DFM/Process)				21
Construction Management Technology				11
Applied Technology				9
Technology with Manufacturing Option (up to 2017-18)	13	13	23	
Technology with Construction Management Option (up to 2017-18)	15	13	20	
Technology with Applied technology Option (up to 2017-18)	11	10	9	
Total	105	110	139	125

APPENDIX E - Renovation vs. Replacement studies

	Alternative I: <i>Preferred Alternate</i> New Engineering Building on the Existing Campus	Alternative II: Renovation of Existing Engineering Facilities	Alternative III: No Action
Description	Design and construction of a new engineering building to support growth and new desired program requirements.	Major renovation to existing facilities both CEB and Cheney Hall.	No action taken.
Advantages	<ul style="list-style-type: none"> - Provides sufficient high quality teaching laboratories to meet forecasted enrollment and degree production. - Provides state-of-the-art engineering research facilities for faculty and industry collaboration - Direct connection to CEB takes advantage of CEB's strengths, creating efficiencies such as shared instructional resources, direct access to faculty and administrative offices, and shared student amenities. 	<ul style="list-style-type: none"> - Reuses some of the existing infrastructure. - Cheney Hall is due for some systems and finishes upgrades. - No demolition of Cadet Hall or relocation of its program elsewhere on campus. 	<ul style="list-style-type: none"> - No demolition of Cadet Hall or relocation of its program elsewhere on campus.
Disadvantages	<ul style="list-style-type: none"> - Demolition of Cadet Hall and relocation of its program elsewhere on campus. 	<ul style="list-style-type: none"> - Majority of facilities are in good condition for their intended use as classrooms and offices. - Upgrading mechanical systems for lab use requires substantial demolition and reconstruction. - 8 good quality general use classrooms and 2 good quality computer labs would be eliminated. - Resulting labs would still be substandard in size and quality due to restricted dimensions and existing low ceiling heights. - Additional costs will be incurred to relocate Engineering Department during construction. 	<ul style="list-style-type: none"> - EWU would not be able to support the current and forecasted demand for engineering enrollment. - Student success in EWU's undergraduate engineering programs could not be ensured. - EWU would produce fewer graduates in high demand engineering professions undermining the policies of the Washington Student Achievement Council and the Office of Financial Management.
Project Costs	\$69,748,366	\$72,689,944	\$0
Construction Schedule	Start: July 2023 Mid-point: April 2024 Completion: July 2025	Start: July 2023 Mid-point: April 2024 Completion: July 2025	No Construction

APPENDIX F - Optimization

(see section 4.0 of Predesign for complete analysis)

4.1 SITE OPTIONS

Five candidate sites on the Cheney campus were initially identified to determine a preferred site for the Engineering Building. The predesign process highlighted that locating the Engineering Building immediately adjacent to CEB for the purposes of sharing resources and encouraging interaction between engineering disciplines was very important. This intention remained intact through studies of several options for the location of the Engineering Building. Ultimately, three sites adjacent to CEB were selected as alternatives worth studying for the Engineering Building.



- Site A: Cheney Hall
- Site B: Cadet Hall
- Site C: Parking Lot 3
- Site D: Engineering Hall
- Site E: Reid Hall

Evaluation of the sites included consideration of numerous issues and those are illustrated in the table on the next page. Key factors in the site selection were appropriate area available, proximity and possible connections to the existing CEB, increasing proximity to Washington Street for greater visibility to industry and community, connections to campus pedestrian and ADA circulation, and disruption to existing buildings and landscape. Topography, solar orientation, access to utilities, service access, disruption to existing parking and future campus expansion were also considered.

Based on the matrix of criteria, three sites were chosen to be studied in greater detail, see 3.6 in this section. Site A: Cheney Hall and Site C: Parking Lot 3 were studied because of their favorable campus locations and high criteria score. These sites were not chosen because their potential connections to CEB were less favorable. Cheney Hall would be challenging to demolish as it would interrupt other University programs which also share space in the building and because of already planned future uses, such as swing space for other University facilities projects.

The predesign study concluded that Site B: Cadet Hall, which is located immediately south of the existing CEB and east of Washington Street, is the most appropriate site for the new engineering building. It best meets the criteria and responds to EWU's 2014 Master Plan Goals of connecting to the larger community and enhancing open space. It has the most favorable adjacency to CEB and its location allows for new "front doors" for Engineering on Washington Street and the Engineering Lawn. This site is located within the boundaries of the Eastern Washington University's Cheney campus and is owned by the State of Washington. The site contains adequate available area that a building on the site will comply with all easement and setback requirements set forth by the University.

APPENDIX G - Project Cost Estimate Report C100

C-100(2020)

Updated June 2020

Quick Start Guide

GENERAL INFORMATION

- 1) The C-100(2020) tool was created to align with the estimating application in the Capital Budgeting System (CBS). The intended use is to enable project managers to communicate their project cost estimates to budget officers in the standard format required for capital project budget requests/submittals to OFM.
- 2) This workbook is protected so that the worksheets within it cannot be moved or deleted in the usual manner. This protection is necessary to ensure that the cost estimate details and formulas align with the estimating application in the Capital Budgeting System.
- 3) The estimating format to develop the maximum allowable construction cost (MACC) is presented in Unifomat II.
- 4) Form-calculated costs such as A/E Basic Design Service fees and Agency Project Management costs are dependent on other estimated project costs such as Acquisition, MACC, Equipment, etc.
- 5) Project estimates generated with this tool are not sufficient for budget request submittals to OFM. Use the Capital Budgeting System to submit capital project budget requests.
- 6) Contact your assigned OFM Capital Budget Analyst with questions.

[OFM Capital Budget Analyst](#)

INSTRUCTIONS

- 1) Only green cells are available for data entry.
- 2) Fill in all known cells in the 'Summary' tab prior to moving on to the cost entry tabs A-G.
- 3) It is recommended, but not required, to fill out cost entry tabs in the following order:
A. Acquisition, C. Construction Contracts, D. Equipment, G. Other Costs, B. Consultant Services, F. Project Management, then E. Artwork.
- 4) If additional rows are inserted to capture additional project costs, a description must be provided in the Notes column or within Tab H. Additional Notes. Be particularly detailed for additional costs estimated for contingencies and project management.

FORM-CALCULATED COSTS (FEE CALCULATIONS)

- 1) A/E Basic Design Services: $AE\ Fee\ \% \times (MACC + Contingency)$
- 2) Design Services Contingency: $Contingency\ \% \times Consultant\ Services\ Subtotal$
- 3) Construction Contingency: $Contingency\ \% \times MACC$
- 4) Artwork: $0.5\% \times Total\ Project\ Cost$
- 5) Agency Project Management (Greater than \$1million): $(AE\ Fee\ \% - 4\%) \times (Acquisition\ Total + Consultant\ Services\ Total + MACC + Construction\ Contingency + Other\ Costs)$

STATE OF WASHINGTON
AGENCY / INSTITUTION PROJECT COST SUMMARY

Updated June 2020

Agency	Eastern Washington University	
Project Name	Engineering Building	
OFM Project Number	30000556	

Contact Information

Name	Shawn King	
Phone Number	509-359-6878	
Email	sking@ewu.edu	

Statistics

Gross Square Feet	97,805	MACC per Square Foot	\$460
Usable Square Feet	53,792	Escalated MACC per Square Foot	\$504
Space Efficiency	55.0%	A/E Fee Class	A
Construction Type	Other Sch. A Projects	A/E Fee Percentage	7.28%
Remodel	No	Projected Life of Asset (Years)	30

Additional Project Details

Alternative Public Works Project		Art Requirement Applies	Yes
Inflation Rate	2.38%	Higher Ed Institution	Yes
Sales Tax Rate %	8.70%	Location Used for Tax Rate	Cheney, WA
Contingency Rate	5%		
Base Month	June-20	OFM UFI# (from FPMT, if available)	
Project Administered By	Agency		

Schedule

Predesign Start	February-20	Predesign End	June-20
Design Start	November-21	Design End	January-23
Construction Start	July-23	Construction End	March-25
Construction Duration	20 Months		

Green cells must be filled in by user

Project Cost Estimate

Total Project	\$63,921,263	Total Project Escalated	\$69,748,366
		Rounded Escalated Total	\$69,748,000

STATE OF WASHINGTON
AGENCY / INSTITUTION PROJECT COST SUMMARY

Updated June 2020

Agency	Eastern Washington University	
Project Name	Engineering Building	
OFM Project Number	30000556	

Cost Estimate Summary

Acquisition			
Acquisition Subtotal	\$0	Acquisition Subtotal Escalated	\$0

Consultant Services			
Predesign Services	\$295,214		
A/E Basic Design Services	\$2,390,408		
Extra Services	\$1,490,797		
Other Services	\$1,161,059		
Design Services Contingency	\$266,874		
Consultant Services Subtotal	\$5,604,352	Consultant Services Subtotal Escalated	\$5,939,232

Construction			
Construction Contingencies	\$2,551,779	Construction Contingencies Escalated	\$2,798,026
Maximum Allowable Construction Cost (MACC)	\$45,035,573	Maximum Allowable Construction Cost (MACC) Escalated	\$49,303,460
Sales Tax	\$4,140,100	Sales Tax Escalated	\$4,532,830
Construction Subtotal	\$51,727,451	Construction Subtotal Escalated	\$56,634,316

Equipment			
Equipment	\$3,377,668		
Sales Tax	\$293,857		
Non-Taxable Items	\$0		
Equipment Subtotal	\$3,671,525	Equipment Subtotal Escalated	\$4,025,828

Artwork			
Artwork Subtotal	\$347,007	Artwork Subtotal Escalated	\$347,007

Agency Project Administration			
Agency Project Administration Subtotal	\$1,770,928		
DES Additional Services Subtotal	\$0		
Other Project Admin Costs	\$0		
Project Administration Subtotal	\$1,770,928	Project Administration Subtotal Escalated	\$1,941,823

Other Costs			
Other Costs Subtotal	\$800,000	Other Costs Subtotal Escalated	\$860,160

Project Cost Estimate			
Total Project	\$63,921,263	Total Project Escalated	\$69,748,366
		Rounded Escalated Total	\$69,748,000

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	\$295,214			
Other				
Insert Row Here				
Sub TOTAL	\$295,214	1.0339	\$305,222	Escalated to Design Start
2) Construction Documents				
A/E Basic Design Services	\$2,390,408			69% of A/E Basic Services
Other				
Insert Row Here				
Sub TOTAL	\$2,390,408	1.0482	\$2,505,626	Escalated to Mid-Design
3) Extra Services				
Civil Design (Above Basic Svcs)	\$95,965			
Geotechnical Investigation	\$29,750			
Commissioning	(see "Other Serv.")			
Site Survey	\$25,500			
Testing	(see "Other Serv.")			
LEED Services	\$88,035			
Voice/Data Consultant	\$53,849			
Value Engineering	\$35,080			
Constructability Review	\$28,033			
Environmental Mitigation (EIS)	(see "Other Serv.")			
Landscape Consultant	\$142,719			
Electronic Security Consultant	\$17,876			
Audiovisual Consultant	\$39,572			
Lighting Consultant	\$51,710			
Laboratory Consultant	\$254,220			
Acoustical Consultant	\$30,396			
Interior Design	\$58,310			
Elevator Consultant	\$18,976			
Hardware Consultant	\$7,922			
Code Consultant				
Building Envelope Consultant	\$91,503			
Value Engineering Support	\$35,080			
Constructability Participation	\$28,033			
Energy Life Cycle Cost Analysis	\$30,804			
Life Cycle Cost Analysis	\$90,066			
Renovation Design at CEB	\$31,480			
Energy Modeling	\$58,582			
Models & Renderings	\$14,450			
Full Fire Protection Design	\$12,886			
Reimbursable Expenses	\$120,000			
Sub TOTAL	\$1,490,797	1.0482	\$1,562,654	Escalated to Mid-Design
4) Other Services				
Bid/Construction/Closeout	\$1,073,951			31% of A/E Basic Services

HVAC Balancing	\$17,000			
Staffing				
Commissioning Support	\$29,862			
Record Drawings	\$40,246			
Sub TOTAL	\$1,161,059	1.0965	\$1,273,102	Escalated to Mid-Const.
5) Design Services Contingency				
Design Services Contingency	\$266,874			
Other				
Insert Row Here				
Sub TOTAL	\$266,874	1.0965	\$292,628	Escalated to Mid-Const.
CONSULTANT SERVICES TOTAL	\$5,604,352		\$5,939,232	

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	\$1,675,641			
G20 - Site Improvements	\$885,139			
G30 - Site Mechanical Utilities	\$324,229			
G40 - Site Electrical Utilities	\$779,154			
G60 - Other Site Construction	\$0			
Other				
Insert Row Here				
Sub TOTAL	\$3,664,163	1.0752	\$3,939,708	
2) Related Project Costs				
Offsite Improvements				
City Utilities Relocation				
Parking Mitigation				
Stormwater Retention/Detention				
Other				
Insert Row Here				
Sub TOTAL	\$0	1.0752	\$0	
3) Facility Construction				
A10 - Foundations	\$1,081,267			
A20 - Basement Construction	\$660,265			
B10 - Superstructure	\$4,751,825			
B20 - Exterior Closure	\$4,037,259			
B30 - Roofing	\$874,932			
C10 - Interior Construction	\$2,639,646			
C20 - Stairs	\$251,340			
C30 - Interior Finishes	\$2,718,760			
D10 - Conveying	\$402,144			
D20 - Plumbing Systems	\$2,599,037			
D30 - HVAC Systems	\$7,027,376			
D40 - Fire Protection Systems	\$470,362			
D50 - Electrical Systems	\$6,304,738			
F10 - Special Construction				
F20 - Selective Demolition	\$240,583			
General Conditions	\$1,800,000			
CFCI Equipment	\$2,394,956			
CFCI Casework and Furnishings	\$953,921			
Escalation Adjustment	\$2,162,999			
Sub TOTAL	\$41,371,410	1.0965	\$45,363,752	
4) Maximum Allowable Construction Cost				
MACC Sub TOTAL	\$45,035,573		\$49,303,460	

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7) Construction Contingency

Allowance for Change Orders	\$2,251,779		
Additional Allowance for Renovation Portion of Project	\$300,000		
Insert Row Here			
Sub TOTAL	\$2,551,779	1.0965	\$2,798,026

8) Non-Taxable Items

Other			
Insert Row Here			
Sub TOTAL	\$0	1.0965	\$0

Sales Tax

Sub TOTAL	\$4,140,100		\$4,532,830
------------------	--------------------	--	--------------------

CONSTRUCTION CONTRACTS TOTAL	\$51,727,451		\$56,634,316
-------------------------------------	---------------------	--	---------------------

Green cells must be filled in by user

Cost Estimate Details

Equipment				
Item	Base Amount	Escalation Factor	Escalated Cost	Notes
E10 - Equipment	\$2,251,779			
E20 - Furnishings	\$1,125,889			
F10 - Special Construction				
Other				
Insert Row Here				
Sub TOTAL	\$3,377,668	1.0965	\$3,703,613	
1) Non Taxable Items				
Other				
Insert Row Here				
Sub TOTAL	\$0	1.0965	\$0	
Sales Tax				
Sub TOTAL	\$293,857		\$322,215	
EQUIPMENT TOTAL	\$3,671,525		\$4,025,828	

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	\$347,007				0.5% of total project cost for new and renewal construction
Other					
Insert Row Here					
ARTWORK TOTAL	\$347,007		NA	\$347,007	

Green cells must be filled in by user

Cost Estimate Details

Project Management					
Item	Base Amount		Escalation Factor	Escalated Cost	Notes
Agency Project Management	\$1,770,928				
Additional Services					
Other					
Insert Row Here					
PROJECT MANAGEMENT TOTAL	\$1,770,928		1.0965	\$1,941,823	

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	\$300,000				
Historic and Archeological Mitigation					
Permits, Etc...	\$500,000				
OTHER COSTS TOTAL	\$800,000		1.0752	\$860,160	

Green cells must be filled in by user

C-100(2020) Additional Notes

Tab A. Acquisition
<i>Insert Row Here</i>

Tab B. Consultant Services
<i>Insert Row Here</i>

Tab C. Construction Contracts
<i>Insert Row Here</i>

Tab D. Equipment
<i>Insert Row Here</i>

Tab E. Artwork
<i>Insert Row Here</i>

Tab F. Project Management
<i>Insert Row Here</i>

Tab G. Other Costs
<i>Insert Row Here</i>

APPENDIX H - Project Schedule and Budget**(COMPLETE COST ESTIMATE IS AVAILABLE IN THE PREDESIGN STUDY)****PROJECT SCHEDULE SUMMARY**

Predesign	March 2020 – June 2020
Design	November 2021- January 2023
Building Permit	November 2022- February 2023
Bidding	March 2023- June 2023
Construction	July 2023- February 2025
Closeout & Commissioning	March 2025- May 2025
Move In	June 2025- July 2025
Classes begin in Engineering Building	September 2025

BUDGET ANALYSIS

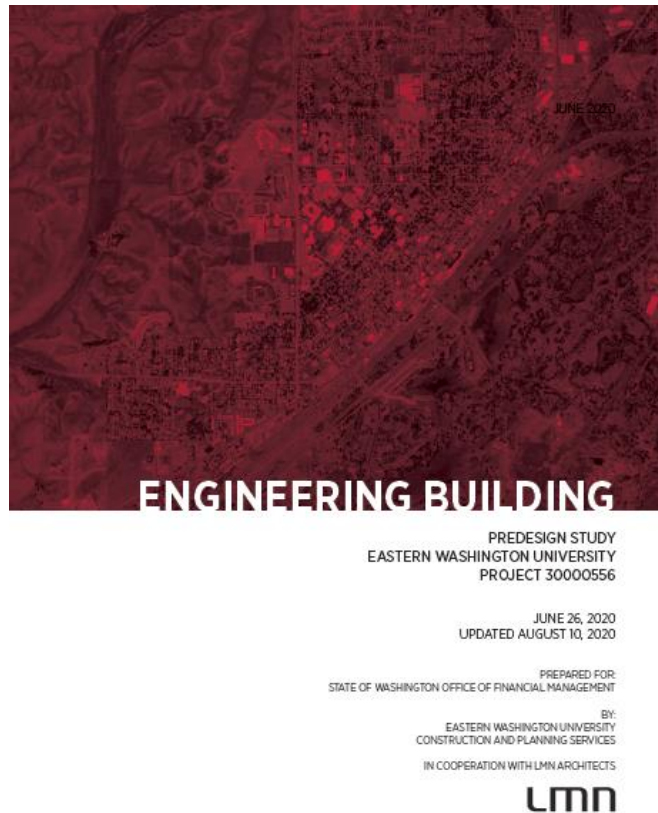
Escalated project costs for the Engineering Building are summarized as follows:

Acquisition Costs	\$0
Consultant Services	\$5,939,232
Construction Contracts	\$56,634,316
Equipment	\$4,025,828
Art Work	\$347,007
Other Costs	\$860,160
Project Management	\$1,941,823
Total Project Request	\$69,748,366

Appendix J – Predesign Study

Available at the following website address:

https://inside.ewu.edu/facilities/engineering-building-predesign-report-revised_082020/



CONTENTS

	EXECUTIVE SUMMARY
1.0	PROJECT ANALYSIS
2.0	PROGRAM ANALYSIS
3.0	ANALYSIS OF ALTERNATIVES
4.0	SITE ANALYSIS
5.0	PROJECT SCHEDULE
6.0	PROJECT BUDGET FOR PREFERRED ALTERNATIVE
7.0	PROJECT DRAWINGS
8.0	APPENDIX

APPENDIX K – CBS 002

370 - Eastern Washington University Capital Project Request

2021-23 Biennium

*

Version: C1 Eastern Washington University

Report Number: CBS002

Date Run: 8/11/2020 8:19AM

Project Number: 30000556

Project Title: Engineering Building

Description

Starting Fiscal Year: 2020

Project Class: Program

Agency Priority: 3

Project Summary

Problem Statement: The current success and sustained growth of Eastern Washington University's engineering programs and degrees is being limited by the lack of appropriate space to house STEM related programs. This has become a function of lack of required space and the lack of quality space to support student success.

Project Description

Identify the problem or opportunity addressed. Why is the request a priority? This narrative should identify unserved/underserved people or communities, operating budget savings, public safety improvements or other backup necessary to understand the need for the request. For preservation projects, it is helpful to include information about the current condition of the facility or system.

Engineering is one of the fastest growing but most physically constrained departments at EWU. The program has demonstrated sustained demand for enrollment and success in providing highly qualified graduates to the marketplace, but future growth is restricted by the lack of appropriate space for its core programs. The Engineering Department currently cannot accommodate additional growth due to space limitations.

EWU requests design funds of \$3,500,000 for the EWU Engineering Building on the Cheney Washington campus as described in the Predesign report submitted to OFM prior to July 1, 2020. This project is a major project in the Growth Category.

EWU proposes that this new facility on the campus connect to the Computing and Engineering Building (CEB), increasing facility capacity, solving facility deficiencies, and meeting future needs. The building is envisioned as a 74,155 GSF facility which will house hands-on teaching laboratories, research laboratories, lab support facilities, and student meeting and study areas. 23,650 GSF of CEB will be lightly modified to create physical connections, take advantage of available space suited to the program, and optimize instructional efficiencies. This is a Major Capital Project in the Growth Category.

A primary goal in Eastern's strategic plan is to create the EWU Virtual Campus, which will provide a premier learning environment for place-bound students and professionals seeking to improve their skills and their own potential for promotion within the workplace. We are a university of opportunity and the programs housed in the facility would offer a high potential for a variety of technically oriented degrees to be completed by place-bound students through online offerings.

Learning how to talk about their work with non-engineers is seen as a critical skill for EWU Engineering graduates, and the department supports that through community and industry outreach programs and events which the students are expected to participate in. The Engineering Department has built successful outreach programs to rural and underserved prospective student populations by providing hands-on engineering activities, events and clubs with the community. It would be most impactful to host these events in the engineering facilities in order to allow prospective students to visualize a college engineering experience but the department currently cannot house these events due to the space constraints and safety concerns described earlier, and so most outreach is mobile.

Additionally, students in certain technical fields, at no less than 24 community colleges, in the state and region have the option of completing a Bachelor of Science in Applied Technology with their AA degree through Eastern's transfer program. Graduates with specific Associate of Science degrees from the Spokane Community College System may also complete bachelor degrees in Applied Technology on the Cheney campus.

What will the request produce or construct (i.e., predesign or design of a building, construction of additional space, etc.)? When will the project start and be completed? Identify whether the project can be phased, and if so, which phase is included in the request. Be prepared to provide detailed cost backup.

This request is for design funds in the amount of \$3,500,000. A pre design study was submitted to the Office of Financial Management on July 1, 2020 for review. This request is part of the traditional request for project funding. It is anticipated, if funding is approved, for design to begin in November of 2021 and completed in January of 2023. Subsequent request for

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Description

construction funding would be submitted in the 2023-2025 biennial request, with construction beginning July of 2023 and the building completion March 2025.

Phasing project does not lend itself to phasing due to the fact that all the teaching labs areas are seriously deficient and constraining growth for multiple programs identified. The pre design study provides a comprehensive breakdown of the anticipated cost of this project. That pre design study is attached to the funding request submitted for evaluation in August of 2020.

How would the request address the problem or opportunity identified in question 1? What would be the result of not taking action? As stated, the sustained growth of engineering programs will continue as the university continues to provide proficient and high-level instructional support along with facilities that support our students' success. The opportunity is clear: to continue the trajectory of the programs that will not only change our student's lifelong potential but also solve some of the 21st century's most challenging issues.

At the core of this request is the lack of capacity that is impeding growth. The current capacity is an obstacle to growth in the Engineering disciplines. Currently there is not certification difficulty in the programs, but the ability to move forward with additional programs and degrees will be hindered without specific teaching and research laboratory spaces available. Programs that require flexible and multi-discipline collaboration spaces are key for future degree certification.

The results of not taking this action would mean the university cannot meet the growing demonstrated demand for the engineering programs already underway at the university. Prior to capping enrollment due to lack of space in 2018-2019, the ME program saw a 45.7% overall increase in the three years between 2014-15 and 2017-18 (from 481 to 701 students). Once space is available and the cap can be lifted, the University's expectation is that this rate is likely to continue.

What alternatives were explored? Why was the recommended alternative chosen? Be prepared to provide detailed cost backup. If this project has an associated predesign, please summarize the alternatives the predesign considered.

As a part of the pre design study a variety of alternatives were considered for remodel of existing buildings, standalone project an annex to the existing Computer and Engineering Building. Site location and adjacency to supporting programs and departments was a major consideration in the study.

The current inventory of teaching lab space does not meet the specific technical needs of the engineering program. Available lab space does not have the infrastructure or equipment for many of the functions with the programs. In addition, there is a shortage of shop lab space with the current levels of need for programs such as engineering, technology and computer science. Programming for new lab space in this project will be assessed for how it supports the project and the goals of the department and university, and also how it affects the overall utilization rates for teaching labs for the university as a whole. The decision was made that it was more cost effective to design and construct a building that was an addition to the existing Computer Science Building to best connect to the existing space and build high quality specialty space for the Engineering programs.

Which clientele would be impacted by the budget request? Where and how many units would be added, people or communities served, etc.

Listed below are the degree options, within the Department of Mechanical Engineering & Technology. Key to the project is in the integrated labs and support spaces that allow for community outreach programs and activities with rural and underserved populations. The new facility will encourage student engagement with the regional engineering industry, the Engineering Department and each other.

Current programs/degrees associated with this project are as follows:

- Mechanical Engineering / Mechanical Engineering Technology (Bachelor of Science)
- Manufacturing Technology: DFM Option (Bachelor of Science)
- Manufacturing Technology: Process Option (Bachelor of Science)
- Construction Management Technology (Bachelor of Science)
- Applied Technology (Bachelor of Science)

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Will other funding be used to complete the project? How much, what fund source, and could the request result in matching federal, state, local or private funds?

The funding request for this project is for 057 state bonded funds. Currently no other funding is available for this project.

Describe how this project supports the agency's strategic master plan or would improve agency performance.

Reference feasibility studies, master plans, space programming and other analyses as appropriate.

Engineering is forecasted to be one of the top three projected STEM occupations in 2027 in Washington State and the Northeast Washington region. State reports indicate a -43% gap in supply of engineering bachelor's degrees needed to meet workforce demand in Washington State in the next five years. All bachelor degrees and certificate programs offered by EWU's Engineering Department are designated STEM/High Demand by the State of Washington and prepare students for entry into cutting-edge engineering and related professions.

The mission of Eastern Washington University is to expand opportunities for personal transformation through excellence in learning. The Engineering Building will support EWU's 2018- 2023 Institutional Strategic Plan by:

IGNITE Change: The Engineering Building will be a student centered environment. Its high quality, hands-on teaching and project laboratories, flexible work areas and student interaction spaces will inspire prospective students and fully support their unique engineering interests and ideas through degree completion.

EMBRACE Equity & Social Justice: Not only will the Engineering Building provide the teaching facilities needed to meet the current and forecasted demand for enrollment which will increase access to high demand degrees, it provides critical space for community engagement with prospective rural and underserved students to participate in hands-on engineering activities.

DRIVE Innovation: Increasing facility capacity will allow the department to hire additional FTE faculty. The Engineering Building's state-of-the-art teaching laboratories and collaboration spaces will support innovative instruction and exchange of ideas.

TRANSFORM Our Region: The Engineering Building will increase interaction with the cutting-edge mechanical engineering and applied manufacturing industry in the region through dedicated laboratories for faculty and industry research and flexible space for departmental outreach. Bringing industry into the program will help students not only see their own future but how they can shape the future.

Eastern's current Strategic plan in its entirety is located at

<https://inside.ewu.edu/strategic-planning/institutional-strategic-plan-2018-2023/>

Academic program planning and review are embedded in the University's Policy under: Accountability, Program Improvement, and Program and Resource alignment (EWU Policy 303-40) located at

<https://inside.ewu.edu/policies/knowledge-base/ap-303-40-academic-program-review/>

In 2014, the university update the Cheney Campus Comprehensive Master Plan. In Horizon 1 (2013 to 2023) 1.4.5, the plan states: Construct addition to the Computer and Engineering Building.

The intention of the pre-design study is to assess this facility for its use to fulfil that part of the Comprehensive Campus Master Plan. The intent to evaluate the building for renewal, expansion or if those options are not cost effective and meet the university need request a building adjacent to Cheney Hall and the Computer Engineering Building that supports those needs. The current Comprehensive Campus Master Plan can be seen in its entirety at:

https://in.ewu.edu/facilities/wp-content/uploads/sites/191/2017/01/EWU-CCMP_All-Sections_Web_optimized_v2.pdf

For IT-related costs: Does this project fund the development or acquisition of a new or enhanced software or hardware system or service?

This project does not fund the development or acquisition of new or enhanced software or hardware systems or service. This facility will use already established software and hardware platforms that are currently on campus.

Does this decision package (DP) fund the acquisition or enhancements of any agency data centers? (See OCIO Policy 184 for definition.)

No.

Does this DP fund the continuation of a project that is, or will be, under OCIO oversight? (See OCIO Policy 121.) If the

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answer to any of these questions is yes, continue to the IT Addendum and follow the directions to meet the requirements for OCIO review.

No.

If the project is linked to the Puget Sound Action Agenda, describe the impacts on the Action Agenda, including expenditure and FTE detail. See Chapter 12 (Puget Sound Recovery) in the 2019-21 Operating Budget Instructions. This project is has no association with the Puget Sound Action Agenda.

Does this project contribute to statewide goals to reduce carbon pollution and/or improve energy efficiency? If yes, please elaborate.

Planning and design for these projects will meet or exceed current Washington State Energy Code WAC 51-11C. We also review design and implementation against our Climate Action Plan and Washington State requirements for reduction of greenhouse gas emissions RCW 70.235.

This project is designed to address the necessary replacement of infrastructure systems and components that are past their effective lifecycle, are costly to operate because of age and technology, and are at risk of failure. Completion of these projects will update compliance with a variety of state and local jurisdictional requirements including:

- RCW 39.35D High Performance Public Buildings – high efficiency components and systems
- RCW 43.19.668; 669; 670; 682 Energy Conservation – high efficiency components and systems
- HB 2311 Greenhouse Gas Emission Limits 2019
- HB 1257 Clean Building for Washington Act 2019
- EWU Facilities Climate Action Plan 2020 update

Is there additional information you would like decision makers to know when evaluating this request?

Eastern Washington University's Cheney campus offers rigorous and pragmatic Mechanical Engineering and Technology (MENT) degrees that prioritize hands-on training and applied learning. The majority of students are enrolled in Mechanical Engineering, Mechanical Engineering Technology, Applied Technology, Construction Management Technology, and Manufacturing Technology with both a DFM and Process option.

EWU's engineering classes are taught exclusively by faculty with industry experience. Since inception in 2010, EWU's Mechanical Engineering and Technology program has experienced strong and sustained enrollment growth. The department has built highly successful outreach programs to rural and underserved prospective student populations and continuation programs with community colleges. Forecasted growth over the next ten years shows that the Mechanical Engineering and Technology program will remain one of the university's fastest growing fields.

EWU's engineering graduates are highly sought after in the growing regional mechanical engineering marketplace. Spokane and West Plains mechanical engineering companies have emerged as major players in their markets encouraging even more peer companies to the region. A 2009 survey of 2008 EWU Mechanical Engineering and Technology graduates showed that 85% were in full-time positions within the first six months after graduation, a rate that has held steady for the past three years, with 55% reporting salaries of over \$60,000 *in their first year*.

Despite the demand for both enrollment and graduates, the Engineering Department capped enrollment in 2018-2019 due to lack of facility capacity. Lack of space also restricts the hiring of additional faculty FTEs to instruct engineering classes and has severely limited engineering research and on-campus industry collaboration.

The department has outgrown the only existing facilities suitable for the hands-on laboratory training which makes up a significant portion of Mechanical Engineering and Technology education. The existing facilities also have serious deficiencies including student safety concerns due to poor instructor sightlines, reduced overhead clearances and limited overhead services which restrict evolution with changing machine technology, aging technological infrastructure, ADA accessibility concerns, and lack of student interaction spaces among others.

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Project Title: Engineering Building

Description

Location

City: Cheney

County: Spokane

Legislative District: 006

Project Type

New Facilities/Additions (Major Projects)

Growth Management impacts

There are no Growth Management Impacts related to this project.

New Facility: Yes

How does this fit in master plan

In 2014 the university update the Cheney Campus Comprehensive Master Plan. In Horizon 1 (2013 to 2023) 1.4.5, the plan states: Construct addition to the Computer and Engineering Building. We are currently looking at with Cheney Hall this planning consideration. The intention of the pre design study is to asses this facility for its use to fulfil that part of the Comprehensive Campus Master Plan. The intent to evaluate the building for renewal, expansion or if those options are not cost effective and meet the university need request a building adjacent to Cheney Hall and the Computer Engineering Building that supports those needs.

Funding

Acct Code	Account Title	Estimated Total	Expenditures		2021-23 Fiscal Period	
			Prior Biennium	Current Biennium	Reappropriates	New Appropriates
057-1	State Bldg Constr-State	73,248,633				3,500,000
061-1	EWU Capital Projects-State	345,000		345,000		
	Total	73,593,633	0	345,000	0	3,500,000
Future Fiscal Periods						
		2023-25	2025-27	2027-29	2029-31	
057-1	State Bldg Constr-State	69,748,633				
061-1	EWU Capital Projects-State					
	Total	69,748,633	0	0	0	

Operating Impacts

No Operating Impact

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<u>Parameter</u>	<u>Entered As</u>	<u>Interpreted As</u>
Biennium	2021-23	2021-23
Agency	370	370
Version	C1-A	C1-A
Project Classification	*	All Project Classifications
Capital Project Number	30000556	30000556
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

APPENDIX L – Institution Greenhouse Gas Emission Reduction Policy 2020



Eastern Washington University Greenhouse Gas Reduction Policy March 1, 2020

Purpose: The purpose of the policy is to set forth EWU's commitment to reducing greenhouse gas within the area of campus operations and guide the university towards a collective goal of Washington State government agencies achieving carbon neutrality in 2050. This policy sets the greenhouse gas reduction standards for managing greenhouse gas emissions at Eastern Washington University and brings EWU in line with Washington State Legislation under RCW 70.235.

History: EWU is committed to reducing greenhouse gas emissions and reducing our impact on climate change. EWU is a signatory of the American College and University Presidents Climate Commitment, developed its first campus Sustainability Plan in 2012, and created the Office of Sustainability with the hiring of our first Sustainability Coordinator in 2016. EWU seeks to further these efforts by developing Sustainability focused policies that decrease our carbon footprint and other environmental impacts. In 2020 the Washington State Legislature passed HB 2311 that amends RCW 70.235 and strengthens the State's commitment to reducing greenhouse gas emissions with the goal to become carbon neutral by 2050. This policy is intended to align EWU's commitment to carbon emission reductions with Washington State policy and provide guidance as EWU progresses towards near carbon neutrality.

- I. Policy** – As part of its role as a State agency, EWU will work to meet the statewide greenhouse gas emission limits established in RCW 70.235.020:
 - i.** Year 2030 – Reduce greenhouse gas emissions by 45 % below 2005 levels
 - ii.** Year 2040 – Reduce greenhouse gas emissions by 70 % below 2005 levels
 - iii.** Year 2050 – Reduce greenhouse gas emissions by 95 % below 2005 levels; and support the collective goal of achieving net zero greenhouse gas emissions by the Washington State government agencies as a whole.
- II. Policy Review** – This policy will be reviewed annually and updated to reflect changes in Washington State Legislation as well as Eastern Washington University policies. The EWU Office of Sustainability will be tasked with the annual review and proposing updates to the policy as necessary.
- III. Greenhouse gas monitoring and reporting** – The Office of Sustainability is tasked with tracking greenhouse gas emissions and providing biannual reports to the State Efficiency and Environmental Performance Office at the Department of Commerce. As defined in RCW 70.235.050, these biannual reports will document steps taken in the previous biennium as well as actions planned for the next two biennia and long-term strategies to meet emission reduction targets. Reports will be submitted every two years, beginning in 2022, on June 1st of even numbered years to the Department of Commerce. Additionally, the Office of Sustainability will provide annual greenhouse gas reduction reports to the EWU VP of Business and Finance.