



**Shawn King**  
Associate Vice President

MEMORANDUM

To: Jen Masterson, Senior Budget Assistant to the Governor, Office of Financial Management  
From: Shawn King, Associate Vice President for Facilities and Planning  
Date: August 15, 2022  
Re: Major Capital Project Proposal – Sports and Recreation Energy Improvements  
Renovation – Stand Alone 40000112

Eastern Washington University's major project proposal for OFM project number 40000112 Sports and Recreation Energy Improvements in the Renovation – Standalone Category, in accordance with requirements of the Office of Financial Management's 2023-2025 Capital Project Evaluation System.

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

[OFM 2023-2025 Capital Project Evaluation System](#)

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

Best Regards,

**2022 PROJECT PROPOSAL CHECKLIST**  
2023-25 Biennium Four-year Higher Education Scoring Process

<b>INSTITUTION</b>	<b>CAMPUS LOCATION</b>
370 - Eastern Washington University	Cheney, Washington
<b>PROJECT TITLE</b>	<b>OFM/CBS Project #</b>
Sport and Recreation Center Energy Improvements	40000112
<b>PROJECT CATEGORY</b>	<b>FPMT UNIQUE FACILITY ID # (OR NA)</b>
Renovation - Standalone	NA
<b>PROPOSAL IS</b>	
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 2018 (2019-21 biennium) <input type="checkbox"/> Resubmittal from 2020 (2021-23 biennium)
<b>CONTACT</b>	<b>PHONE NUMBER</b>
Shawn King	509-359-6878

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).

*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 70A.45.050 and vehicle emissions reduction policy in place per RCW 47.01.440 or RCW 43.160.020 as applicable.
- A complete predesign report was submitted to OFM by July 1, 2022 and approved.
- 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.

**2022 PROJECT PROPOSAL CHECKLIST**  
2023-25 Biennium Four-year Higher Education Scoring Process

- Stand-alone, infrastructure and acquisition proposals is a single project requesting funds for one biennium.

Required appendices

- Project cost estimate: Excel C-100
- Degree Totals and Targets template to indicate the number of Bachelors, High Demand and Advanced degrees expected to be awarded in 2023. (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: Energy Audit Report

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: 5/15/2022

# Sports and Recreation Center Energy Improvements



Stand Alone Renovation



2023-2025 Capital Budget

Stand-Alone Renovation

2023-25 Biennium Project

2022 Higher Education Project Proposal Form

INSTITUTION	CAMPUS
<b>Eastern Washington University</b>	<b>Cheney, Washington</b>
PROJECT TITLE	
<b>Sports and Recreation Center Energy Improvements</b>	

### Summary Narrative

#### ▪ Problem Statement

Eastern Washington University's Sport and Recreation Center (SRC) is located on the Cheney campus and houses a variety of academic and student activity functions. Developed in several "phases" throughout the 1970's, the SRC boasts over 250,000 square feet of recreational space. The SRC is home to the Pavilion; "Reese Court", the Aquatic Center, the PE Activities Building; housing the Strength and Conditioning Center, the Dance Studio, as well as many other activity gyms and spaces and the Fieldhouse. The Sports and Recreational Center is a multi-use facility open to students, faculty staff and community members.

Clean and highly efficient buildings are essential to meeting our state energy goals. In 2019 the Clean Buildings bill, HB 1257, was signed into law and later expanded in 2022. The objective is to lower costs and pollution from fossil fuel consumption in the state's existing buildings and reduce our carbon footprint.

*Eastern Washington University is requesting funds in the amount of \$10,000,000 in the category of Stand-Alone Renovation to improve the building efficiency and performance to meet and exceed the requirements of HB 1257.*

The phases of the SRC building were built in the late 1970s and early 1980s and only the Physical Education Classroom Building has building improvements since originally constructed. The balance of the facility has an average age of 45.8 years old. The building systems are at the end of their functional lifecycle and need major upgrades and renewals. These systems, due to their age and original design are not as energy efficient as they once were and certainly not as efficient as the current design and construction technologies allow. These systems include but are not limited to: Heating and Ventilation equipment and distribution systems, Temperature controls and Building Automation Systems (BAS), lighting upgrades and lighting controls. These systems have high repair cost and low efficiency and need be improved to save energy and meet the requirements of HB 1257.

#### ▪ History of the Project or Facility

Early in 2022 Eastern contracted with KJH Engineering to develop an engineering grade energy audit for the SRC. As the complex ages and the systems continue to operate past their effective lifecycles, the complex is the number 1 priority for energy upgrades under HB 1257 the Washington State Clean Buildings Act. Our consultant provided base EUI (Energy Use Intensity) numbers for buildings that are a part of the SRC. The criteria for HB 1257 states that since the individual buildings in the SRC are connected they are one facility that is over 250,000 gross square feet. The criteria also states that buildings with shared walls need to be evaluated on the EUI of the least energy efficient building.

Building	Year Built	Size	EUI	EUI Target for Colleges and Universities	EUI Target for Public Building	Project EUI Expectation
Physical Education Activities (Fitness Center)	1972	87,828 gsf	176,695	102,000	73,000	98,740
Pavilion (Performing Arts)	1978	107,920 gsf	73,617	70,000	55,000	58,051
Aquatics (Pool)	1980	19,610 gsf	100,000	102,000	73,000	73,000
Jim Thorpe Fieldhouse (Indoor Track)	1978	49,926 gsf	143,722	102,000	67,000	77,720

- University Programs addressed or encompassed by the project

As stated above, the SRC is a multi-use facility. Programs that are housed in this facility are academic, athletic, intramurals, Club Sports Federation, and community recreation opportunities. This facility is highly used by students and staff and is open from early in the morning until late in the evening for the functions that it houses.

**Academic Programs** – Eastern’s College of Health Science and Public Health (CHSPH) are co-located in Spokane and Cheney. Many degree options are housed on the Cheney Campus in the SRC facility. They are:

- Coaching (minor)
- Experiential Education and Group Facilitation (minor)
- Exercise Science
- Gerokinesiology (certificate)
- Health and Physical Education/Elementary (BAE)
- Health and Physical Education/Secondary (BAE)
- Outdoor Recreation Leadership (BA)
- Personal Trainer (Minor)
- Public Health (BS)
- Sports Management (minor)
- Therapeutic Recreation (BA)
- Athletic Training (MS)
- Wellness and Movement (MS)

**Club Sports** – The Club Sport Federation (CSF) was created in 1999 when EWU Campus Recreation and a group of student leaders saw the need for a program that would allow our students to participate in club level competition. Starting with 12 clubs and growing to the present 33 CSF organizations, the CSF quickly became a program that recognizes teams in many traditional and non-traditional sports offerings.

**Intramural Sports** – The Intramural Sports program is the largest on-campus program for students to connect, make new friends, and be active in competitive sports. Each year over 1,500 students compete in officiated flag football, basketball, volleyball, and soccer leagues.

Category – Specific Scoring Criteria

## 1. Age of the building since the last major remodel

- a. Physical Education Activities – 1972 – 87,828 gsf – 50 years old
- b. Pavilion – 1978 – 107,920 gsf – 44 years old
- c. Aquatics – 1980 – 19,610 gsf – 42 years old
- d. Jim Thorpe Fieldhouse – 1978 – 49,926 gsf – 44 years old

Aggregate Weighted Age – 45.8 years

The focus of this project would be to improve the systems that are reaching the end of their lifecycles prior their failure while realizing that other systems of the building have longer lifecycles and are still reliable for many more years. This is a cost-effective way to extend the building functionality without a major building renovation that would cost many more millions of dollars

## 2. Condition of the Building

- a. FCS – Facility Condition Score.

Building	FCA Building	FCA Services	FCA HVAC	FCA Control/EMS	FCA Plumbing	FCA Electrical
Physical Education Activities	2.5	3.2	4.0	4.0	4.0	3.0
Pavilion	2.5	3.1	3.0	4.0	4.0	3.0
Aquatics	2.3	2.7	3.5	4.0	4.0	3.0
Jim Thorpe Fieldhouse	2.4	3.2	4.0	4.0	4.0	3.0

Condition Score	Condition Class	Description
1	Superior	A building with major systems that are in good condition.
2	Adequate	A building with major systems in good condition, functioning adequately, and within their expected lifecycles.
3	Fair; Systems approaching end of expected life cycle	A building with some older major systems that, though are still functional, are approaching the end of their expected life cycles.
4	Needs Improvement; Limited functionality	A building with some major systems that are in poor condition, exceed life cycles, and require immediate attention to prevent or mitigate impacts on functions.
5	Needs Improvement; Marginal Functionality	A building with some systems that are failing and significantly restrict continued use of the building.

- b. This building is not on the state historical register

### 3. Significant health, safety, and code compliance issues

The SRC was designed and built in the mid to late 1970s, designed to then, current ventilation and fresh air standards. At that time studies and standards related to the percentage of outside air. Return air mixing ratios and building filtration standards have increased based upon research and data gathered over the past five decades. The effect of Indoor Air Quality (IAQ) on the learning environment as well as maintaining healthy environments. Recent research suggests that a school's physical environment plays a major role in academic performance. The potential effects of contaminants in building air have also become predominant in the past few years, especially during the COVID-19 pandemic and beyond.

ASHRAE (American Society of Heating, Refrigerating and Air-Conditioning Engineers) is a professional association that seeks to advance heating, ventilation, air conditioning and refrigeration systems design and construction. In conjunction with national and regional health and safety organizations ASRHAE provides standards for air quality for the Heating Ventilation and Air Conditioning industry. Washington State Department of Health states indoor air quality can have a significant effect on your health. Studies show that people spend 65 to 90 percent of their time indoors, and indoor air can be two to five times more polluted than outdoor air. The young, elderly, chronically ill, and those with respiratory or cardiovascular disease are often the most impacted by poor indoor air quality.

The current heating, cooling and ventilation information is part of the current building audit; the report can be found in Appendix A. Requirement for major renovations require the review of current building codes and regulatory requirements with the jurisdictions having authority. This may require some upgrades of peripheral systems that are out of compliance. Below are minimum levels of code compliance review items. The intent of this project is to bring this major complex into compliance with House Bill 1257 and increase the overall efficiency of the SRC which has an average age of Forty-Five years.

- House Bill 1257 Clean Building Act
- State of Washington Energy Code
- 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
- WAC 194-50-150 Normative Annex Z – Washington State Reporting requirements
- EWU Energy Efficiency Sustainability Report
- EWU Climate Action Plan
- EWU Campus Infrastructure Renewal/Backlog Maintenance Plan

### 4. Reasonableness of costs

Below is a summary of costs estimated for this project. The full audit of the SRC is attached in Appendix A. This includes the cost/benefit analysis of each of the FIM. Since this is a system upgrade and not a full building upgrade the OFM cost guide does not apply. This is improvements to Heating Ventilation and Air Conditioning, Temperature Controls and Lighting upgrades.

FIM	Building	Description	Project Estimated Cost
1	Physical Education Activities	LED Lighting Upgrade	\$202,022
2	Physical Education Activities	Gym 270 Air Handler replacement and DDC control upgrade	\$1,289,863



3	Jim Thorpe Fieldhouse	LED Lighting Upgrade	\$131,812
4	Jim Thorpe Fieldhouse	Heating/Ventilation Unit Replacement	\$1,892,161
5	Jim Thorpe Fieldhouse	Air Handling Unit Replacement	\$1,158,580
6	Pavilion	LED Lighting Ungraded	\$169,350
7	Pavilion	Lower-Level Air Handling Unit and DCC Controls Replacement	\$2,165,979
8	Pavilion	Upper-Level Air Handling Unit and DDC Controls Replacement	\$1,380,777
<b>Total</b>			<b>\$8,389,566</b>

Estimated Costs above include MACC, Bonds and Insurance, IFA Fees, Design, Construction and Project Administration, CH&P, Owner Contingency, M&V, and WSST.

Appendix A includes a cost/benefit analysis and return on investment for this requested project. The C-100 (Appendix C) calculates MACC costs of \$27 per square foot., escalated MACC \$30 per square foot.

## 5. Availability of space/utilization on campus

See Appendix B Space Utilization.

## 6. Efficiency of space allocation

- a. For each major function in the proposed facility (classroom, instructional lab, offices), identify whether space allocation will be consistent with FEPG assignable square feet standards.

This project will not change or affect the current space allocations and efficiencies. The scope of work will not change the current floor plan or building footprint. The building spaces were designed based upon the standards that were in place in the 1970s.

- b. Identify the following from the C-100 (Appendix C)
  1. Usable square feet (USF) in the proposed facility
  2. Gross square feet (GSF)
  3. Building efficiency (USF divided GSF)

Building	Assignable/Usable Space	Gross Square Feet	Efficiency
Physical Education Activities	86,172	93,859	92%
Pavilion	102,617	169,926	60%
Jim Thorpe Fieldhouse	49,926	51,316	97%
Aquatics	19,610	21,237	92%

## 7. Adequacy of space

Providing a high-quality instruction environment for activities is critical to supporting our student's outcomes and degree production. The building age and condition current do not lend themselves to providing those environments. This is an obstruction to sustaining and growing these programs.

Air Flows throughout the building do not meet current ASHRAE requirements for fresh air for building occupancy. Since the original equipment was designed and constructed in the mid to late 1970s the primary and secondary distributions systems are well past the end of their anticipated lifecycle.

Upgrades will include direct digital control (DDC) tied into the university's energy management (BACnet) system. DDC is a control process in which a microprocessor controller **constantly updates an internal information database by monitoring information from a controlled environment and continuously produces corrective output commands in response to changing control conditions.** Benefits are:

1. Increased occupant comfort
2. Decreasing operating costs and faster response time.
3. Controls Sequence for energy savings
4. Digital interface
5. Less Maintenance costs

A comprehensive process of capturing data and responding to the dynamics of outside conditions with building and user needs can greatly increase the efficiency of systems and manage energy costs in real time. As the university expands and upgrades our energy management systems the benefits reflected better space environments and lower costs.

1. Actively manage real life energy use.
2. Actively manage what is measurable
3. Actively manage energy consumption
4. Have a holistic plan
5. Partner with those who can supplement in-house knowledge
6. Establish and Occupant behavior awareness program

### **Retrofitting/Replacing HVAC systems and equipment provides several other benefits:**

1. **Energy Savings** - Retrofitting HVAC equipment is one of the quickest ways to solve chronic problems with high energy consumption. On average, small offices and retail establishments reduce energy consumption by 35% when retrofitting HVAC systems and equipment. In cold weather climates, this number can jump to as high as 40%.
2. **Increased HVAC Lifespan** - Replacing a defective part gives your HVAC equipment new life. In fact, sometimes you can even extend the life of your system by several years, spending far less money than a whole system replacement.
3. **Flexibility** - Educational spaces are constantly changing interiors are rearranged, occupants move in and out, and infrastructure requirements change. Retrofitting HVAC systems allows you to continue adapting to the needs of occupants without huge investments.
4. **Improved Comfort** - A retrofitted HVAC system will operate with more consistency than an older or poorly maintained system. This consistency leads to more control over temperature and humidity, resulting in improved comfort for occupants.

5. **New Technology** - Not only do retrofitted systems operate more consistently, but they also operate more efficiently and independently. This adds to energy savings, as mentioned, but it also decreases to costs of maintenance and service because the new part will be more dependable.
6. **Faster ROI** - Retrofitting equipment is much cheaper than investing in a whole commercial HVAC system replacement. Given the energy and service savings of retrofitted equipment, return on your investment is achieved much more quickly than a full replacement.

### Benefits of Lighting Control Systems

#### 1. Increased Energy Efficiency

- a. Smart lamps can be 80% more efficient than standard lighting lamps
- b. Only use lighting when space is in use.
- c. If programmed properly lighting is turned off when space does not have a programmed activity scheduled.

#### 2. Better programming of lighting needs to align with space usage

- a. Lighting can be scheduled to align with space use. Spaces that are used less will be “asleep” saving on electricity and wear on lamps.

#### 3. Enhanced Convenience

- a. Users can make on the spot changes when needed and after that need is fulfilled the system returns to standard programming processes

#### 4. Improved Safety

- a. Allows for lighting to activate when needed for personal safety and property protection.

On May 7, 2019, the Clean Buildings bill ([HB 1257, 2019](#)) was signed into law. The objective is to lower costs and pollution from fossil fuel consumption in the state’s existing buildings, especially large commercial buildings. The law requires the Washington State Department of Commerce to develop and implement an energy performance standard for these buildings and provide incentives to encourage efficiency improvements.

Buildings are the most rapidly growing source of greenhouse gas emissions in Washington state. As our population continues to grow, so does the number of business spaces being constructed. Each time we construct a new building or remodel one, we either lock in inefficient energy use or we embrace materials and technologies that will save energy and reduce emissions for decades to come.

The buildings sector is the state’s second-biggest carbon polluter behind transportation. Investment in building energy efficiency is also the most cost-efficient way to significantly reduce greenhouse gas emissions. The solution to cutting building emissions lies in energy efficiency – the fastest, cheapest way to cut carbon emissions and other harmful pollution.

Washington state’s new Commercial Clean Buildings Performance Standard is designed to secure this energy efficiency opportunity. Through the university’s audit and analysis, we believe that this project will meet and exceed the intentions of HB 1257 as enacted. Secondly and as important, this project will update systems in the Sports and Recreation Center to increase efficiency, extend systems lifecycles, improve user’s comfort levels in the facility and improve maintenance and operations. The return on investment will pay dividends for many years to come.

## APPENDICES

# Supporting Reference Data

## Appendix A – Energy Audit Report

PREPARED BY: KELLY HARKINS PE

KJH ENGINEERING PLLC 610 EAST 3RD STREET MOSCOW, IDAHO 83843

## Appendix A

# EASTERN WASHINGTON UNIVERSITY SPORTS AND RECREATION CENTER ENERGY AUDIT REPORT JULY 21ST, 2022



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KJH ENGINEERING – EASTERN WASHINGTON UNIVERSITY  
SPORTS AND RECREATION CENTER ENERGY AUDIT REPORT

A. EXECUTIVE SUMMARY

KJH Engineering was contacted by Dave Walters of Eastern Washington University, Construction and Planning Department in December of 2021 requesting a proposal to provide an energy audit of the Athletic Facilities (Phase Buildings). The scope of work and terms were finalized in March of 2022 and KJH was placed under contract.

The final scope of work for the energy audit covered the Pavilion (Reese Court), Physical Education Activities Building (PEA) Gymnasium 270, and the Jim Thorpe Fieldhouse (JTF). The project involves performing an ASHRAE Level 2 Audit process that would meet the requirements of State of Washington House Bill 1257. This process involves the determination of each buildings energy utilization index (EUI) defined in units of BTU/Square Foot per year. Once the baseline EUI is determined, facility improvement measures (FIMS) are developed to lower the EUI to meet the ASHRAE targets identified within the Washington State Clean Buildings Performance Standard (ASHARE Standard 100-2018).

KJH subcontracted with Apollo Solutions Group in Spokane to perform the creation of a calibrated baseline energy model of each facility and to assist with the development of the facility improvement measures. KJH gathered all applicable architectural, electrical and mechanical drawings and utility consumption data that Apollo would require to build the energy models. KJH also gathered all of the applicable mechanical equipment submittals that identified the capacities of all equipment. KJH worked with Dustin Walters of EWU to collect and record all existing sequences of operation that are currently operating the mechanical equipment including set-points, reset schedules, equipment enable/disable basis and equipment scheduling. KJH located the submittals for the equipment that is operating with pneumatic controls and recorded the original reset schedules and operating parameters.

To calculate each building's EUI, we first collected data from the utility data meters for each building. Then using this utility data, field notes and drawings, we created the Trace 3D energy model for each building. This model is created by inputting all of the data that we have and calibrating the outputs to match the utility bills within 5%.



KJH ENGINEERING – EASTERN WASHINGTON UNIVERSITY  
SPORTS AND RECREATION CENTER ENERGY AUDIT REPORT

When creating the model, we will sometimes find that some utility data doesn't make sense, and thus not usable, and in this case, we found a few meters that we didn't think that we could use.

First, we found some problems with the steam condensate data for all three buildings. When the data was used in our steam calculations to back calculate the Therms consumed at each building, we found that once we converted the gallons of condensate values to Therms, the values were much lower than we had anticipated for buildings of this size. Because of this, we used the annual Therms consumption that were calculated by the Trace 3D Model. We used these values to calculate the EUI for each building. Since the equipment information, occupancy schedules, equipment schedules, and all other available data was input into Trace, we believe that the calibrated Therm Consumption is accurate to the building's current HVAC Systems, operation, and usage.

Another problem that we ran into was that there was not a meter to measure electrical demand for the Jim Thorpe Fieldhouse. Because of this, we couldn't display electrical demand savings based on historical data, but we did show savings based on the Trace 3D model's calculated demand for JTF.

The cooling BTU/hr data only gave us a cooling load profile, which followed a typical load profile for cooling. The meter is based on the flow rate and supply and return temperatures. The data followed the cooling load profile that we believe we would typically see out of a building, but it didn't help us calibrate the baseline, but did allow us to make sure our cooling load profiles that the model calculated followed a similar profile.

The electrical data that was given to us does not include the cooling electrical load from Rozell. We feel that the model gave us a sufficient estimate of the cooling electrical load required for the respective buildings.

B. PE ACTIVITIES BUILDING (PEA)

I) Mechanical Equipment: This facility is served with central campus steam and chilled water. Zones and gymnasiums are served by air handling units that utilize various styles of units; multi-zones, heating and ventilating and heating, ventilating and cooling. Perimeter areas and some internal zones are heated with hot water generated by a steam shell in tube heat exchanger. The large domestic hot water load is served by (3) Aerco steam generators with accumulator storage tanks. EWU has replaced most all equipment due to normal wear and tear with the exception of (2) air handling units serving Gymnasium 270. These units are ceiling suspended heating and ventilating units served by pneumatic controls.

II) Controls: The majority of this facility is served by an Alerton DDC Control system with the exception of air handling units 3 and 4 which are served by a Delta system. The domestic hot water convertors are monitored by the Alerton system but are locally controlled with Robert Shaw pneumatics. As mentioned above, Gymnasium 270 is controlled by a Robert Shaw pneumatic system.

III) Lighting: This facility has a large quantity of fluorescent fixtures with a mixture of T8's and T5's. Resound Energy performed a lighting audit that will be discussed below in the

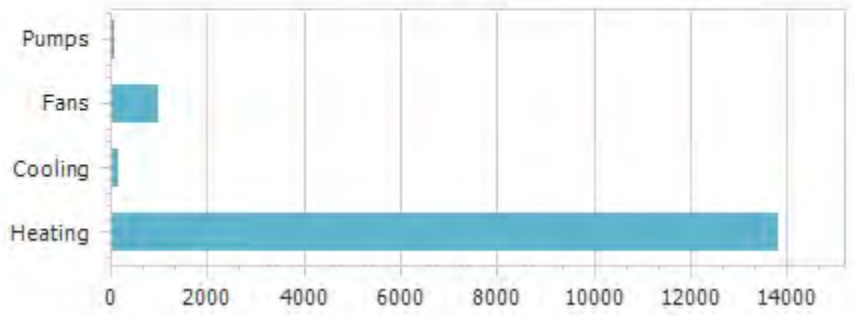
IV) ENERGY MODEL BUILDING/CONSUMPTION SUMMARY (BASELINE VS ALL NEW FIMS)

# PEA BASELINE CONSUMPTION SUMMARY

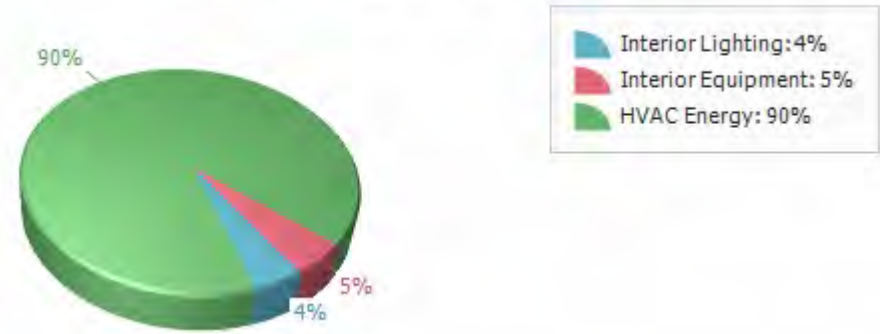
## Site Consumption Summary

### Energy Consumption

HVAC Energy Usage  
(Mbtu)



Total Site Energy Breakdown



Component	Electricity (kWh)	Gas (Mbtu)	District Cooling (Mbtu)	District Heating (Mbtu)	Other Utilities (Mbtu)	Site Energy (kBtu)	Site Energy Use Intensity (kBtu/ft²)	Source Energy (kBtu)	Source Energy Use Intensity (kBtu/ft²)	Water (gal)
Heating	3	13,808	0	0	0	13,808,359	134.06	14,968,281	145.32	0
Cooling	47,006	0	0	0	0	160,390	1.56	507,954	4.93	0
Fans	279,853	0	0	0	0	954,897	9.27	3,024,160	29.36	0
Pumps	21,906	0	0	0	0	74,745	0.73	236,717	2.3	0
Heat Rejection	0	0	0	0	0	0	0	0	0	0
Humidification	0	0	0	0	0	0	0	0	0	0
Heat Recovery	0	0	0	0	0	0	0	0	0	0
HVAC	348,767	13,808	0	0	0	14,998,391	145.61	18,737,112	181.91	0
Water Systems	0	0	0	0	0	0	0	0	0	0
Interior Lighting	216,550	0	0	0	0	738,899	7.17	2,340,094	22.72	0
Exterior Lighting	0	0	0	0	0	0	0	0	0	0
Interior Equipment	248,208	0	0	0	0	846,922	8.22	2,682,202	26.04	0
Exterior Equipment	0	0	0	0	0	0	0	0	0	0
Refrigeration	0	0	0	0	0	0	0	0	0	0
Non-HVAC	464,758	0	0	0	0	1,585,821	15.4	5,022,296	48.76	0
Generators	0	0	0	0	0	0	0	0	0	0
Site Generation	0	0	0	0	0	0	0	0	0	0
Grand Total	813,525	13,808	0	0	0	16,584,212	161.01	23,759,408	230.66	0

Gross Floor Area: 102,973 ft²	Region: West	Building Type: Office	CBECS Survey Year: 2012	Benchmark EUI: 69.2 kBtu/ft²/yr
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If the region reports as "All US" it means the data for the particular region was withheld because the Relative Standard Error was greater than 50 percent or fewer than 20 buildings were sampled.

Alternative: Primary

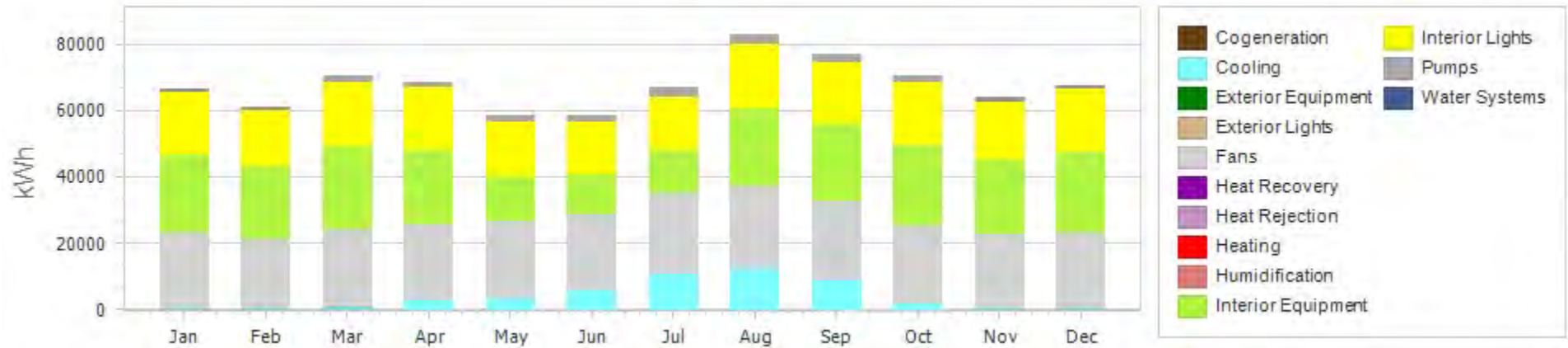
Calculated at: Jul 06, 2022 - 04:14 PM

File name: EWU PE Buildings 7-5.mdf

TRACE™ 3D Plus 4.01.97

## Monthly Energy End Use

### Electricity



	January	February	March	April	May	June	July	August	September	October	November	December	Grand Total
Cogeneration	0	0	0	0	0	0	0	0	0	0	0	0	0
Cooling	80	300	959	2,606	3,133	5,785	10,824	12,177	8,799	1,718	445	182	47,006
Exterior Equipment	0	0	0	0	0	0	0	0	0	0	0	0	0
Exterior Lights	0	0	0	0	0	0	0	0	0	0	0	0	0
Fans	23,256	20,996	23,402	23,042	23,510	23,009	24,512	24,795	23,856	23,710	22,524	23,242	279,854
Heat Recovery	0	0	0	0	0	0	0	0	0	0	0	0	0
Heat Rejection	0	0	0	0	0	0	0	0	0	0	0	0	0
Heating	1	0	0	0	0	0	0	0	0	0	0	0	3
Humidification	0	0	0	0	0	0	0	0	0	0	0	0	0
Interior Equipment	23,555	21,770	24,795	22,747	13,341	11,713	12,693	23,762	23,361	24,166	22,159	24,147	248,209
Interior Lights	18,649	17,215	19,632	18,503	16,650	16,075	16,294	19,364	18,435	19,093	17,642	18,998	216,550
Pumps	844	1,079	1,564	1,886	1,919	2,206	2,879	2,897	2,575	1,831	1,230	996	21,905
Water Systems	0	0	0	0	0	0	0	0	0	0	0	0	0
Grand Total	66,385	61,360	70,352	68,784	58,554	58,788	67,201	82,995	77,026	70,518	63,999	67,565	813,528

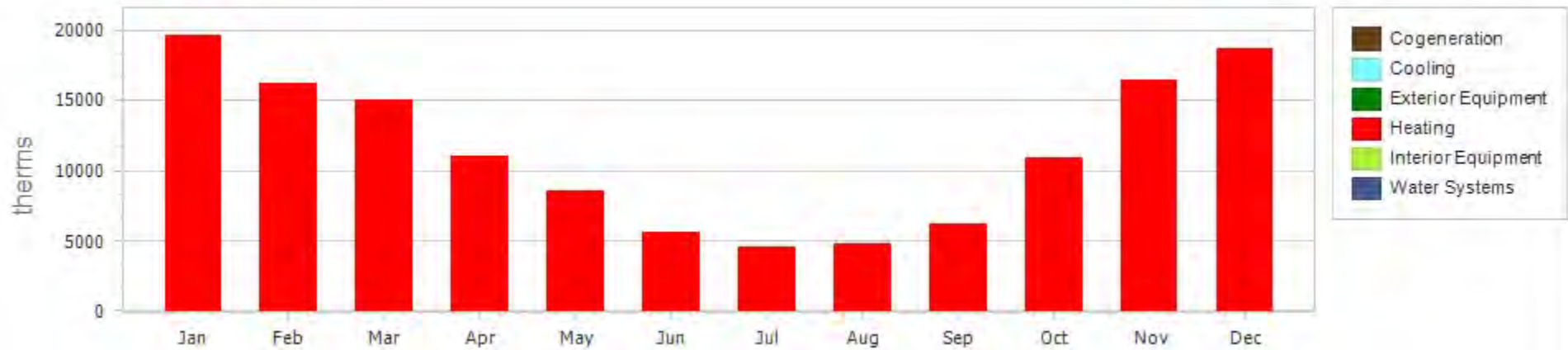
Alternative: Primary

File name: EWU PE Buildings 7-5.mdf

TRACE™ 3D Plus 4.01.97

Calculated at: Jul 06, 2022 - 04:14 PM

### Natural Gas



	January	February	March	April	May	June	July	August	September	October	November	December	Grand Total
Cogeneration	0	0	0	0	0	0	0	0	0	0	0	0	0
Cooling	0	0	0	0	0	0	0	0	0	0	0	0	0
Exterior Equipment	0	0	0	0	0	0	0	0	0	0	0	0	0
Heating	19,689	16,287	15,100	11,058	8,632	5,653	4,558	4,777	6,262	10,896	16,486	18,721	138,118
Interior Equipment	0	0	0	0	0	0	0	0	0	0	0	0	0
Water Systems	0	0	0	0	0	0	0	0	0	0	0	0	0
Grand Total	19,689	16,287	15,100	11,058	8,632	5,653	4,558	4,777	6,262	10,896	16,486	18,721	138,118

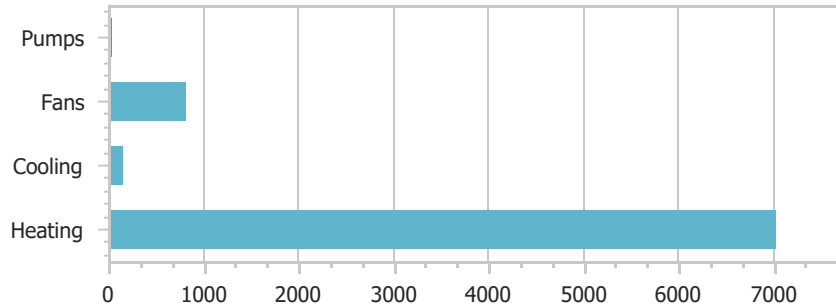
# PEA ALL NEW FIMS CONSUMPTION SUMMARY

## Site Consumption Summary

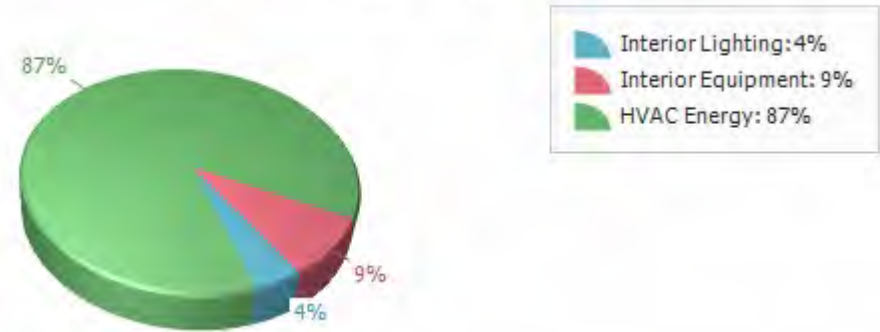
### Energy Consumption

HVAC Energy Usage

(Mbtu)



Total Site Energy Breakdown



Component	Electricity (kWh)	Gas (Mbtu)	District Cooling (Mbtu)	District Heating (Mbtu)	Other Utilities (Mbtu)	Site Energy (kBtu)	Site Energy Use Intensity (kBtu/ft²)	Source Energy (kBtu)	Source Energy Use Intensity (kBtu/ft²)	Water (gal)
Heating	2,731	7,012	0	0	0	7,021,278	68.16	7,630,472	74.08	0
Cooling	43,861	0	0	0	0	149,660	1.45	473,974	4.6	0
Fans	238,014	0	0	0	0	812,137	7.88	2,572,038	24.97	0
Pumps	11,453	0	0	0	0	39,079	0.38	123,762	1.2	0
Heat Rejection	0	0	0	0	0	0	0	0	0	0
Humidification	0	0	0	0	0	0	0	0	0	0
Heat Recovery	0	0	0	0	0	0	0	0	0	0
HVAC	296,058	7,012	0	0	0	8,022,153	77.88	10,800,246	104.85	0
Water Systems	0	0	0	0	0	0	0	0	0	0
Interior Lighting	116,764	0	0	0	0	398,415	3.87	1,261,780	12.25	0
Exterior Lighting	0	0	0	0	0	0	0	0	0	0
Interior Equipment	248,208	0	0	0	0	846,922	8.22	2,682,202	26.04	0
Exterior Equipment	0	0	0	0	0	0	0	0	0	0
Refrigeration	0	0	0	0	0	0	0	0	0	0
Non-HVAC	364,972	0	0	0	0	1,245,337	12.09	3,943,982	38.29	0
Generators	0	0	0	0	0	0	0	0	0	0
Site Generation	0	0	0	0	0	0	0	0	0	0
Grand Total	661,031	7,012	0	0	0	9,267,490	89.97	14,744,228	143.14	0

Gross Floor Area: 102,973 ft²

Region: West

Building Type: Office

CBECS Survey Year: 2012

Benchmark EUI: 69.2 kBtu/ft²/yr

If the region reports as "All US" it means the data for the particular region was withheld because the Relative Standard Error was greater than 50 percent or fewer than 20 buildings were sampled.

Alternative: Demand Control Ventilation

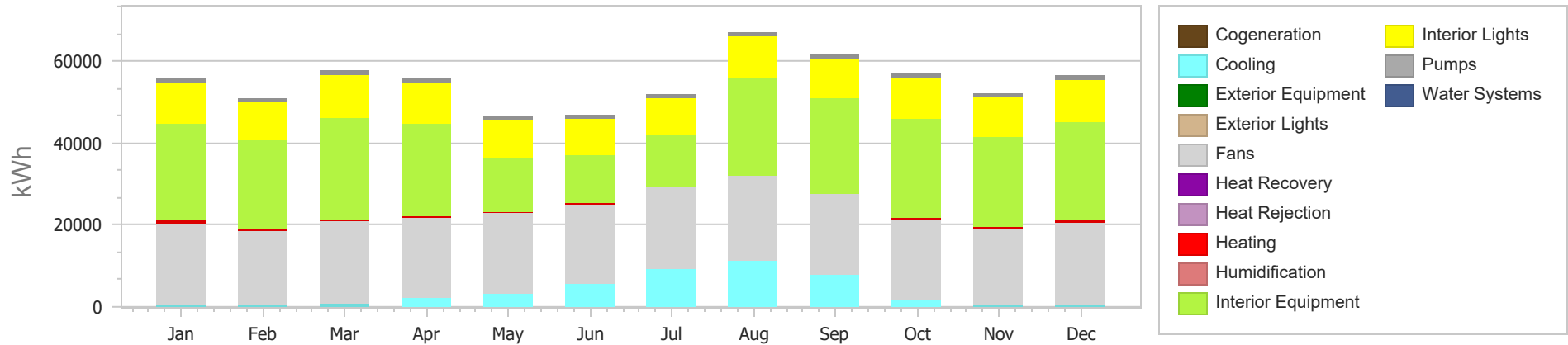
Calculated at: Jul 11, 2022 - 12:24 PM

File name: EWU PE Buildings 7-5.mdf

TRACE™ 3D Plus 4.13.207

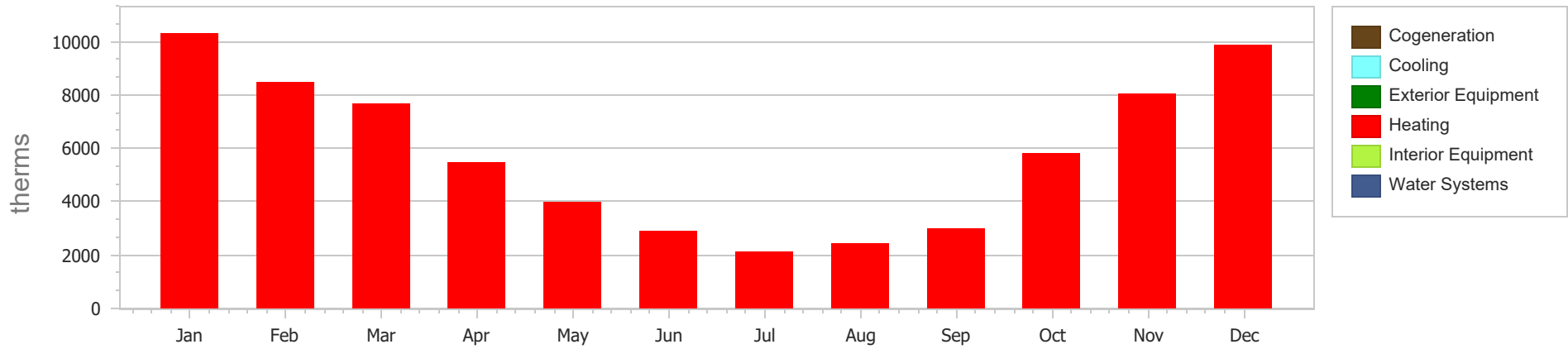
# Monthly Energy End Use

## Electricity



	January	February	March	April	May	June	July	August	September	October	November	December	Grand Total
Cogeneration	0	0	0	0	0	0	0	0	0	0	0	0	0
Cooling	430	423	766	2,322	3,193	5,616	9,302	11,299	7,868	1,714	452	475	43,860
Exterior Equipment	0	0	0	0	0	0	0	0	0	0	0	0	0
Exterior Lights	0	0	0	0	0	0	0	0	0	0	0	0	0
Fans	19,837	18,153	20,516	19,851	20,103	19,851	20,201	20,893	19,728	20,104	18,651	20,127	238,014
Heat Recovery	0	0	0	0	0	0	0	0	0	0	0	0	0
Heat Rejection	0	0	0	0	0	0	0	0	0	0	0	0	0
Heating	1,093	488	145	10	5	1	0	0	0	20	392	576	2,730
Humidification	0	0	0	0	0	0	0	0	0	0	0	0	0
Interior Equipment	23,555	21,770	24,795	22,747	13,341	11,713	12,693	23,762	23,361	24,166	22,159	24,147	248,209
Interior Lights	10,011	9,224	10,502	9,902	9,158	8,856	8,962	10,381	9,872	10,227	9,502	10,167	116,764
Pumps	1,088	1,004	1,063	928	957	896	835	844	817	911	994	1,116	11,452
Water Systems	0	0	0	0	0	0	0	0	0	0	0	0	0
Grand Total	56,014	51,061	57,787	55,760	46,758	46,932	51,993	67,179	61,646	57,140	52,150	56,607	661,029

### Natural Gas



	January	February	March	April	May	June	July	August	September	October	November	December	Grand Total
Cogeneration	0	0	0	0	0	0	0	0	0	0	0	0	0
Cooling	0	0	0	0	0	0	0	0	0	0	0	0	0
Exterior Equipment	0	0	0	0	0	0	0	0	0	0	0	0	0
Heating	10,312	8,489	7,681	5,468	3,987	2,913	2,114	2,432	2,996	5,816	8,050	9,880	70,137
Interior Equipment	0	0	0	0	0	0	0	0	0	0	0	0	0
Water Systems	0	0	0	0	0	0	0	0	0	0	0	0	0
Grand Total	10,312	8,489	7,681	5,468	3,987	2,913	2,114	2,432	2,996	5,816	8,050	9,880	70,137



V) FIMS list for this building.

FIM #1 PEA: Retrofit existing T5 & T8 lighting fixtures with new LED fixtures

FIM #2 PEA: Remove and replace (2) existing constant volume variable temperature ceiling suspended heating and ventilating units with Haakon Custom units that will be mounted on the roof. Each unit will have new ductwork distribution systems and Alerton Controls installed. Add demand control ventilation to all (13) air handling units in the facility.

C. PAVILION (REESE COURT)

I) Mechanical Equipment: This facility is served by (5) air handling units that provide heating, cooling and ventilation. The heating and cooling systems are served by campus steam and chilled water. The (3) smaller units (AH-1, 2 & 3). Serve the lower-level locker rooms and storage areas. The (2) large units (AH-4 & 5) serve Reese Court and certain surrounding areas. Perimeter areas and some internal zones are heated and cooled with fan coil units, fin tubes and cabinet unit heaters. The heating hot water is generated by a steam shell in tube heat exchanger utilizing campus steam. The campus chilled water pressure is boosted by a 20 Horsepower chilled water pump (CP-2) that serves the entire facility. AH-4 & 5 are large “Joy Manufacturer 1000 Series” axial vane fans. Each system uses a 50,000 CFM supply Joy fan and a 34,000 CFM Joy return fan. The domestic hot water load is served by shell in tube heat exchanger and accumulator storage tank.

II) Controls: The majority of controls are Alerton DDC with some smaller fan coils, fin tubes and cabinet unit heaters served by Robert Shaw pneumatic controls.

III) Lighting: This facility has a large quantity of fluorescent fixtures with a mixture of T8's and T5's. Resound Energy performed a lighting audit that will be discussed below in the

IV) ENERGY MODEL BUILDING/CONSUMPTION SUMMARY (BASELINE VS ALL NEW FIMS)

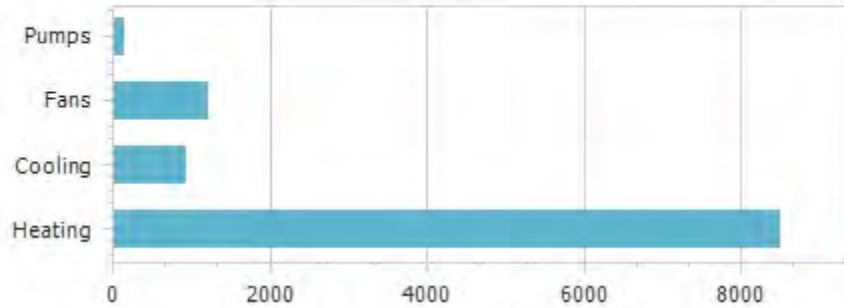
# PAVILION BASELINE SITE CONSUMPTION SUMMARY

## Site Consumption Summary

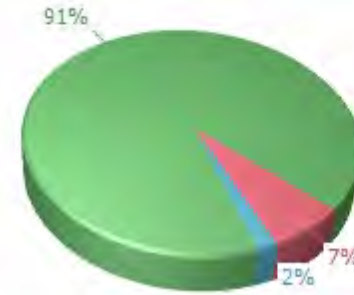
### Energy Consumption

HVAC Energy Usage

(Mbtu)



Total Site Energy Breakdown



Component	Electricity (kWh)	Gas (Mbtu)	District Cooling (Mbtu)	District Heating (Mbtu)	Other Utilities (Mbtu)	Site Energy (kBtu)	Site Energy Use Intensity (kBtu/ft²)	Source Energy (kBtu)	Source Energy Use Intensity (kBtu/ft²)	Water (gal)
Heating	219	8,498	0	0	0	8,498,261	92.16	9,213,674	99.92	0
Cooling	270,675	0	0	0	0	923,581	10.02	2,924,982	31.72	0
Fans	355,522	0	0	0	0	1,213,092	13.16	3,841,863	41.66	0
Pumps	37,706	0	0	0	0	128,657	1.4	407,456	4.42	0
Heat Rejection	0	0	0	0	0	0	0	0	0	0
Humidification	0	0	0	0	0	0	0	0	0	0
Heat Recovery	0	0	0	0	0	0	0	0	0	0
HVAC	664,122	8,498	0	0	0	10,763,591	116.72	16,387,976	177.72	0
Water Systems	0	0	0	0	0	0	0	0	0	0
Interior Lighting	63,808	0	0	0	0	217,723	2.36	689,529	7.48	0
Exterior Lighting	0	0	0	0	0	0	0	0	0	0
Interior Equipment	236,014	22	0	0	0	826,885	8.97	2,573,810	27.91	0
Exterior Equipment	0	0	0	0	0	0	0	0	0	0
Refrigeration	0	0	0	0	0	0	0	0	0	0
Non-HVAC	299,822	22	0	0	0	1,044,608	11.33	3,263,339	35.39	0
Generators	0	0	0	0	0	0	0	0	0	0
Site Generation	0	0	0	0	0	0	0	0	0	0
Grand Total	963,944	8,519	0	0	0	11,808,199	128.05	19,651,315	213.11	0

Gross Floor Area: 92,185 ft²

Region: West

Building Type: Office

CBECS Survey Year: 2012

Benchmark EUI: 69.2 kBtu/ft²/yr

If the region reports as "All US" it means the data for the particular region was withheld because the Relative Standard Error was greater than 50 percent or fewer than 20 buildings were sampled.

Alternative: Upper AHU Retrofit

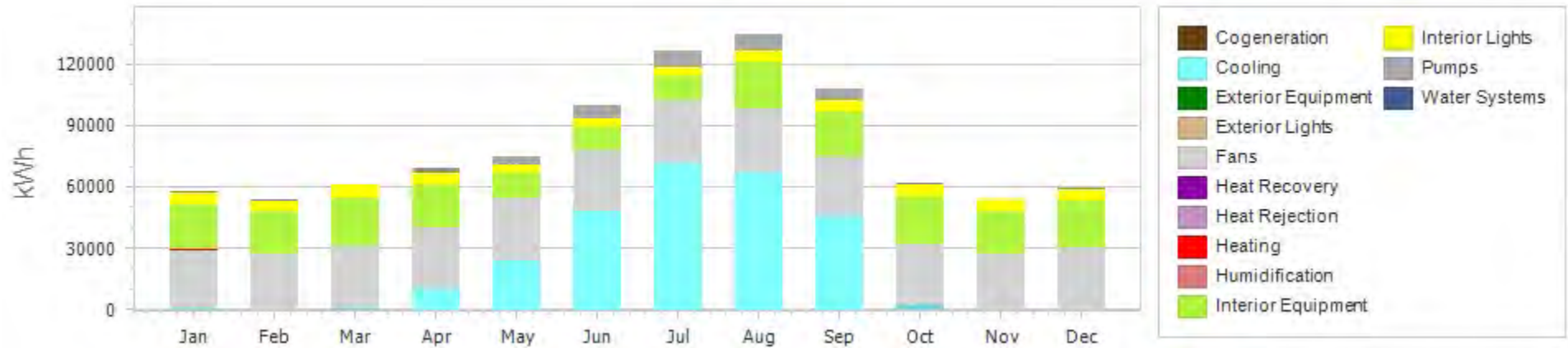
Calculated at: Jul 06, 2022 - 03:05 PM

File name: EWU Pavilion 7-5.mdf

TRACE™ 3D Plus 4.01.97

## Monthly Energy End Use

### Electricity



	January	February	March	April	May	June	July	August	September	October	November	December	Grand Total
Cogeneration	0	0	0	0	0	0	0	0	0	0	0	0	0
Cooling	118	109	493	9,884	24,378	48,206	72,201	67,226	45,625	2,249	76	111	270,676
Exterior Equipment	0	0	0	0	0	0	0	0	0	0	0	0	0
Exterior Lights	0	0	0	0	0	0	0	0	0	0	0	0	0
Fans	29,151	27,120	31,111	30,107	30,131	30,107	30,131	31,111	29,127	30,131	27,167	30,131	355,522
Heat Recovery	0	0	0	0	0	0	0	0	0	0	0	0	0
Heat Rejection	0	0	0	0	0	0	0	0	0	0	0	0	0
Heating	29	23	21	17	16	13	10	10	12	18	24	27	220
Humidification	0	0	0	0	0	0	0	0	0	0	0	0	0
Interior Equipment	22,384	20,678	23,526	21,610	12,544	11,199	12,159	22,755	22,196	22,955	21,054	22,955	236,015
Interior Lights	5,670	5,262	6,020	5,654	4,301	4,110	4,244	5,906	5,651	5,845	5,301	5,845	63,809
Pumps	515	466	466	1,795	3,868	6,453	8,331	7,879	6,007	1,060	376	492	37,706
Water Systems	0	0	0	0	0	0	0	0	0	0	0	0	0
Grand Total	57,867	53,659	61,636	69,067	75,237	100,088	127,075	134,886	108,617	62,257	53,998	59,560	963,948

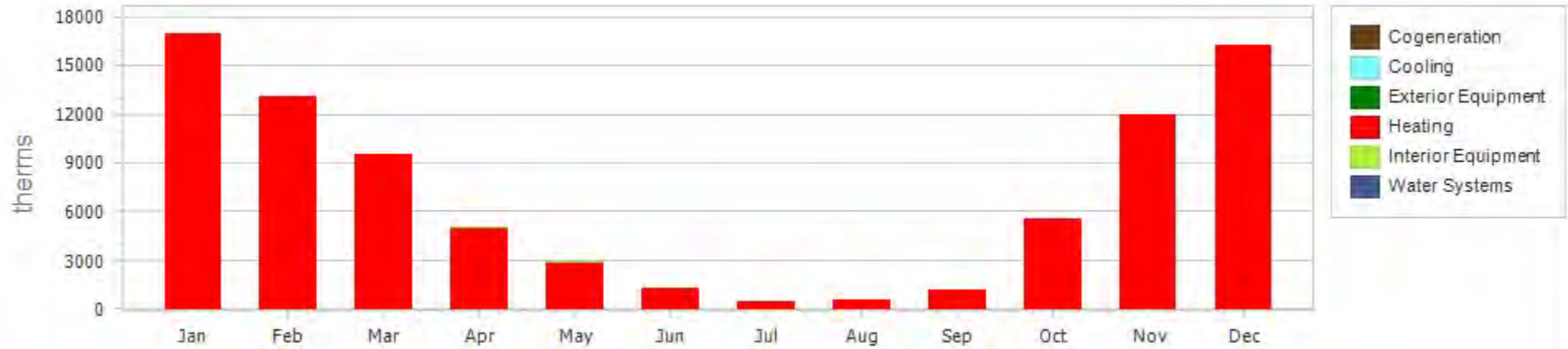
Alternative: Upper AHU Retrofit

File name: EWU Pavilion 7-5.mdf

TRACE™ 3D Plus 4.01.97

Calculated at: Jul 06, 2022 - 03:05 PM

### Natural Gas



	January	February	March	April	May	June	July	August	September	October	November	December	Grand Total
Cogeneration	0	0	0	0	0	0	0	0	0	0	0	0	0
Cooling	0	0	0	0	0	0	0	0	0	0	0	0	0
Exterior Equipment	0	0	0	0	0	0	0	0	0	0	0	0	0
Heating	17,005	13,174	9,577	5,014	2,863	1,298	446	533	1,186	5,595	12,020	16,284	84,997
Interior Equipment	19	18	20	19	20	15	15	16	19	19	18	19	216
Water Systems	0	0	0	0	0	0	0	0	0	0	0	0	0
Grand Total	17,024	13,192	9,598	5,033	2,883	1,313	461	549	1,205	5,614	12,038	16,303	85,212

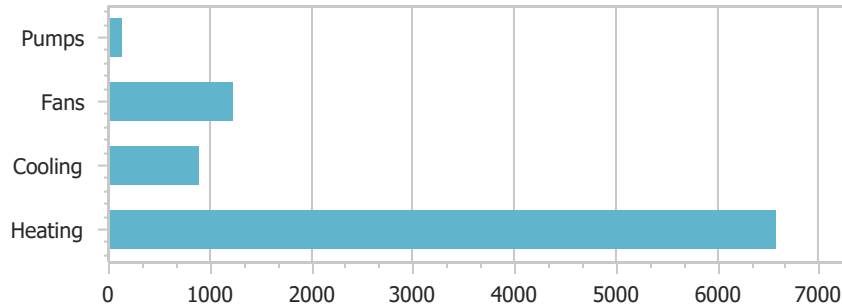
# PAVILION ALL NEW FIMS SITE CONSUMPTION SUMMARY

## Site Consumption Summary

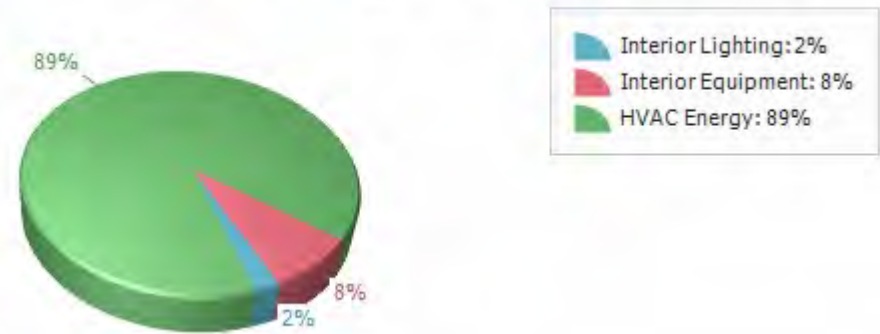
### Energy Consumption

HVAC Energy Usage

(Mbtu)



Total Site Energy Breakdown



Component	Electricity (kWh)	Gas (Mbtu)	District Cooling (Mbtu)	District Heating (Mbtu)	Other Utilities (Mbtu)	Site Energy (kBtu)	Site Energy Use Intensity (kBtu/ft²)	Source Energy (kBtu)	Source Energy Use Intensity (kBtu/ft²)	Water (gal)
Heating	219	6,571	0	0	0	6,571,813	71.27	7,125,405	77.27	0
Cooling	260,969	0	0	0	0	890,465	9.66	2,820,102	30.58	0
Fans	359,872	0	0	0	0	1,227,935	13.32	3,888,871	42.17	0
Pumps	37,972	0	0	0	0	129,567	1.41	410,337	4.45	0
Heat Rejection	0	0	0	0	0	0	0	0	0	0
Humidification	0	0	0	0	0	0	0	0	0	0
Heat Recovery	0	0	0	0	0	0	0	0	0	0
HVAC	659,033	6,571	0	0	0	8,819,780	95.65	14,244,715	154.48	0
Water Systems	0	0	0	0	0	0	0	0	0	0
Interior Lighting	63,808	0	0	0	0	217,723	2.36	689,529	7.48	0
Exterior Lighting	0	0	0	0	0	0	0	0	0	0
Interior Equipment	236,014	22	0	0	0	826,885	8.97	2,573,810	27.91	0
Exterior Equipment	0	0	0	0	0	0	0	0	0	0
Refrigeration	0	0	0	0	0	0	0	0	0	0
Non-HVAC	299,822	22	0	0	0	1,044,608	11.33	3,263,339	35.39	0
Generators	0	0	0	0	0	0	0	0	0	0
Site Generation	0	0	0	0	0	0	0	0	0	0
Grand Total	958,856	6,593	0	0	0	9,864,388	106.97	17,508,054	189.86	0

Gross Floor Area: 92,185 ft²

Region: West

Building Type: Office

CBECS Survey Year: 2012

Benchmark EUI: 69.2 kBtu/ft²/yr

If the region reports as "All US" it means the data for the particular region was withheld because the Relative Standard Error was greater than 50 percent or fewer than 20 buildings were sampled.

Alternative: Upper AHU Retrofit & DCV

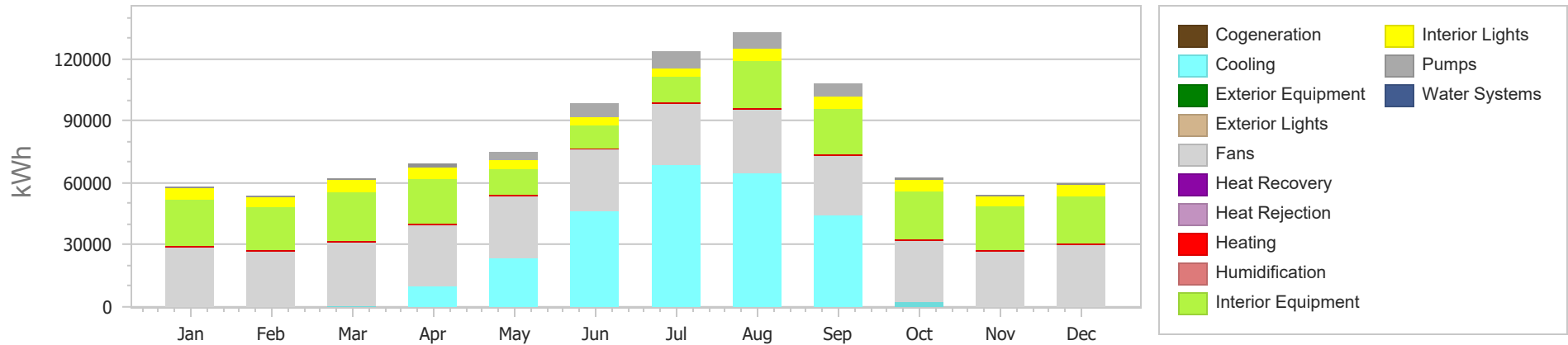
Calculated at: Jul 12, 2022 - 08:36 AM

File name: EWU Pavilion 7-5.mdf

TRACE™ 3D Plus 4.13.207

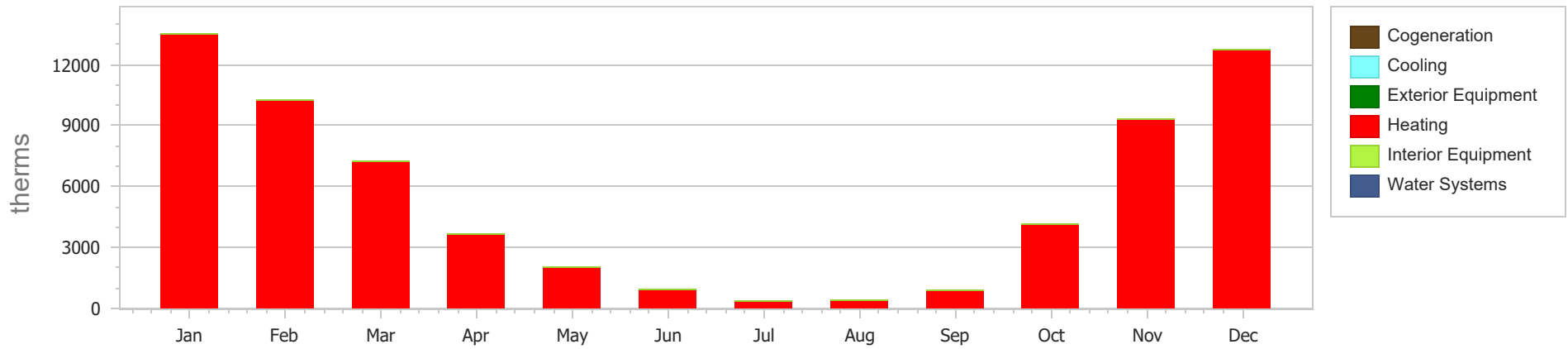
# Monthly Energy End Use

## Electricity



	January	February	March	April	May	June	July	August	September	October	November	December	Grand Total
Cogeneration	0	0	0	0	0	0	0	0	0	0	0	0	0
Cooling	104	96	524	9,893	23,743	46,338	68,601	64,822	44,391	2,283	90	85	260,970
Exterior Equipment	0	0	0	0	0	0	0	0	0	0	0	0	0
Exterior Lights	0	0	0	0	0	0	0	0	0	0	0	0	0
Fans	29,507	27,452	31,492	30,476	30,499	30,476	30,499	31,492	29,483	30,499	27,499	30,499	359,873
Heat Recovery	0	0	0	0	0	0	0	0	0	0	0	0	0
Heat Rejection	0	0	0	0	0	0	0	0	0	0	0	0	0
Heating	29	24	21	17	16	13	10	10	12	18	24	27	220
Humidification	0	0	0	0	0	0	0	0	0	0	0	0	0
Interior Equipment	22,384	20,678	23,526	21,610	12,544	11,199	12,159	22,755	22,196	22,955	21,054	22,955	236,015
Interior Lights	5,670	5,262	6,020	5,654	4,301	4,110	4,244	5,906	5,651	5,845	5,301	5,845	63,809
Pumps	463	420	542	1,918	3,859	6,467	8,376	7,908	6,091	1,112	406	408	37,971
Water Systems	0	0	0	0	0	0	0	0	0	0	0	0	0
Grand Total	58,157	53,933	62,125	69,568	74,962	98,603	123,888	132,892	107,824	62,713	54,373	59,820	958,859

### Natural Gas



	January	February	March	April	May	June	July	August	September	October	November	December	Grand Total
Cogeneration	0	0	0	0	0	0	0	0	0	0	0	0	0
Cooling	0	0	0	0	0	0	0	0	0	0	0	0	0
Exterior Equipment	0	0	0	0	0	0	0	0	0	0	0	0	0
Heating	13,523	10,289	7,260	3,675	2,063	956	384	424	908	4,176	9,324	12,745	65,727
Interior Equipment	19	18	20	19	20	15	15	16	19	19	18	19	216
Water Systems	0	0	0	0	0	0	0	0	0	0	0	0	0
Grand Total	13,542	10,306	7,281	3,694	2,083	971	398	440	927	4,196	9,342	12,764	65,943

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SPORTS AND RECREATION CENTER ENERGY AUDIT REPORT

V) FIMS list for this building.

FIM #6: Retrofit existing T5 & T8 lighting fixtures with new LED fixtures

FIM #7: Lower-Level Air Handling Units: Remove the existing (3) air handling units with (4) new air handling units. The single multi-zone unit will be broken up into (2) separate zones served by (2) new air handling units. The existing ductwork will be modified to accommodate the (2) new units. Each new air handling unit will have new Alerton Controls.

FIM #8: Reese Court (Upper Air Handling Units): Remove and replace the supply and return axial “Joy” fans serving air handling units 4 & 5 with fan wall arrays with variable frequency drives. Remove the sound attenuators on either side of the fans and install new ductwork. Each air handling unit will have new Alerton Controls. Add demand control ventilation to AHU-4 & AHU-5.

D. JIM THORPE FIELDHOUSE

I) Mechanical Equipment: The fieldhouse floor is served by (2) rooftop mounted heating and ventilating units. Steam is supplied to these units from the central campus steam plant. Each unit is rated at 24,000 CFM. The discharge of each unit is served by a rotating discharge air nozzle. The handball courts are served by a multi-zone air handling unit. Campus steam and chilled water are supplied to this unit. The hallway adjacent to the handball courts is served by a steam air handling unit. There is supplemental heat provided by hydronic baseboard and fan coil units. This heating hot water is supplied from a shell and tube heat exchanger supplied with campus steam. The storage area is heated with (4) steam unit heaters.

II) Controls: The entire facility is served by the original Honeywell pneumatic control system.

III) Lighting: This facility has a large quantity of fluorescent fixtures. Resound Energy performed a lighting audit that will be discussed below in the FIMS list for this building.

IV) ENERGY MODEL BUILDING/CONSUMPTION SUMMARY (BASELINE VS ALL NEW FIMS)



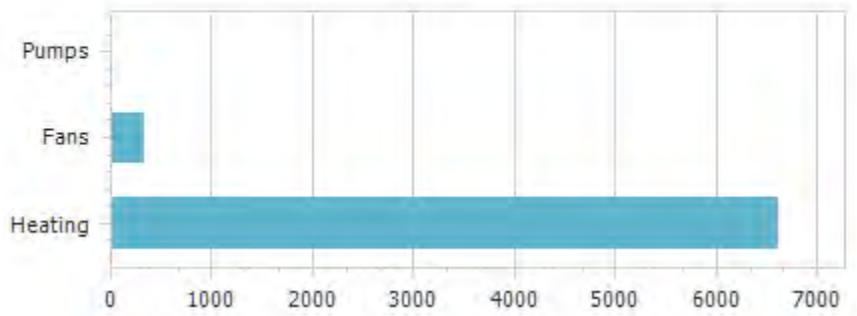
# JTF BASELINE SITE CONSUMPTION SUMMARY

## Site Consumption Summary

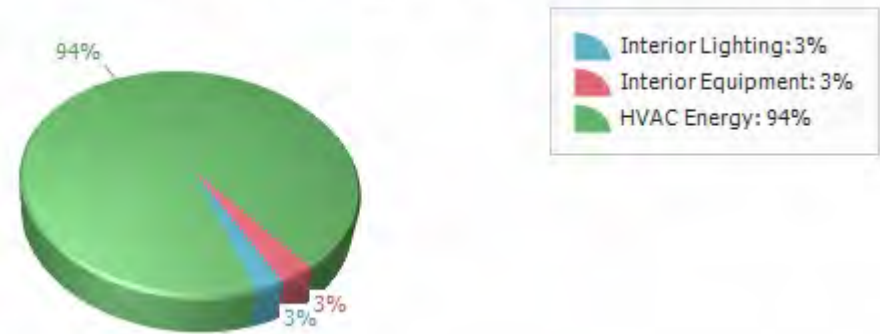
### Energy Consumption

HVAC Energy Usage

(Mbtu)



Total Site Energy Breakdown



Component	Electricity (kWh)	Gas (Mbtu)	District Cooling (Mbtu)	District Heating (Mbtu)	Other Utilities (Mbtu)	Site Energy (kBtu)	Site Energy Use Intensity (kBtu/ft²)	Source Energy (kBtu)	Source Energy Use Intensity (kBtu/ft²)	Water (gal)
Heating	0	6,610	0	0	0	6,609,859	131.8	7,165,087	142.87	0
Cooling	0	0	0	0	0	0	0	0	0	0
Fans	98,861	0	0	0	0	337,328	6.73	1,068,318	21.3	0
Pumps	256	0	0	0	0	872	0.02	2,762	0.06	0
Heat Rejection	0	0	0	0	0	0	0	0	0	0
Humidification	0	0	0	0	0	0	0	0	0	0
Heat Recovery	0	0	0	0	0	0	0	0	0	0
HVAC	99,117	6,610	0	0	0	6,948,059	138.54	8,236,167	164.23	0
Water Systems	0	0	0	0	0	0	0	0	0	0
Interior Lighting	56,222	0	0	0	0	191,838	3.83	607,552	12.11	0
Exterior Lighting	0	0	0	0	0	0	0	0	0	0
Interior Equipment	68,886	0	0	0	0	235,049	4.69	744,401	14.84	0
Exterior Equipment	0	0	0	0	0	0	0	0	0	0
Refrigeration	0	0	0	0	0	0	0	0	0	0
Non-HVAC	125,108	0	0	0	0	426,887	8.51	1,351,952	26.96	0
Generators	0	0	0	0	0	0	0	0	0	0
Site Generation	0	0	0	0	0	0	0	0	0	0
Grand Total	224,225	6,610	0	0	0	7,374,946	147.05	9,588,119	191.18	0

Gross Floor Area: 50,136 ft²

Region: West

Building Type: Office

CBECS Survey Year: 2012

Benchmark EUI: 69.2 kBtu/ft²/yr

If the region reports as "All US" it means the data for the particular region was withheld because the Relative Standard Error was greater than 50 percent or fewer than 20 buildings were sampled.

Alternative: Primary

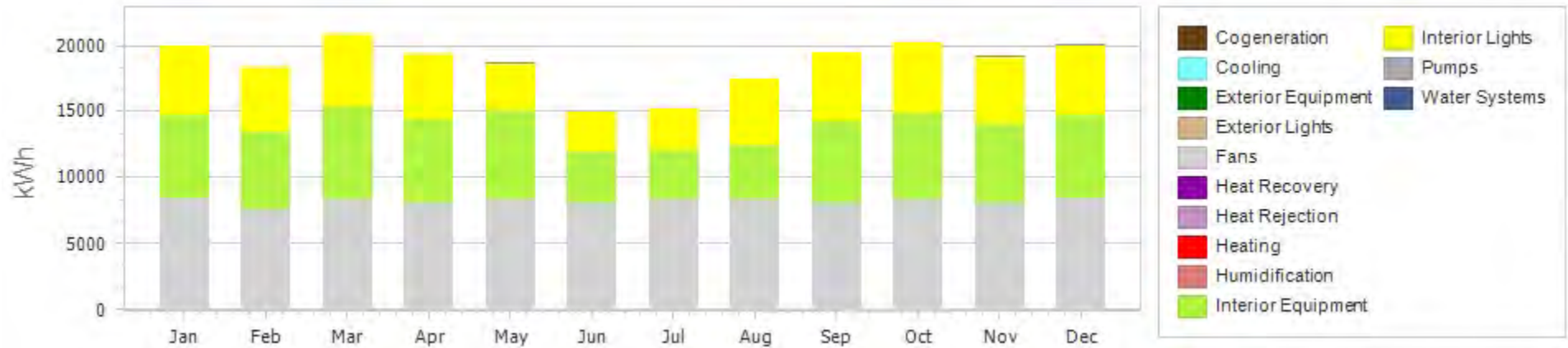
Calculated at: Jul 05, 2022 - 08:50 AM

File name: EWU Jim Thorpe Fieldhouse 6-29 Test.mdf

TRACE™ 3D Plus 4.01.97

## Monthly Energy End Use

### Electricity



	January	February	March	April	May	June	July	August	September	October	November	December	Grand Total
Cogeneration	0	0	0	0	0	0	0	0	0	0	0	0	0
Cooling	0	0	0	0	0	0	0	0	0	0	0	0	0
Exterior Equipment	0	0	0	0	0	0	0	0	0	0	0	0	0
Exterior Lights	0	0	0	0	0	0	0	0	0	0	0	0	0
Fans	8,485	7,631	8,406	8,104	8,359	8,087	8,356	8,356	8,087	8,366	8,165	8,458	98,861
Heat Recovery	0	0	0	0	0	0	0	0	0	0	0	0	0
Heat Rejection	0	0	0	0	0	0	0	0	0	0	0	0	0
Heating	0	0	0	0	0	0	0	0	0	0	0	0	0
Humidification	0	0	0	0	0	0	0	0	0	0	0	0	0
Interior Equipment	6,274	5,882	6,964	6,220	6,734	3,898	3,744	4,182	6,220	6,504	5,990	6,274	68,887
Interior Lights	5,266	4,832	5,479	5,022	3,594	2,974	3,162	5,022	5,169	5,355	5,027	5,319	56,221
Pumps	37	31	30	24	22	0	0	0	17	26	32	36	256
Water Systems	0	0	0	0	0	0	0	0	0	0	0	0	0
Grand Total	20,062	18,376	20,880	19,370	18,709	14,959	15,263	17,561	19,493	20,251	19,214	20,086	224,225

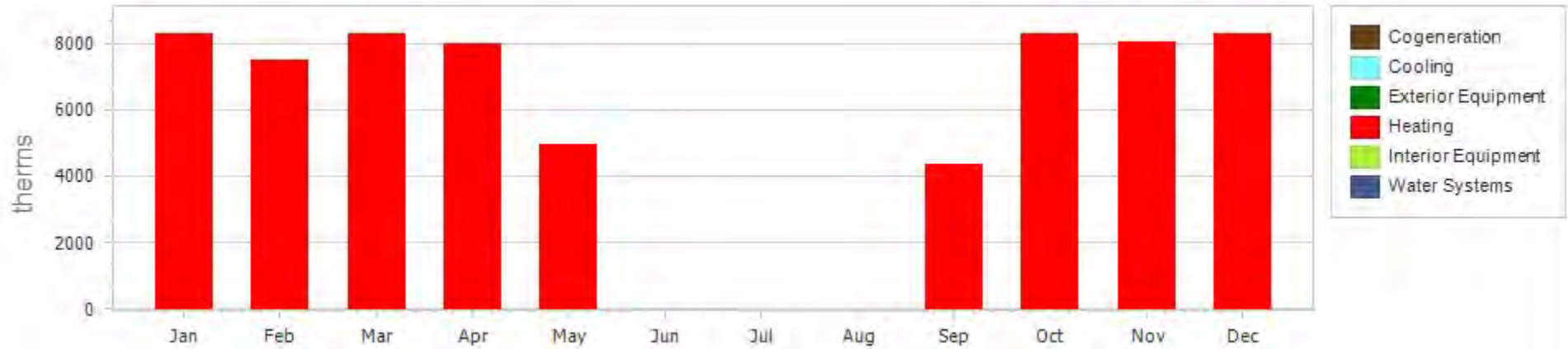
Alternative: Primary

Calculated at: Jul 05, 2022 - 08:50 AM

File name: EWU Jim Thorpe Fieldhouse 6-29 Test.mdf

TRACE™ 3D Plus 4.01.97

### Natural Gas



	January	February	March	April	May	June	July	August	September	October	November	December	Grand Total
Cogeneration	0	0	0	0	0	0	0	0	0	0	0	0	0
Cooling	0	0	0	0	0	0	0	0	0	0	0	0	0
Exterior Equipment	0	0	0	0	0	0	0	0	0	0	0	0	0
Heating	8,310	7,506	8,310	8,016	4,962	0	0	0	4,351	8,310	8,042	8,310	66,115
Interior Equipment	0	0	0	0	0	0	0	0	0	0	0	0	0
Water Systems	0	0	0	0	0	0	0	0	0	0	0	0	0
Grand Total	8,310	7,506	8,310	8,016	4,962	0	0	0	4,351	8,310	8,042	8,310	66,115

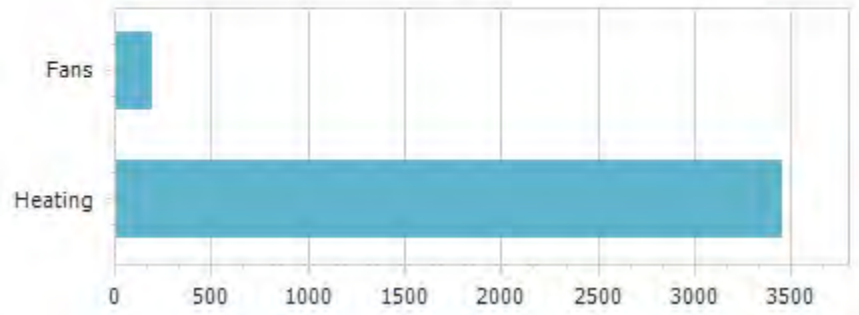
# JTF ALL NEW FIMS SITE CONSUMPTION SUMMARY

## Site Consumption Summary

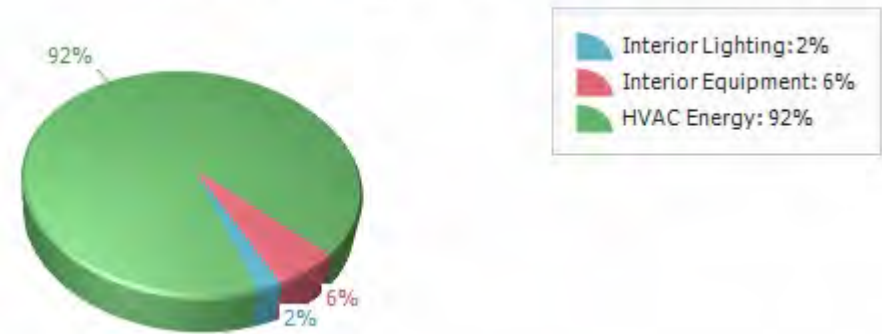
### Energy Consumption

HVAC Energy Usage

(Mbtu)



Total Site Energy Breakdown



Component	Electricity (kWh)	Gas (Mbtu)	District Cooling (Mbtu)	District Heating (Mbtu)	Other Utilities (Mbtu)	Site Energy (kBtu)	Site Energy Use Intensity (kBtu/ft²)	Source Energy (kBtu)	Source Energy Use Intensity (kBtu/ft²)	Water (gal)
Heating	0	3,451	0	0	0	3,450,670	68.8	3,740,527	74.58	0
Cooling	0	0	0	0	0	0	0	0	0	0
Fans	56,100	0	0	0	0	191,421	3.82	606,231	12.09	0
Pumps	106	0	0	0	0	360	0.01	1,141	0.02	0
Heat Rejection	0	0	0	0	0	0	0	0	0	0
Humidification	0	0	0	0	0	0	0	0	0	0
Heat Recovery	0	0	0	0	0	0	0	0	0	0
HVAC	56,206	3,451	0	0	0	3,642,452	72.63	4,347,898	86.7	0
Water Systems	0	0	0	0	0	0	0	0	0	0
Interior Lighting	25,661	0	0	0	0	87,559	1.75	277,300	5.53	0
Exterior Lighting	0	0	0	0	0	0	0	0	0	0
Interior Equipment	68,886	0	0	0	0	235,049	4.69	744,401	14.84	0
Exterior Equipment	0	0	0	0	0	0	0	0	0	0
Refrigeration	0	0	0	0	0	0	0	0	0	0
Non-HVAC	94,547	0	0	0	0	322,609	6.43	1,021,701	20.37	0
Generators	0	0	0	0	0	0	0	0	0	0
Site Generation	0	0	0	0	0	0	0	0	0	0
Grand Total	150,753	3,451	0	0	0	3,965,060	79.06	5,369,599	107.07	0

Gross Floor Area: 50,136 ft²

Region: West

Building Type: Office

CBECS Survey Year: 2012

Benchmark EUI: 69.2 kBtu/ft²/yr

If the region reports as "All US" it means the data for the particular region was withheld because the Relative Standard Error was greater than 50 percent or fewer than 20 buildings were sampled.

Alternative: AHU Replacement

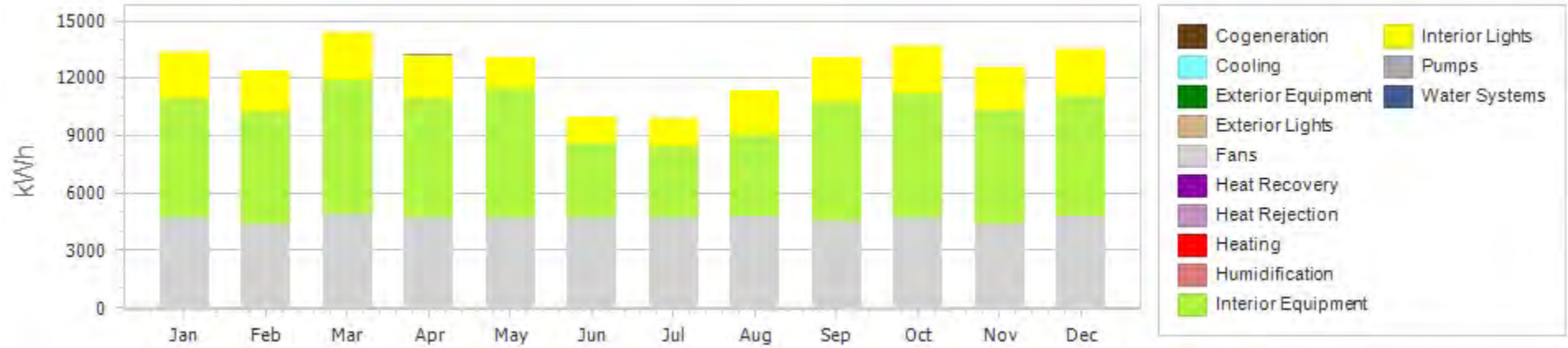
Calculated at: Jul 05, 2022 - 11:26 AM

File name: EWU Jim Thorpe Fieldhouse 7-5.mdf

TRACE™ 3D Plus 4.01.97

## Monthly Energy End Use

### Electricity



	January	February	March	April	May	June	July	August	September	October	November	December	Grand Total
Cogeneration	0	0	0	0	0	0	0	0	0	0	0	0	0
Cooling	0	0	0	0	0	0	0	0	0	0	0	0	0
Exterior Equipment	0	0	0	0	0	0	0	0	0	0	0	0	0
Exterior Lights	0	0	0	0	0	0	0	0	0	0	0	0	0
Fans	4,697	4,337	4,931	4,735	4,723	4,692	4,692	4,848	4,543	4,742	4,336	4,826	56,100
Heat Recovery	0	0	0	0	0	0	0	0	0	0	0	0	0
Heat Rejection	0	0	0	0	0	0	0	0	0	0	0	0	0
Heating	0	0	0	0	0	0	0	0	0	0	0	0	0
Humidification	0	0	0	0	0	0	0	0	0	0	0	0	0
Interior Equipment	6,274	5,882	6,964	6,220	6,734	3,898	3,744	4,182	6,220	6,504	5,990	6,274	68,887
Interior Lights	2,387	2,191	2,483	2,276	1,627	1,408	1,488	2,339	2,343	2,427	2,279	2,411	25,660
Pumps	21	16	13	7	3	1	0	0	1	8	15	20	106
Water Systems	0	0	0	0	0	0	0	0	0	0	0	0	0
Grand Total	13,379	12,426	14,391	13,238	13,087	9,999	9,925	11,369	13,107	13,681	12,620	13,531	150,753

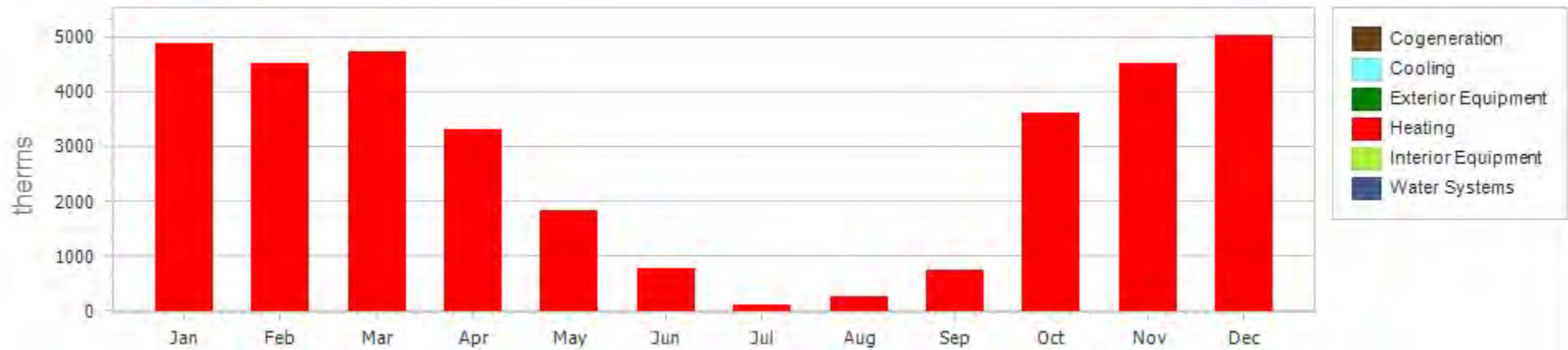
Alternative: AHU Replacement

File name: EWU Jim Thorpe Fieldhouse 7-5.mdf

TRACE™ 3D Plus 4.01.97

Calculated at: Jul 05, 2022 - 11:26 AM

### Natural Gas



	January	February	March	April	May	June	July	August	September	October	November	December	Grand Total
Cogeneration	0	0	0	0	0	0	0	0	0	0	0	0	0
Cooling	0	0	0	0	0	0	0	0	0	0	0	0	0
Exterior Equipment	0	0	0	0	0	0	0	0	0	0	0	0	0
Heating	4,907	4,541	4,760	3,312	1,835	788	122	276	756	3,637	4,535	5,047	34,515
Interior Equipment	0	0	0	0	0	0	0	0	0	0	0	0	0
Water Systems	0	0	0	0	0	0	0	0	0	0	0	0	0
Grand Total	4,907	4,541	4,760	3,312	1,835	788	122	276	756	3,637	4,535	5,047	34,515

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SPORTS AND RECREATION CENTER ENERGY AUDIT REPORT

V) FIMS list for this building.

FIM #3: retrofit existing T5 fluorescent fixtures with energy efficient LED high bays that will correct existing low level lighting issues.

FIM #4: Heating and Ventilating Units: Remove and replace (2) existing H & V units serving the fieldhouse with (2) new air handling units mounted on the roof. New supply air ductwork distribution systems will be installed to eliminate the areas of high velocity air flows that inhibit tennis ball travel. Each unit will have new piping installed. Each unit will also have new Alerton Controls.

FIM #5: Remove and replace (2) smaller air handling units with (2) new units. Each unit will reuse as much of the existing ductwork systems as possible. Each unit will have new Alerton Controls.

## FACILITY IMPROVEMENT MEASURES SUMMARY

Eastern Washington University  
GMAX

## E) FIMS COSTS-ENERGY SAVINGS-PAYBACK PERIOD



MECHANICAL CONTRACTORS  
Solutions Group

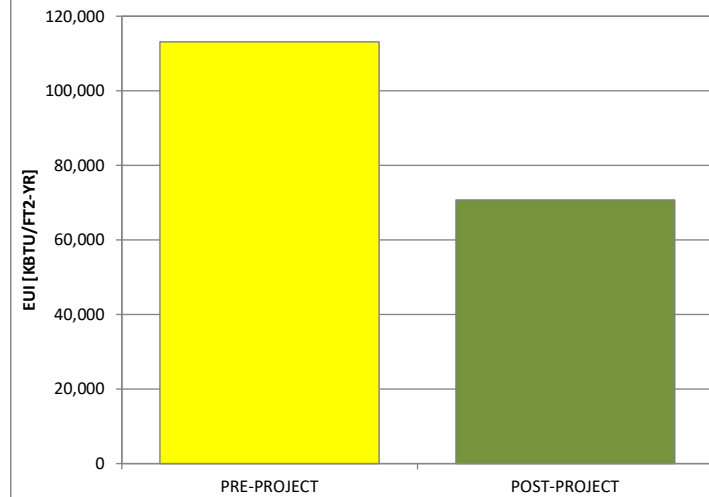
ROW	FIM ID	FIM DESCRIPTION	PROJECT PRICE	UTILITY INCENTIVES [\$]	TOTAL ANNUAL COST SAVINGS	SIMPLE PAYBACK BEFORE INCENTIVES	MODIFIED PAYBACK AFTER INCENTIVES	ANNUAL ELECTRICITY SAVINGS [KWH/YR]	Annual Natural Gas Savings (Therms/Year)	ANNUAL FUEL 2 SAVINGS	ANNUAL WATER SAVINGS [KGAL/YR]	GUARANTEED ANNUAL UTILITY COST SAVINGS [\$/YR]	ANNUAL O&M SAVINGS [\$/YR]	ELIMINATED CO2 [TONS/YR]	ELIMINATED CO2 [CARS/YR]
1	1	PEA LED Lighting (Physical Education Activities)	\$201,022	\$869	\$6,712	32.6	29.8	106,178	0	0	0	\$6,167	\$545	73	14
2	2	PEA Gym 270 AHUs & DCV (Physical Education Activities)	\$1,289,863	\$0	\$47,503	30.3	27.2	46,335	67,964	0	0	\$42,627	\$4,876	372	73
3	3	JTF LED Lighting (Jim Thorpe Fieldhouse)	\$131,812	\$221	\$1,773	74.3	74.2	30,528	0	0	0	\$1,773	\$0	21	4
4	4	JTF HV Units (Jim Thorpe Fieldhouse)	\$1,892,161	\$0	\$30,191	94.8	62.7	32,097	30,801	0	0	\$19,963	\$10,228	176	35
5	5	JTF AHUs (Jim Thorpe Fieldhouse)	\$1,158,590	\$0	\$7,541	1057.3	153.6	10,854	792	0	0	\$1,096	\$6,445	11	2
6	6	PAV LED Lighting (Pavilion)	\$169,350	\$626	\$13,678	12.6	12.3	230,725	0	0	0	\$13,401	\$277	159	31
7	7	PAV Lower AHUs (Pavilion)	\$2,165,979	\$0	\$6,054	--	357.8	-11,123	-3,708	0	0	\$0	\$6,054	-26	-5
8	8	PAV Upper AHUs & DCV (Pavilion)	\$1,380,777	\$0	\$19,562	102.2	70.6	4,984	22,495	0	0	\$13,508	\$6,054	116	23
			<b>\$8,389,556</b>	<b>\$1,716</b>	<b>\$133,013</b>	<b>63.1</b>	<b>63.1</b>	<b>450,578</b>	<b>118,344</b>	<b>0</b>	<b>0</b>	<b>\$98,534</b>	<b>\$34,479</b>	<b>902</b>	<b>177</b>

Costs include Construction, Performance Bond, IGA Fee, Design, Construction and Project Administration, OH&P, Client Contingency, M&V, WSST, & DES Fees.

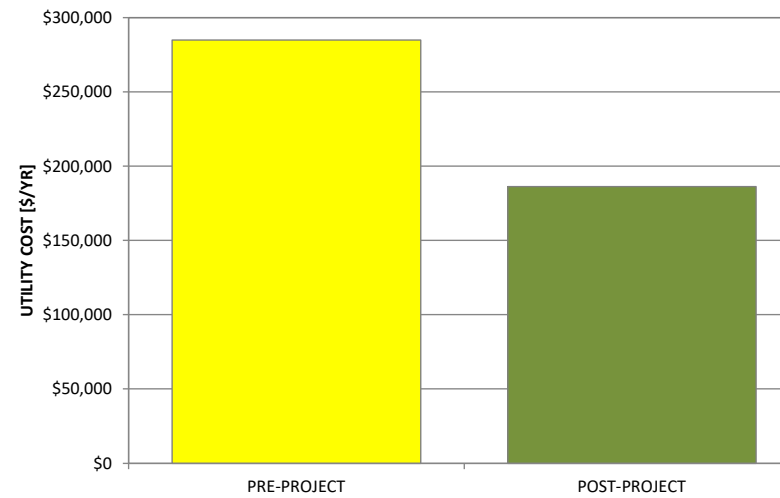
### UTILITY SAVINGS SUMMARY FOR ALL FACILITIES INCLUDED IN THE PROJECT

	FLOOR AREA [FT2]	ELECTRICITY USAGE [kWh/yr]	FUEL 1 USAGE [Therm/yr]	FUEL 2 USAGE -	WATER USAGE [CCF/yr]	UTILITY COST [\$/YR]	EUI [BTU/FT2-YR]
PRE-PROJECT	315,101	1,981,140	288,897	0	0	\$284,821	113,143
POST-PROJECT	315,101	1,530,562	170,553	0	0	\$186,287	70,705
PERCENT SAVINGS		22.7%	41.0%	#DIV/0!	#DIV/0!	34.6%	37.5%

PRE AND POST ENERGY FOOTPRINT



PRE AND POST UTILITY COST





# EUI'S EXISTING, UPDATED & TARGET

Facility	Existing EUI	Updated EUI	Target EUI
Jim Thorpe Fieldhouse	143,722	77,270	102,000
Physical Education Activities	176,695	98,740	102,000
Pavilion	73,617	58,051	70,000

G. REPORT CERTIFICATION

SUBMITTED BY:

PROFESSIONAL ENGINEERING FIRM NAME:

KJH Engineering PLLC

WASHINGTON STATE PE LICENSE: 47417



PROFESSIONAL ENGINEER NAME: KELLY J. HARKINS

PROFESSIONAL ENGINEER SIGNATURE:

*Kelly J Harkins*

Appendix B – Availability of Space/ Campus Utilization

Complete and include this template as appendix in all growth, renovation, replacement and research proposal packets.

**Availability of Space/Campus Utilization Template**

Project name:  CBS/OFM Project #:   
 Institution:  Scoring category:   
 Campus/Location:

**Enrollment**

2021 fall on-campus student FTE:	<input type="text" value="9,437"/>	Expected 2022 fall on-campus student FTE:	<input type="text" value="8,021"/>
		% increase budgeted:	<input type="text" value="-15.00%"/>

Enter the average number of hours per week each for (a) classroom seat and (b) classroom lab is expected to be utilized in Fall 2022 for the campus where the project is located.

(a) General University Classroom Utilization		(b) General University Lab Utilization	
Fall 2021 Weekly Contact Hours	<input type="text" value="88,173"/>	Fall 2021 Weekly Contact Hours	<input type="text" value="24,213"/>
Multiply by % FTE Increase Budgeted	<input type="text" value="-15.00%"/>	Multiply by % FTE Increase Budgeted	<input type="text" value="-15.00%"/>
Expected Fall 2022 Contact Hours	<input type="text" value="74,943"/>	Expected Fall 2022 Contact Hours	<input type="text" value="20,580"/>
Expected Fall 2022 Classroom Seats	<input type="text" value="6,083"/>	Expected Fall 2022 Class Lab Seats	<input type="text" value="1,805"/>
<b>Expected Hours per Week Utilization</b>	<b><input type="text" value="12.3"/></b>	<b>Expected Hours per Week Utilization</b>	<b><input type="text" value="11.4"/></b>
HECB utilization standard (hours/GUC seat)	<input type="text" value="22.0"/>	HECB utilization standard (hour/GUL seat)	<input type="text" value="16.0"/>
Difference in utilization standard	<input type="text" value="-44.0%"/>	Difference in utilization standard	<input type="text" value="-28.7%"/>

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 the utilization standard.

Eastern continually reviews utilization rates and looks to take low utilized classrooms (110) and Teaching Labs (210) out of our class scheduling inventory and use those spaces for needed office and student support spaces. The goal is to "right size" the classroom and teaching lab inventory to increase this utilization rates.

Appendix C – C-100

# C-100(2022)

Updated June 2022

## Quick Start Guide

### GENERAL INFORMATION

- 1) The intended use of the C-100(2022) 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 Uniformat 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 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 and attach the C-100 form.
- 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:  $AE\ Fee\ \% (x) (MACC + Contingency)$
- 2) Design Services Contingency:  $Contingency\ \% (x) Consultant\ Services\ Subtotal$
- 3) Construction Contingency:  $Contingency\ \% (x) MACC$
- 4) Artwork:  $0.5\% (x) Total\ Project\ Cost$
- 5) Agency Project Management (Greater than \$1million):  $(AE\ Fee\ \% - 3\%) (x) (Acquisition\ Total + Consultant\ Services\ Total + MACC + Construction\ Contingency + Other\ Costs)$

**STATE OF WASHINGTON**  
**AGENCY / INSTITUTION PROJECT COST SUMMARY**

*Updated June 2022*

Agency	Eastern Washington University	
Project Name	Sports and Recreation Center Energy Improvements	
OFM Project Number	40000112	

**Contact Information**

Name	Shawn King	
Phone Number	509-359-6878	
Email	<a href="mailto:sking@ewu.edu">sking@ewu.edu</a>	

**Statistics**

Gross Square Feet	250,000	MACC per Gross Square Foot	\$27
Usable Square Feet	180,000	Escalated MACC per Gross Square Foot	\$30
Alt Gross Unit of Measure			
Space Efficiency	72.0%	A/E Fee Class	B
Construction Type	College classroom facilit	A/E Fee Percentage	11.41%
Remodel	Yes	Projected Life of Asset (Years)	25

**Additional Project Details**

Procurement Approach	DBB	Art Requirement Applies	No
Inflation Rate	4.90%	Higher Ed Institution	Yes
<a href="#">Sales Tax Rate %</a>	8.70%	Location Used for Tax Rate	Cheney WA
Contingency Rate	5%		
Base Month (Estimate Date)	July-22	OFM UFI# (from FPMT, if available)	
Project Administered By	Agency		

**Schedule**

Predesign Start		Predesign End	
Design Start	July-23	Design End	January-24
Construction Start	March-24	Construction End	December-24
Construction Duration	10 Months		

Green cells must be filled in by user

**Project Cost Estimate**

Total Project	<b>\$9,082,408</b>	Total Project Escalated	<b>\$10,011,635</b>
		Rounded Escalated Total	<b>\$10,012,000</b>

## Cost Estimate Summary

Acquisition			
<b>Acquisition Subtotal</b>	<b>\$0</b>	<b>Acquisition Subtotal Escalated</b>	<b>\$0</b>

Consultant Services			
Predesign Services	\$0		
Design Phase Services	\$564,192		
Extra Services	\$0		
Other Services	\$253,477		
Design Services Contingency	\$40,883		
<b>Consultant Services Subtotal</b>	<b>\$858,553</b>	<b>Consultant Services Subtotal Escalated</b>	<b>\$924,273</b>

Construction			
Maximum Allowable Construction Cost (MACC)	\$6,825,000	Maximum Allowable Construction Cost (MACC) Escalated	\$7,541,625
DBB Risk Contingencies	\$0		
DBB Management	\$0		
Owner Construction Contingency	\$341,250		\$377,082
Non-Taxable Items	\$0		\$0
Sales Tax	\$623,464	Sales Tax Escalated	\$688,928
<b>Construction Subtotal</b>	<b>\$7,789,714</b>	<b>Construction Subtotal Escalated</b>	<b>\$8,607,635</b>

Equipment			
Equipment	\$0		
Sales Tax	\$0		
Non-Taxable Items	\$0		
<b>Equipment Subtotal</b>	<b>\$0</b>	<b>Equipment Subtotal Escalated</b>	<b>\$0</b>

Artwork			
<b>Artwork Subtotal</b>	<b>\$0</b>	<b>Artwork Subtotal Escalated</b>	<b>\$0</b>

Agency Project Administration			
Agency Project Administration Subtotal	\$434,142		
DES Additional Services Subtotal	\$0		
Other Project Admin Costs	\$0		
<b>Project Administration Subtotal</b>	<b>\$434,142</b>	<b>Project Administration Subtotal Escalated</b>	<b>\$479,727</b>

Other Costs			
<b>Other Costs Subtotal</b>	<b>\$0</b>	<b>Other Costs Subtotal Escalated</b>	<b>\$0</b>

Project Cost Estimate			
Total Project	<b>\$9,082,408</b>	Total Project Escalated	<b>\$10,011,635</b>
		Rounded Escalated Total	<b>\$10,012,000</b>

## Funding Summary

	Project Cost (Escalated)	Funded in Prior Biennia	New Approp Request 2023-2025	2025-2027	Out Years
<b>Acquisition</b>					
Acquisition Subtotal	\$0		\$0		\$0
<b>Consultant Services</b>					
Consultant Services Subtotal	\$924,273		\$924,273		\$0
<b>Construction</b>					
Construction Subtotal	\$8,607,635		\$8,607,635		\$0
<b>Equipment</b>					
Equipment Subtotal	\$0		\$0		\$0
<b>Artwork</b>					
Artwork Subtotal	\$0		\$0		\$0
<b>Agency Project Administration</b>					
Project Administration Subtotal	\$479,727		\$479,727		\$0
<b>Other Costs</b>					
Other Costs Subtotal	\$0		\$0		\$0
<b>Project Cost Estimate</b>					
Total Project	\$10,011,635	\$0	\$10,011,635	\$0	\$0
	\$10,012,000	\$0	\$10,012,000	\$0	\$0
Percentage requested as a new appropriation			100%		

**What is planned for the requested new appropriation? (Ex. Acquisition and design, phase 1 construction, etc. )**

Design and Construction

*Insert Row Here*

**What has been completed or is underway with a previous appropriation?**

N/A

*Insert Row Here*

**What is planned with a future appropriation?**

N/A

*Insert Row Here*



## 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					
<b>ACQUISITION TOTAL</b>	<b>\$0</b>		<b>NA</b>	<b>\$0</b>	

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## Cost Estimate Details

Consultant Services				
Item	Base Amount	Escalation Factor	Escalated Cost	Notes
<b>1) Pre-Schematic Design Services</b>				
Programming/Site Analysis				
Environmental Analysis				
Predesign Study				
Other				
Insert Row Here				
<b>Sub TOTAL</b>	<b>\$0</b>	<b>1.0490</b>	<b>\$0</b>	Escalated to Design Start
<b>2) Construction Documents</b>				
<b>A/E Basic Design Services</b>	\$564,192			69% of A/E Basic Services
Other				
Insert Row Here				
<b>Sub TOTAL</b>	<b>\$564,192</b>	<b>1.0617</b>	<b>\$599,003</b>	Escalated to Mid-Design
<b>3) Extra Services</b>				
Civil Design (Above Basic Svcs)				
Geotechnical Investigation				
Commissioning				
Site Survey				
Testing				
LEED Services				
Voice/Data Consultant				
Value Engineering				
Constructability Review				
Environmental Mitigation (EIS)				
Landscape Consultant				
Other				
Insert Row Here				
<b>Sub TOTAL</b>	<b>\$0</b>	<b>1.0617</b>	<b>\$0</b>	Escalated to Mid-Design
<b>4) Other Services</b>				
<b>Bid/Construction/Closeout</b>	\$253,477			31% of A/E Basic Services
HVAC Balancing				
Staffing				
Other				
Insert Row Here				
<b>Sub TOTAL</b>	<b>\$253,477</b>	<b>1.1050</b>	<b>\$280,093</b>	Escalated to Mid-Const.
<b>5) Design Services Contingency</b>				
Design Services Contingency	\$40,883			
Other				
Insert Row Here				
<b>Sub TOTAL</b>	<b>\$40,883</b>	<b>1.1050</b>	<b>\$45,177</b>	Escalated to Mid-Const.

CONSULTANT SERVICES TOTAL	
\$858,553	\$924,273

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## Cost Estimate Details

Construction Contracts					
Item	Base Amount		Escalation Factor	Escalated Cost	Notes
<b>1) Site Work</b>					
G10 - Site Preparation					
G20 - Site Improvements					
G30 - Site Mechanical Utilities					
G40 - Site Electrical Utilities					
G60 - Other Site Construction					
Other					
Insert Row Here					
<b>Sub TOTAL</b>	<b>\$0</b>		<b>1.0831</b>	<b>\$0</b>	
<b>2) Related Project Costs</b>					
Offsite Improvements					
City Utilities Relocation					
Parking Mitigation					
Stormwater Retention/Detention					
Other					
Insert Row Here					
<b>Sub TOTAL</b>	<b>\$0</b>		<b>1.0831</b>	<b>\$0</b>	
<b>3) Facility Construction</b>					
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	\$6,000,000				
D40 - Fire Protection Systems					
D50 - Electrical Systems	\$425,000				
F10 - Special Construction	\$200,000				
F20 - Selective Demolition	\$100,000				
General Conditions	\$100,000				
Other Direct Cost					
Insert Row Here					
<b>Sub TOTAL</b>	<b>\$6,825,000</b>		<b>1.1050</b>	<b>\$7,541,625</b>	
<b>4) Maximum Allowable Construction Cost</b>					
<b>MACC Sub TOTAL</b>	<b>\$6,825,000</b>			<b>\$7,541,625</b>	
	\$27			\$30 per GSF	

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**7) Owner Construction Contingency**

Allowance for Change Orders	\$341,250		
Other			
Insert Row Here			
<b>Sub TOTAL</b>	<b>\$341,250</b>	<b>1.1050</b>	<b>\$377,082</b>

**8) Non-Taxable Items**

Other			
Insert Row Here			
<b>Sub TOTAL</b>	<b>\$0</b>	<b>1.1050</b>	<b>\$0</b>

**9) Sales Tax**

<b>Sub TOTAL</b>	<b>\$623,464</b>		<b>\$688,928</b>
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<b>CONSTRUCTION CONTRACTS TOTAL</b>	<b>\$7,789,714</b>		<b>\$8,607,635</b>
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## Cost Estimate Details

Equipment					
Item	Base Amount		Escalation Factor	Escalated Cost	Notes
<b>1) Equipment</b>					
E10 - Equipment					
E20 - Furnishings					
F10 - Special Construction					
Other					
Insert Row Here					
<b>Sub TOTAL</b>	\$0		1.1050	\$0	
<b>2) Non Taxable Items</b>					
Other					
Insert Row Here					
<b>Sub TOTAL</b>	\$0		1.1050	\$0	
<b>3) Sales Tax</b>					
<b>Sub TOTAL</b>	\$0			\$0	
<b>EQUIPMENT TOTAL</b>					
<b>EQUIPMENT TOTAL</b>	\$0			\$0	

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## Cost Estimate Details

Artwork					
Item	Base Amount		Escalation Factor	Escalated Cost	Notes
<b>1) Artwork</b>					
Project Artwork	\$0				0.5% of total project cost for new construction
Higher Ed Artwork	\$50,058				0.5% of total project cost for new and renewal construction
No Art Required	-\$50,058				
Insert Row Here					
<b>ARTWORK TOTAL</b>	<b>\$0</b>		<b>NA</b>	<b>\$0</b>	

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## Cost Estimate Details

Project Management					
Item	Base Amount		Escalation Factor	Escalated Cost	Notes
<b>1) Agency Project Management</b>					
Agency Project Management	\$434,142				
Additional Services					
Other					
Insert Row Here					
<i>Subtotal of Other</i>	<i>\$0</i>				
<b>PROJECT MANAGEMENT TOTAL</b>	<b>\$434,142</b>		<b>1.1050</b>	<b>\$479,727</b>	

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## Cost Estimate Details

Other Costs					
Item	Base Amount		Escalation Factor	Escalated Cost	Notes
Mitigation Costs					
Hazardous Material Remediation/Removal					
Historic and Archeological Mitigation					
Other					
Insert Row Here					
<b>OTHER COSTS TOTAL</b>	<b>\$0</b>		<b>1.0831</b>	<b>\$0</b>	

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**C-100(2022)**  
**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**

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**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 D – Greenhouse Gas Reduction Policy



## 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 1<sup>st</sup> 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.

Appendix E – Availability of Space/Campus Utilization Template

**Availability of Space/Campus Utilization Template**

Project name:  CBS/OFM Project #:   
 Institution:  Scoring category:   
 Campus/Location:

**Enrollment**

2021 fall on-campus student FTE:  Expected 2022 fall on-campus student FTE:   
 % increase budgeted:

Enter the average number of hours per week each for (a) classroom seat and (b) classroom lab is expected to be utilized in Fall 2022 for the campus where the project is located.

<b>(a) General University Classroom Utilization</b>		<b>(b) General University Lab Utilization</b>	
Fall 2021 Weekly Contact Hours	88,173	Fall 2021 Weekly Contact Hours	24,213
Multiply by % FTE Increase Budgeted	-16.53%	Multiply by % FTE Increase Budgeted	-16.53%
Expected Fall 2022 Contact Hours	73,600	Expected Fall 2022 Contact Hours	20,211
Expected Fall 2022 Classroom Seats	6,083	Expected Fall 2022 Class Lab Seats	1,805
<b>Expected Hours per Week Utilization</b>	<b>12.1</b>	<b>Expected Hours per Week Utilization</b>	<b>11.2</b>
HECB utilization standard (hours/GUC seat)	22.0	HECB utilization standard (hour/GUL seat)	16.0
Difference in utilization standard	-45.0%	Difference in utilization standard	-30.0%

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 the utilization standard.

The university continues to evaluate those classrooms and teaching labs that do not meet our standard for instruction and systematically remove them from their respective inventories. Also 110 and 210 spaces that are utilized below reasonable standards are being capture for other required usage such as officie spaces, general student support spaces and other activities.